2010 Ohio State University Combined Research and Extension Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

The Ohio Agricultural Research and Development Center (OARDC) and Ohio State University Extension Service (OSU Extension), administered through the Ohio State University Vice President, Agriculture, are central to accomplishing the land grant mission of The Ohio State University and fulfilling its Academic Plan. That mission is inclusive of an active state government agenda to grow Ohio economic sectors through research, development, and extension investments. The food and agriculture bioeconomy in Ohio is a 90 plus billion dollar enterprise that depends in a great part on the OSU research, development, and extension programs reported herein. On an annual basis external reviewers reported that OARDC, with the support of OSU Extension, annually (in 2008 dollars)directly generates: $156.3 million in total Ohio economic output; 1,609 jobs in Ohio; $59.2 million in personal income for Ohio residents; and $5.5 million in annual state tax revenues. The university and state agendas compliment the broader goals of CSREES and the national agenda. OARDC and OSU Extension strategic plans are reflected in the College of Food, Agricultural, and Environmental 2008 Strategic Plan. All activities within that Strategic Plan adhere to the college's long established paradigm calling for consideration of four elements - production efficiency, economic viability through value added, social acceptably of our contributions, and environmental compatibility of products and practices emanating from our planned programs. At this rare moment in history, knowledge, and scienticfic advancements spark revolutionary progress in economies and societies. The twenty first century has opened to a revolution in bioscience and agricultural knowledge, collectively known as agbiosciences. Rapid advancements in agbioscience will provide unprecedented opportunities for global economic and societal advancement. OARDC is the singular research and development hub for agbiosciences research in Ohio and OSU Extension is the center for associated education and human capital development. This institution is ideally positioned to lead Ohio in realizing progress in all significant aspects of the bioeconomy and contribute to a broad national agenda. Three signature areas have been identified that align the state's highest needs with this institution's greatest strengths. Likewise these needs are found throughout the nation and world. Our guiding 2008 Strategic Plan is focused on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas : (1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products. Our perspective moves us from the local stakeholder to the global marketplace. As we plan into and beyond the second decade of the twenty first century, globalization is providing windows of opportunity for positioning our university, state, and nation to leverage and contribute to economies driven by new knowledge and new technology/materials platforms. While OARDC and OSU Extension provides leadership in these new economies, we continue to focus on traditional areas where need exists. Both are accomplished by leveraging federal and state base funding through competitive processes and the utilization of stakeholder input into planning processes, scientific peer review, and stakeholder review of outputs and impacts. The emerging approach to advancing agbiosciences is less dependent on only making and growing things and more dependent on ideas and innovation. Knowledge has replaced raw materials and physical labor as the source of value, wealth, and economic prosperity. Our programs are positioning agricultural bioscience (agbiosciences) /biotechnology foci within knowledge-based industry clusters. Advances in agbiosciences have shifted foci beyond food and fiber production, alone, toward goals of also improving employment opportunities, public health, social well-being, energy independence, and environmental well being. A 2008 Battelle study states: Agbioscience innovations are driving new, high visibility economic opportunities for American states, and the State of Ohio has been an early mover in recognizing the economic development potential of biobased resources. For Ohio, the foremost in-state driver of agbioscience R and D is The Ohio State University Ohio Agricultural Research and Development Center (OARDC). A research, development and extension system has been put in place that provides a continuum of support including: support for early stage basic science investigations in areas with potential signature platform linkages; development of applied R and D programs focused on translating basic science discoveries into practical innovations; and the testing of applied R and D discoveries for true market potential through scale-up and piloting projects, demonstration projects, and market feasibility assessment. The knowledge gained is broadly extended to stakeholders. To aid the efforts, a new BioHio Research Park, located on the OSU Wooster campus, will commercialize ideas and products from food, agricultural, and environmental research laboratories and move them to the marketplace. It will serve as a catalyst for local and regional development by supporting the creation of an agbiosciences industry cluster in northeast Ohio and propelling an economic shift for Ohio. This is complimented by an existing research, development, and extension center in southern Ohio. Collectively OARDC and OSU Extension are playing new and different roles aimed at meeting the food and nutrition, environmental, and advance energy and materials needs of the twenty first century. A more comprehensive view of the value chain is now driving the research and extension agenda. In addition major economic shifts, rising energy costs, energy globalization, trade liberalization, changing consumer preferences, public concern about food, environment, and energy security, and changes in the relationship between agriculture and rural communities, collectively, have altered the context in which the OARDC and OSU Extension agenda is

being formulated and implemented. Emerging areas such as biotechnology, genomics, health, nutrition, advanced energy/materials, and ecosystem science have also transformed the practices and products of agriculture. OSU Extension and OARDC partner together with each other, with other OSU colleges, and with multiple external partners to accelerate these transformations. New institutional arrangements such as the AgBioscience Innovation Centers (ABIG), Research Enhancement Competitive Grants Program (SEEDS), and Ohio BioProducts Innovation Center (OBIC) are transformational approaches in which OARDC and OSU Extension are leaders. OARDC's role is providing the science for economic drivers while OSU Extension provides the leadership and training to engage and transform economies and lives. The overall emphasis is on creating jobs, adding value to products, advancing energy independency, and strengthening Ohio and national competitiveness, while leveraging human capital and enhancing the quality of life and quantity of goods and services for individuals and communities, as environmental and natural resources are protected. To that end, OSU Extension and OARDC, individually and collectively, will continue to focus extensively on the three afore mentioned signature areas. OARDC and OSU Extension recognize that all future gains are based in great part on its existing strengths and past achievements, as well as in its new capacity to lead. OARDC, OSU Extension, and the College of Food, Agricultural and Environmental Science, in collaboration with stakeholders and partners, are committed to: (1) focusing on improving agricultural production; enhancing the quality of food and feed; ensuring an adequate, affordable, and safe food supply; and maintaining agrosecurity to ensure food security and the basics of nutritional health for a growing global population; (2) working to understand, protect, and remediate impacts to the environment and ecosystems to ensure long-term sustainability; and (3) to developing biomass-based advanced energy technologies and value-added biobased products such as fuels, specialty chemicals, and fiber products. OSU Extension and OARDC will continue to be characterized by: (1) recognizing and exploiting the continuum from fundamental to applied science; (2) generating knowledge and solving problems that span multiple economic, social, and ecological systems; (3) enhancing discovery, learning, engagement, and impact through partnerships; and (4) considering and integrating physical, economic, social, and ecological variables into sustainable systems that meet societal needs. Collectively these will continue to advance the land grant mission. Note: The FTEs shown in this Plan of Work are based on programmatic assessments, and may not reflect actual FTEs expended.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2010	215.0	0.0	83.2	0.0
2011	210.0	0.0	78.9	0.0
2012	205.0	0.0	74.9	0.0
2013	200.0	0.0	71.2	0.0
2014	195.0	0.0	67.7	0.0

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel
- External Non-University Panel
- Combined External and Internal University External Non-University Panel
- Expert Peer Review

2. Brief Explanation

OARDC and OSU Extension utilize various advisory committees at differing levels commensurate with the review and input required. Small internal competitive grants are peer reviewed by an internal panel of faculty and administrators representing all academic departments within the College. Other larger competitive grants are reviewed by panels of faculty and administrators and leading stakeholders who have expertise in the area of the award, e.g. agbioscience grants. When needed, faculty from

outside the College are used a reviewers. Combined panels of academics and non- academics are being used more extensively as OARDC and OSU Extension seek to move research into the marketplace more quickly to respond to the new economic realities of the global economy. All OARDC and OSU Extension publications are either blind peer-reviewed or peer reviewed/juried before publications either in print or via electronic media. OSU Extension develops long range program plans through a process involving Extension personnel from throughout the system, input of lay leaders in communities, incorporating data about Ohio's population, and through collaboration with other agencies, institutions and organizations. Each of OSU Extension program areas conducts long range strategic planning to prioritize programming. Specialists from academic disciplines provide insight from research trends while county Extension personnel provide insight from local communities. Systematic prioritization processes, such as Delphi, are used. Program area personnel work together to identify key issues that cut across disciplines. Special task forces or teams then collaborate to identify priority program efforts to address these issues. Funding is then allocated to support program priorities. Programmatic resources such as personnel or materials reflect the program priorities. In addition, these priorities direct from what sources grant funds are sought. Once strategic plans are in place, there is continual review of plans to include the ability to be responsive to unanticipated issues. The system provides flexibility for Educators to address these issues. In situations where grant monies are obtained, staff with specific, short-term employment contracts are hired to assist in meeting priority needs. Educator specialization is a way for the system to provide subject matter expertise close to local communities. Educators determine a subject matter specialization that relates to needs in their geographical area of the state. They receive additional training to remain on the cutting edge of their field. They are encouraged to work with other educators in their region to address local needs in a timely manner. In addition, educators are linked to state specialists in the same discipline to enable the rapid dissemination of new information or the development of appropriate programming to address critical needs.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

In order to encourage stakeholder input into advancing education, scholarship, knowledge acquisition, and information diffusion into the institutions three signature areas : (1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products multiple methods are employed. Both OARDC and OSU Extension rely on a layered approach to identifying critical issues. First an established strategy within the institution which include stakeholder input, has identified the long term critical issues related to our joint mission and state, national and international needs. Faculty and staff have been hired within those areas. The College as a whole relies on a layered approach to identify stakeholders. First each academic unit has subgroups of stakeholders based on needs for their research and extension programs. These units are also charged with continuing to identify new and emerging needs and associated stakeholder groups. OARDC and OSU Extension both have advisory committees as well as county, regional, and statewide groups with whom they liaison for input and guidance. The Vice President, Agriculture also has a variety of advisory committees as well as interactions with major support and commodity/processing/distribution groups such as the Ohio Farm Bureau and Soybean Council who provide valuable in identification of critical issues.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

Under-served and under- represented stakeholder needs are of major concern at all levels of administration at this institution. This has been reaffirmed in the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan, as well as in OSU Extension's 2008 Strategic Plan and OARDC's operational plans. OARDC and OSU Extension have sought to build linkages with a number of under-served groups such as the Somali community through a fresh goat meat initiative, the Amish through multiple community -based programs, and now is providing a number of publications in Spanish. One of our websites now has a Spanish language section. New windows of opportunity continue to open and will be serviced with culturally- relevant, culturally sensitive products and progras.OARDC is developing a variety of research agreements with some of the 1890 Universities in order to enhance its research effectiveness and to better understand the types of research needed by minority populations that have been extensively served by 1890 programs. Likewise OARDC is growing a relationship with a processor of ethnic foods in central Ohio as a means of better servicing the need for ethnic foods. A senior administrator of that group serves on OSU Extension's advisory committee. To address the needs of the underserved and under represented, stakeholders are first identified either by: (a) an overt request for research data or extension publications and /or programs such as a request to aid in enhancing the supply of fresh goat meat for a new immigrant populations; (b) a latent need identified by faculty and staff who work with these populations such as the effectiveness in terms of social stability, economic stability, and preparation for career advancement of daycare provided by grandparents of a rural single working parent; (c) from the literature; (d) a combination of a, b, and c. Based on the needs identified, the institution responds based on its academic capacity to address the need and resources available. Priority of the need in relation to other needs of the under-represented and under-served must be assessed internally.

3. How will the planned programs describe the expected outcomes and impacts?

All programs are evaluated based on outcomes and impacts throughout OSU Extension and OARDC addressing new knowledge gained, behavioral changes of clientele, and action changes in practices and products. Programs will describe their expected outcomes as the result of research and extension in terms of new or more commodities and advanced materials, enhanced efficiencies and effectiveness in processing, economic gains/value added, environmental enhancements or surrogate measures for when the environmental impacts may take decades to be manifested; social gains; food and environmental security programs that are institutionalized; as well as other manifestations needed within our stakeholders' domain.

4. How will the planned programs result in improved program effectiveness and/or efficiency?

Effectiveness and efficiency are assessed at all levels of the organization. OSU Extension and OARDC have limited resources and depend heavily on leveraging their base federal funding to attract state funding and competitive grants from extramural sources in the three signature areas identified in our Strategic Plan. Continued and enhanced focus on assessing stakeholder needs while assessing the institution's capabilities within mission to meet those needs using base funding, extramural funds, or a combination of both is the first step for program effectiveness. Efficiencies are also gained by predetermining where scarce resources are to be targeted and what impacts are expected based on the inputs allocated. Recently completed strategic plans and external program reviews are providing additional insight into the need - funding- program development- impact model.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Survey of selected individuals from the general public
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to selected individuals from general public
- Targeted invitation to non-traditional stakeholder groups
- Use of media to announce public meetings and listening sessions
- Survey of traditional stakeholder individuals
- Targeted invitation to traditional stakeholder individuals
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Targeted invitation to non-traditional stakeholder individuals
- Other (focus groups, public information booths at local gatherings,)
- Survey of traditional stakeholder groups
- Survey of the general public

Brief explanation.

Meaningful stakeholder input is central to this institution's success. All colleges at Ohio State University developed strategic plans in 2008 that address among other points, stakeholders needs. The College of FAES, OSU Extension, and OARDC, jointly, have completed a very in-depth strategic plan for the University that is most comprehensive in scope and is heavily vested in stakeholder input. In addition, OSU Extension completed an independent strategic plan over the 2007 - 2008 period that extensively engaged stakeholders at all levels. The Ohio Agricultural Research and Development Center, OSU Extension, and most academic departments/schools within the College of Food, Agricultural and Environmental Sciences have external advisory boards that meet 2-3 times a year to discuss current programs and provide input for future direction. All county Extension offices are expected to have an overall advisory committee as well as focused committees providing input for program planning, implementation and evaluation. Every two years, OSU Extension and OARDC involve stakeholders in meeting with state legislators to discuss programmatic priorities and budgetary needs to insure that we are focusing on critical needs of Ohioans. In 2004, 2005, 2007 and 2008 , OARDC and/or OSU Extension commissioned Battelle, a private research and development firm, to conduct studies of the economic and social impact of our programs. The Battelle study team interviewed hundreds of stakeholders about the effectiveness of our research and Extension programs. The recommendations from these two reviews will guide how OARDC and Extension collaborate and reinforced that identified priority efforts are based on 21st Century needs of Ohio citizens. In addition to the series of Battelle studies, each program area within OSU Extension conducted strategic plans to identify statewide priority programs. The process involved educators meeting with local advisory committees, reviewing data about demographic, economic, and social trends in Ohio, and prioritization processes. As a result, each program area has focused teams composed of campus and center specialists as well as county educators who will develop curriculum and evaluation strategies for statewide programs. In many cases, these teams have identified specific target audiences from whom they regularly involve in evaluating programs and educational materials and engage in planning. Some of

the program teams include members from external organizations (statewide agencies, organizations, commodity groups) who are appropriate partners to enhance program outreach and delivery. OSU Extension Administration also identified several issues of critical interest to Ohioans based upon existing information. These are the focus for interdisciplinary and multidisciplinary programs and we are offering competitive funding for new programmatic initiatives and partnerships. County Extension Advisory Committees as well as the State Extension Advisory Committee have been engaged in reviewing the themes and prioritizing them as they relate to local communities.

2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use External Focus Groups
- Other (one on one interactions with existing and new stakeholders)
- Open Listening Sessions
- Use Advisory Committees
- Use Internal Focus Groups
- Use Surveys
- Needs Assessments

Brief explanation.

OARDC and OSU Extension have a history of successfully indentifying and linking with stakeholders. The institution utilizes faculty and staff, and associates from support organizations as well as political leaders to help identify individuals and groups with whom we should be interacting. These contacts are logged and maintained in the College's Unified Reporting System. As new contacts are made, they are asked as to others who need to be included. Formal needs assessments and targeted surveys, as well as an annual statewide telephone survey, help to identify individuals, groups, issues, and needs. One on one sessions at the state fair, local fairs, special event such as our BiOhio, and active participation by faculty and staff in community group processes and business/professional meetings expand the institution's clientele list and knowledge of needs. Local committee members are identified by the Extension personnel in that county. They are expected to have a constitution and bylaws that identify the makeup of the committee. The membership of committees is reviewed during annual on-site and self study diversity reviews to insure that involvement is sought from a representative group of local citizens. Educators are encouraged to reach out to new and underserved target audiences to identify specific needs to be addressed. This occurs at the campus level as well. For example, in Horticulture and Crop Sciences, a faculty member and her graduate assistant have conducted extensive needs assessments with Hispanic workers in the horticultural industry. Resulting programs have addressed both professional development needs and family issues impacting these workers. More educational materials are being written and programs taught in Spanish. Several statewide program teams, such as the Agronomic Crops team conduct program evaluation and needs assessment directly with users of their web based resources to determine what information they need during the growing season and how they want to receive it to maximize use. Program evaluations have determined that the information delivered in a timely manner from the Crop Observation Reporting Network (CORN) resulted in a savings of over $11 million in pesticide use. OSU Extension has added a market research position to the Program Development and Evaluation unit to conduct research with potential target audiences and to coach teams of educators, specialists and researchers in using sound market research to design and delivery programs.

2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting specifically with non-traditional groups
- Survey of selected individuals from the general public
- Meeting with traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of traditional Stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional individuals
- Survey of traditional Stakeholder groups
- Other (focus group interviews, unobtrusive observation, qualitative dat)

Brief explanation

Each year, multiple methods are required for collecting stakeholder input due to the size, and the multiple units and programs engaged in research, development, and extension. Each faculty and staff member, department and school, and various other research and extension groups/centers/programs within the institution have stakeholder lists that serve as the foundational list. There are business and industrial partners, fellow research and extension institutions, and support organizations who are part of the list. These are updated regularly. Federal, state, regional, and local governments and agencies, as well as advisory committees and friends groups, commodity groups, and special interest groups add to the list of stakeholders from whom we seek input in the initial planning and execution phases of our programs and who provide both formative and summative assessment of outputs and impacts.

3. A statement of how the input will be considered

- Redirect Extension Programs
- In the Action Plans
- Other (Business management practices, culture of organization)
- To Identify Emerging Issues
- Redirect Research Programs
- To Set Priorities
- In the Budget Process
- In the Staff Hiring Process

Brief explanation.

In our 2008 strategic planning activities, OARDC and OSU Extension have reaffirmed this institution as one that is customer centered. This is clearly articulated in the aforementioned Strategic Plan that has been submitted to the University. The institution advances both basic and applied research and builds and tests advanced models for extension programming while meeting their clients' immediate needs. Client needs and their input are critical in the state level budget process and the Plan of Work for federal base funding. Formal and informal input is required in meeting client needs and in fulfilling the land grant mission. Stakeholders input is critical in building research and extension programs that are impact oriented, that fulfill society's needs, and contribute to national well-being. State, federal, and extramural supporters need to see constituency benefits in order to justify funding decisions. It is the field level interactions stakeholders and sound theory and practice standards that identify the majority of emerging issues. While strong theoretical academic insight is critical, food, agriculture and environmental issues manifest themselves in field/business locale and in our clients' daily work and social lives. Clients are true partners with faculty and staff in identifying emerging issues. Issues and needs originating from producers, processors/manufacturers, distributors, and consumers have and will continue to redirect both extension and research programs. It is such issues that provide the scientists with the study questions. Once answered, the response is framed for the clients and other interested parties. The response includes intervention to effect change and assess of impact. Sharing of new knowledge and adoption techniques using electronic media is enhancing utilization of our organizations outputs. These have and will continue to influence faculty and staff hiring, shifts in priorities, resource allocation, and strategic/ action planning. Likewise stakeholder input has and continues to influence how our institution positions itself in the marketplace and conducts business. Stakeholder input has transformed our corporate culture in that as a public institution, it is imperative for society to see our organization reflecting their aspirations and meeting their needs. As economies continue to struggle this will be more imperative than ever. Input is considered at many levels of the organization. The Administrative Cabinet of OSU Extension reviews input from surveys and strategic planning processes to determine funding and staffing needs. The State Extension Advisory Committee meets 3-4 times a year and provides input on programmatic needs and proposed priorities. Cooperative Extension administrators (Director, Associate Director) and others with statewide program leadership responsibility have initiated a departmental accountability process with all campus units receiving Extension funding. This process involves meetings to discuss shared priorities, surveys of internal and external stakeholders about their satisfaction with the content and expertise delivered from that unit, and review of documented impacts. This process is directly linked to annual funding for the campus departments. Locally, Extension Advisory Committees and other programmatic committees assist educators in prioritizing programs annually. They review information about local needs, capacity of Extension to deliver programs and guide the overall local programmatic vision. The OARDC Advisor Committee is equally as engaged in all aspects from budgeting to agenda setting.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program #1

1. Name of the Planned Program

Soil, Water and Air Systems-OARDC Led

2. Brief summary about Planned Program

Soil, air, and water systems, i.e. ecosystems, sustainability is central to the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan that focuses on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas : (1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products. Achievements within all OARDC Planned Programs are dependent upon functioning ecosystems; soil, water, and air are the primary physical underpinnings of those systems. The understanding of interactions among soil, water, and air resources provide a basis for delivering to society food, fiber, other associated products, and related services. The appraisal of soil systems, including the physical, chemical, and biological components, their management for targeted outcomes, and the monitoring and mapping thereof, is a critical research step. Likewise these activities provide a basis for extending such knowledge to stakeholders who have participated in defining the need. Soil, water and air interactions are explored in relationship to plant growth and development with particular focus on plant nutrition. Included in this line of inquiry, but not limited to, are soil microbes, management practices for surface and subsurface components, and amendments to soil and water and the effects thereof, both positive and negative. While analysis and individual practices are at the field and farm level, the total systems approach typically will be carried out at the watershed level, or sub region of the watershed. To that end, the supplying of water for plant, animal, human, and business use is studied, as are methods to conserve and protect water resources and watersheds. Soil protection and management of effects of wind and water, and other natural forces, are included. Both components of the natural watersheds and built structures, e.g. wetlands, are research and extension foci. Scarcity of land and water resources demands the investigation of alternative uses and efficiency studies. Understanding of weather and climate as well as air resources including, for example, odors from animals or how atmospheric carbon that can be attracted and stored in soil, wetlands, and living plants are a growing areas of importance to a fuller comprehension of soil, water and air systems. Pollution prevention and mitigation of negative effects of odors, carbon loading, other related air quality issues are critical lines of inquiry that are being pursued. Knowledge from these inquiries provides a basis for extending knowledge that for example has been requested to help address rural urban interface conflicts, e.g. odors from animal operations.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	10%		10%	
102	Soil, Plant, Water, Nutrient Relationships	40%		25%	
103	Management of Saline and Sodic Soils and Salinity	0%		5%	
111	Conservation and Efficient Use of Water	20%		15%	
112	Watershed Protection and Management	20%		10%	
131	Alternative Uses of Land	0%		10%	
132	Weather and Climate	0%		5%	
133	Pollution Prevention and Mitigation	0%		10%	
141	Air Resource Protection and Management	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

As societal demands increase for natural resources and associated commodities such as biomss for advanced energy and biobased materials, and for ever-increasing environmental services, greater understanding of conservation and wise use of soil, water, and air resources is paramount. Unmet needs and unresolved conflicts have social, economic, and environmental consequences. Agriculture experiment stations and extension programs, especially in a highly urbanized state such as Ohio, have a unique opportunity to aid in meeting both latent and overtly stated needs of society in this Planned Program area. Individuals and families associated with food and fiber production need the research information that is generated through this program for their business, as do processors. Communities, both rural and urban, need both the biological and management knowledge to protect their natural resource base and to address rural - urban interface needs and conflicts. Commodity, environmental, community groups such as watershed-based community groups, regulators, and political leaders are demanding the best science and extension education programs to insure that resource conflicts are avoided or managed, and that growth and development can occur within reasonable social and environmental bounds. Such work is well-grounded theoretically and extensive applied peer reviewed literature exists. The challenges lie in applying what is known to new and emerging issues such as energy independence and generating basic research as needed. While a number of areas, such as microbial ecology and plant nutrition still require extensive laboratory experiments, it is the on-farm and in-watershed fieldwork, where stakeholders live and work, that provide some of the richest opportunities for research and extension to engage in situational analyses and priority setting.

2. Scope of the Program

- In-State Research
- Integrated Research and Extension
- Multistate Research
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Given our University - accepted Strategic Plan, this planned program will continue to be a primary focus of this reporting unit. This program assumes that by understanding the scientific underpinnings (both basic and applied) of soil, water, and air sciences, independently and collectively, as these relate to our food, agriculture, and environmental foci, we can address problems and needs within our stakeholders communities and be prepared to take advantage of emerging opportunities or to more rapidly address problems within these areas. Key assumptions are: 1) The issues within this program that have been identified within our stakeholder communities and/or within the scientific literature reflect the more important issues and warrant allocation of resources. 2) The understanding of soils, soils systems, and how society utilizes and depends on soil is key to present and future decision-making in provisioning and managing food and fiber systems and environmental services. 3) Commodity groups, processors, and consumers depend on soil, water, air and associated nutrient research for plant production for societal well-being. 4) Research related to water and accessibility of water for plant and animal nutrition, human enterprises, and environmental services is important to society and will be utilized for enhanced decision-making by stakeholders and all citizens. 5) Research and education related to conservation of water, and landscape-scale best management practices in water projects, is demanded by society to meet current and future needs. 6) Air quality research, as well as air resources (including sequestration of air borne carbon) for plant and animal production, for human health, and for environmental quality, is a high priority among all sectors within our industry and support publics. These issues are manifested at some community level and those stakeholders who are most vested will become involved; others' involvement will be limited, yet they will reap the benefits of a sound basic and applied understanding of soil, water, and air research and extension programming. It is further assumed that base federal funding will continue to be available and leveraged to support this planned program and the scientific staff who carry out the lines of inquiry noted within the knowledge areas for this program. Likewise it is assumed that the federal base funding will be leverage to attract state and extramural funds.

2. Ultimate goal(s) of this Program

Goals are: 1) Soils research to: a) support USDA, NRCS, ODNR and local government/stakeholder initiatives to understand, map, and to determine and implement best management/allocation practices for soils of Ohio and the region. - enhance soil management for greater economic and environmental gains. 2) Water research to - support USDA, NRCS, ODNR and local government/stakeholder initiatives to understand, map, and determine and implement best practices/allocation for water resources and watersheds of Ohio and the region., - enhance water management for greater economic and environmental gains. 3) Air research to: - support federal, state, and local agendas, including stakeholders and beneficiaries thereof, seeking to mitigate program-related air quality problems or to enhance air quality for plant, animal, and human health, as well as environmental well being, - Support unique, both new and yet to emerge, air related programs such as carbon sequestration for agronomic, economic (e.g. carbon trading), or environmental gains for society as a whole and for specific stakeholder groups. 4) Integrated soil, water and air research to - understand the system in such manner as to inform both on-site (e.g. on-farm) and landscape scale decisions necessary to meet individual stakeholder groups' and societal needs, - Support international, national, state, and local agendas for advancing environmental quality to insure a sustained flow of goods and services that will meet intergenerational demands. 5) To contribute to the theoretical knowledge base within this planned program to ensure that, where possible, all applied research can be grounded in the best science and evaluation available.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	7.9	0.0
2011	0.0	0.0	7.5	0.0
2012	0.0	0.0	7.1	0.0
2013	0.0	0.0	6.7	0.0
2014	0.0	0.0	6.4	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Activities within this planned program will be manifested as: 1) in print research-based publications targeted to: (a) specific stakeholder groups, (b) support publics such as fellow agencies, political entities, (c) targeted populations, and (d) the broader general public, including mass media releases; 2) peer-reviewed journal articles; 3) commercialized techniques/inventions; 4) non-commericalized techniques/inventions that are distributed to those in need without costs (e.g. wetland construction techniques); 5) intellectual properties; 6) consultation services; 7) meetings with stakeholders and supporters; 8) facilitation of training programs/workshops for other scientists and for specific groups of stakeholders, including international visitors; and 9) planning meetings with advisory groups to communicate findings and plan new research.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Demonstrations • One-on-One Intervention	• Newsletters • Web sites

3. Description of targeted audience

Targeted audiences are, but not limited to,: 1) Specific individuals or groups who have expressed a need for certain information that is to be derived through new research, extracted from on-going research, or is derived from scientific literature. Often those requests are communicated to OARDC by an intermediary such as a staffer at Ohio Dept of Natural Resources or a county extension agent; 2) Fellow agencies or support organizations that will not only use the information but will also be brokers of that information, including embedding it into groups to encourage change; 3) Populations who have not requested the information but will likely benefit from that information, e.g. immigrant populations; 4) Other scientists and scientific groups; 5) Political entities; 6) Extension personnel; 7) Students from pre-school to post doctorate studies; 8) News organizations; and 9) Business groups such as chambers of commerce and community coalitions.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :** 1 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	40	0	0
2011	40	0	0
2012	40	0	0
2013	40	0	0
2014	40	0	0

V(H). State Defined Outputs

1. Output Target

- Peer-reviewed publications will be tracked in terms of name and tier of journal

  2010 :40 **2011 :**40 **2012 :**40 **2013 :**40 **2014 :**40

- Patents by number and who partnered/purchased/commercialized

  2010 :0 **2011 :**0 **2012 :**1 **2013 :**0 **2014 :**1

- Number of graduate students completed

  2010 :8 **2011 :**8 **2012 :**8 **2013 :**8 **2014 :**6

V(I). State Defined Outcome

O. No	Outcome Name
1	Continue to advance soil, water, nutrient, and plant research to ensure Ohio continues to be one of the top five states in corn and soybean production and has knowledge to support growing niche market agriculture, organic farming, and biobased products.
2	Provide the necessary research finding (scientific knowledge and techniques) to support stakeholder compliance with Ohio and federal EPA regulations, and future regulations, regarding odors and other air quality issues in ag production and processing.
3	Expand watershed and ecosystem level modeling to the extent that scientific data and watershed management protocols can bring all streams effected by agriculture and natural resource runoff into compliance with Ohio EPA standards.
4	Through the provisioning of watershed specific data, support the creation of and conservation action of community-based watershed networks in each major watershed in Ohio.
5	Advance the basic knowledge contribution so that Ohio continues to be viewed as a center of excellence in terms of soils and water sciences, and associated extension programming.
6	Support the mapping of county level soils with a target of three new counties per year
7	Provide the necessary soil, air, weather/climate, and water research, in conjunction with actions in other planned programs KA (e.g. IPM), to permit continued adoption of conservation tillage practices in the face of problems such as climatic changes, pest, etc.
8	Advance carbon sequestration research to the point that Ohio farmers can enter the carbon trading market.

Outcome #1

1. Outcome Target

Continue to advance soil, water, nutrient, and plant research to ensure Ohio continues to be one of the top five states in corn and soybean production and has knowledge to support growing niche market agriculture, organic farming, and biobased products.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 132 - Weather and Climate

Outcome #2

1. Outcome Target

Provide the necessary research finding (scientific knowledge and techniques) to support stakeholder compliance with Ohio and federal EPA regulations, and future regulations, regarding odors and other air quality issues in ag production and processing.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 141 - Air Resource Protection and Management

Outcome #3

1. Outcome Target

Expand watershed and ecosystem level modeling to the extent that scientific data and watershed management protocols can bring all streams effected by agriculture and natural resource runoff into compliance with Ohio EPA standards.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management

- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation

Outcome #4

1. Outcome Target

Through the provisioning of watershed specific data, support the creation of and conservation action of community-based watershed networks in each major watershed in Ohio.

2. Outcome Type : Change in Condition Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

Outcome #5

1. Outcome Target

Advance the basic knowledge contribution so that Ohio continues to be viewed as a center of excellence in terms of soils and water sciences, and associated extension programming.

2. Outcome Type : Change in Condition Outcome Measure

2010 :2 **2011 :** 3 **2012 :** 3 **2013 :**3 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 141 - Air Resource Protection and Management

Outcome #6

1. Outcome Target

Support the mapping of county level soils with a target of three new counties per year

2. Outcome Type : Change in Action Outcome Measure

2010	2011	2012	2013	2014
3	3	3	3	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources

Outcome #7

1. Outcome Target

Provide the necessary soil, air, weather/climate, and water research, in conjunction with actions in other planned programs KA (e.g. IPM), to permit continued adoption of conservation tillage practices in the face of problems such as climatic changes, pest, etc.

2. Outcome Type : Change in Action Outcome Measure

2010	2011	2012	2013	2014
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 141 - Air Resource Protection and Management

Outcome #8

1. Outcome Target

Advance carbon sequestration research to the point that Ohio farmers can enter the carbon trading market.

2. Outcome Type : Change in Condition Outcome Measure

2010	2011	2012	2013	2014
0	1	1	0	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 141 - Air Resource Protection and Management

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Other (extramural funding)
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges
- Government Regulations
- Populations changes (immigration,new cultural groupings,etc.)
- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes

Description

Climatic extremes, coupled with pest and diseases that are often climate related, can impact outcomes. As the food, fiber, and environmental economy adjust to the global marketplace, in conjunction with public policy shifts, regulations, and shifts in demand, outcomes will be impacted. Formative evaluation though can lessen the burden by seeking feedback throughout the life of the program. Internal factors such as the availability of base funding to ensure a core faculty and staff, availability of extramural funds, availability of competitive funds, and programmatic demands that often exceed resources, all may affect outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Case Study
- Comparison between locales where the program operates and sites without program intervention
- Before-After (before and after program)
- During (during program)

Description

Experiment station evaluation begins with HATCH project reviews and approval, and with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provide a more summative assessment. Pre-planning with stakeholders of research continues to provide a strong bases for framing projects that have potential of adoption; with such approach outcomes become more easily identified. Research projects and clusters of research projects lend themselves well to case studies in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Most of the analysis leads either faculty, peers, or the research team themselves to investigate outcomes and impacts by asking so what? Experiment Station reviews, as do stakeholders and those who provide extramural funding, are becoming more demanding as to chronicling impact.

2. Data Collection Methods

- Unstructured
- Case Study
- Whole population
- Observation

Description

Data collection in this planned program tends to be unstructured feedback from stakeholders, peers, and administrators, rather than formal pencil and paper evaluation. In the area of community based programs, such as watershed development, joint OARDC and extension activities results in formal surveys that usually address adoption and processes rather than actual research findings per se. Observations with recorded biological, physical, and social data make up the bulk of data collection in this program. Annually, OARDC gathers individual faculty, program, and departmental data and measures it against stated goals and objectives to provide another level of documenting outputs, outcomes and impacts.

V(A). Planned Program (Summary)

Program #2

1. Name of the Planned Program

Natural Resources and Environmental Systems-OARDC Led

2. Brief summary about Planned Program

Natural resources and environmental systems, like soil, air, and water, are central within the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan that focuses on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas : (1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products. In 2008 faculty working in this planned program defined their mission: to develop an academic program focused on better understanding human interactions with the natural environment where social factors, science, and political practices serve as co-determinants of change. Natural resource and environmental systems research focus on managing and sustaining natural resources for the citizens of Ohio; the state is one-third forested. Private landowners hold most of the forest thus a significant portion of our research and outreach are private-owner centered. Emphasis on grasslands, urban forest, agroforestry, and outdoor recreation are also found within this program. Key to managing the forest and other natural systems for a sustained flow of environmental goods and services requires an understanding of how to conserve the diversity with particular emphasis on, and strengths in, aquatic and terrestrial wildlife ecology. Research programs in this planned program focus both on the individual components as defined in the selected knowledge areas and the collective community and landscape scale functions. Ohio's landscapes are managed, primarily in small tracks under fairly intense population or production pressures. Thus the understanding of the science of managing in such complex landscapes is critical to providing a sound resource base to meet human and wildlife needs, while seeking to protect Ohio's biological diversity, some of which has regional and national importance, e.g. migratory route for song birds, hawks, ducks, and geese. The latter two are important to the hunting industry, while the songbirds and hawks are important non-game species and contribute to Ohio's tourism industry. Forest sustainability requires an understanding of biology, silviculture, management and modeling, and forest products, both from forest science and horticultural science perspectives. These activities include the conservation of biological diversity through on-site efforts to protect resources, as well as seed bank and germ plasm programs. In partnership with Ohio Department of Natural Resources and USDA, and other partners at the federal, state and local levels, OARDC advances studies in traditional fisheries and wildlife programs for game and non-game programs, as well as conservation biology program for protection and restoration of natural systems. Human- wildlife interactions are studied. An ever-growing area, and a second signature area within the College's 2008 Strategic Plan- advanced energy and biobased products - is highly dependent on the success of this program, especially as a producer of biomass. A companion OSU Extension program is available to communicate natural resource findings and provide educational programs.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
121	Management of Range Resources	0%		5%	
122	Management and Control of Forest and Range Fires	0%		5%	
123	Management and Sustainability of Forest Resources	25%		15%	
124	Urban Forestry	0%		10%	
125	Agroforestry	0%		10%	
134	Outdoor Recreation	0%		10%	
135	Aquatic and Terrestrial Wildlife	60%		35%	
136	Conservation of Biological Diversity	15%		10%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Society demands natural resources based commodities and environmental services, particularly in terms of forest-related goods and services, and especially in the area of fish and wildlife resources. With 11 million people in a relative small state, the demand for consumptive and non-consumptive uses of the resources continues to grow. As travel costs continue to remain high, the demand for local resource utilization is expected to increase demand for agriculture experiment station research in this area and companion extension programming. In a highly urbanized state such as Ohio, the organization has a heightened obligation to meet this demand and to aid in conserving resources, as well as generating economic return. Individuals and families, as well as companion agencies, involved in the food and fiber production need the research information that is generated through this program as do various sector of the public including environmental organizations, hunters, fishers, birdwatchers, hikers, etc. Communities, both rural and urban, need both the conservation biology and management knowledge to protect and wisely use their natural resource base. All environmental resources are issues of concern from both a regulatory and from an aesthetic point of view. Conflicts do occur over differing human values, e.g. dove hunting. Work in these knowledge areas is well-grounded theoretically and extensive applied peer-reviewed literature exists. OARDC has sponsored efforts in this program since the late 1800s. The challenges lie in applying what is known to new and emerging issues and generating lines of research as needed to ensure that the citizens' needs are met and that related issues do not become an impediment to food, fiber, and renewable/advance energy production.

2. Scope of the Program

- Multistate Research
- In-State Research
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Within this planned program, these lines of inquiry will provide necessary information to inform human enterprises while protecting environmental services. This is an important area of study for society and will be utilized for enhanced decision-making by stakeholders and all citizens. Research and education related to conservation of natural resources, and landscape-scale best management practices that are being adopted, is a demand by society to meet current and future needs. These issues are manifested at some community level and those stakeholders who are most vested will become involved; others involvement will be limited yet they will reap the benefits of a sound basic and applied resource understanding of these research and extension programs. It is assumed that base federal funding will continue to be available and leveraged to support this planned program and the scientific staff who carry out the lines of inquiry noted within the knowledge areas for this program. Likewise it is assumed that the federal base funding will be leverage for continuing to attract state and extramural funds.

2. Ultimate goal(s) of this Program

Goals are: Forest resource related research - advance the understanding of forest biology and ecology commensurate with the demands in Ohio and the region, as well as silvicultural techniques, horticultural techniques, forest systems modeling, outdoor recreation, and wood manufacturing; expand knowledge of how to use this resource base while conserving diversity and expanding environmental services such as clean air and water from forests; enhance overall management for greater economic, social (including recreational) and environmental gains. Conservation biology research - support USDA, USDI, ODNR, and local government/stakeholder initiatives to more fully understand the biology of Ohio landscapes and determine and implement best practices/allocation strategies for the resources. Aquatic and terrestrial wildlife research - supports federal, state, and local agendas, including all those who are stakeholders and beneficiaries thereof, in seeking to conserve and utilize these aquatic and terrestrial wildlife resources in a sustainable manner while managing associated conflicts; engage in scientific inquiries at the genetic, species, community, and landscape scale levels to investigate biological and physical components, including influences of human enterprises, for the purpose of meeting wildlife needs in Ohio and the region; study conflicts leading to negative human wildlife interface for the purpose of mitigating negative effects on wildlife population and on human enterprises, e.g. wildlife depredation. Integrated natural resources and environmental systems research - understand the system in such manner as to inform both on-site (e.g. community, watershed) and landscape scale decisions necessary to meet individual stakeholder groups' and societal needs; support international, national, state and local agendas for advancing natural resources and environmental systems research to insure a sustained flow of goods and services that will meet intergenerational demands; to contribute to the theoretical knowledge base within this planned program to ensure that where possible all applied research can be grounded in the best science and evaluation available.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	3.4	0.0
2011	0.0	0.0	3.2	0.0
2012	0.0	0.0	3.0	0.0
2013	0.0	0.0	2.9	0.0
2014	0.0	0.0	2.8	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Activities within this planned research program will result in: - in print research-based publications targeted to (a) specific

stakeholder groups, (b) support publics such as fellow agencies, political entities, (c) targeted populations, and (d) the broader general public, including mass media releases; - peer-reviewed journal articles; - non-commercialized techniques that are distributed to those in need without costs (e.g. wildlife depredation mitigation techniques); - consultation services and meetings with agencies/organizations, stakeholders and supporters; - facilitation of training programs/workshops for other scientists, support organizations such as ODNR and for specific groups of stakeholders, including international visitors; and - planning meeting with advisory groups to communicate findings and to plan new research.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• One-on-One Intervention • Demonstrations	• Web sites • Newsletters

3. Description of targeted audience

Targeted audiences include, but are not limited to: - specific individuals or groups who have expressed a need for natural resources and environmental research knowledge that is to be derived through new research, extracted from on-going research, or is derived from scientific literature. Often those requests are communicated to OARDC by an intermediary such as a staffer at USDA, ODNR, or a county extension agent; - related agencies or support organizations who will not only use the information but will also be brokers of that information, including embedding it into groups to encourage change, e.g. fish and wildlife clubs; - populations who have not requested the information but will likely benefit from that information, e.g. people who fish for recreation; - other scientists and scientific groups; - political entities; - extension personnel; - students from pre-school to post doctorate studies; - news organizations; and - business groups such as Ohio Farm Bureau and community collations such as watershed collations.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	25	0	0
2011	25	0	0
2012	25	0	0
2013	25	0	0
2014	25	0	0

V(H). State Defined Outputs

1. Output Target

- Peer-reviewed publications will be tracked

2010 :25 **2011** :25 **2012** :25 **2013** :25 **2014** :20

- Number of graduate students completed

2010 :12 **2011** :12 **2012** :12 **2013** :12 **2014** :11

V(I). State Defined Outcome

O. No	Outcome Name
1	In conjunction with companion agencies and organizations, advance research in forest biology and ecology to promote (a) best management practices on private forest land in Ohio with an incremental gain of 5% of lands each year
2	Improve the flow of forest raw materials to the extent it meets the needs of Ohio industries within ten years
3	Increase the production of oak and reduce maple to eventually achieve a balance equivalent to forest with natural fire regimes
4	Meet federal and state needs for research data related to Ohio forest systems as the demand arises
5	Increase the scientific understanding necessary to maintain flow of environmental goods and services through conservation actions commensurate with regional demand, i.e. Buffer zones in forest riparian zones, reforestation, CREP, carbon sequestration in forests and grassland biomass, outdoor recreation opportunities, urban forest zones
6	Advance research knowledge, both basic and applied, in the areas of silviculture and horticulture to existing and emerging industry and consumer demand regarding forest genetics, forest biology, seed production, nutrition, and related topics
7	Meet ODNR, USDA, USDI, local, commodity groups, community, and other stakeholder demands for scientific knowledge to inform existing and emerging issues/practices in aquatic and terrestrial wildlife including human wildlife use/conflicts, and human to human conflicts related to wildlife and use
8	To contribute to the theoretical knowledge base within this planned program to ensure that where possible all applied research can be grounded in the best science and evaluation available in all knowledge areas selected.

Outcome #1

1. Outcome Target

In conjunction with companion agencies and organizations, advance research in forest biology and ecology to promote (a) best management practices on private forest land in Ohio with an incremental gain of 5% of lands each year

2. Outcome Type : Change in Action Outcome Measure

2010 2	**2011 :** 2	**2012 :** 2	**2013** 2	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 125 - Agroforestry
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity

Outcome #2

1. Outcome Target

Improve the flow of forest raw materials to the extent it meets the needs of Ohio industries within ten years

2. Outcome Type : Change in Condition Outcome Measure

2010 1	**2011 :** 0	**2012 :** 1	**2013** 0	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity

Outcome #3

1. Outcome Target

Increase the production of oak and reduce maple to eventually achieve a balance equivalent to forest with natural fire regimes

2. Outcome Type : Change in Action Outcome Measure

2010 0	**2011 :** 1	**2012 :** 0	**2013** 1	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity

Outcome #4

1. Outcome Target

Meet federal and state needs for research data related to Ohio forest systems as the demand arises

2. Outcome Type : Change in Action Outcome Measure

2010 : 1	**2011 :** 1	**2012 :** 1	**2013 :** 1	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 125 - Agroforestry
- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity

Outcome #5

1. Outcome Target

Increase the scientific understanding necessary to maintain flow of environmental goods and services through conservation actions commensurate with regional demand, i.e. Buffer zones in forest riparian zones, reforestation, CREP, carbon sequestration in forests and grassland biomass, outdoor recreation opportunities, urban forest zones

2. Outcome Type : Change in Action Outcome Measure

2010 : 1	**2011 :** 1	**2012 :** 1	**2013 :** 1	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 125 - Agroforestry

- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity

Outcome #6

1. Outcome Target

Advance research knowledge, both basic and applied, in the areas of silviculture and horticulture to existing and emerging industry and consumer demand regarding forest genetics, forest biology, seed production, nutrition, and related topics

2. Outcome Type : Change in Condition Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 2 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 125 - Agroforestry
- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity

Outcome #7

1. Outcome Target

Meet ODNR, USDA, USDI, local, commodity groups, community, and other stakeholder demands for scientific knowledge to inform existing and emerging issues/practices in aquatic and terrestrial wildlife including human wildlife use/conflicts, and human to human conflicts related to wildlife and use

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity

Outcome #8

1. Outcome Target

To contribute to the theoretical knowledge base within this planned program to ensure that where possible all applied

research can be grounded in the best science and evaluation available in all knowledge areas selected.

2. Outcome Type : Change in Condition Outcome Measure

2010 : 1	**2011 :** 0	**2012 :** 1	**2013 :** 1	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 125 - Agroforestry
- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Government Regulations
- Public Policy changes
- Other (Laws)
- Appropriations changes
- Competing Programmatic Challenges
- Competing Public priorities
- Populations changes (immigration,new cultural groupings,etc.)

Description

Climatic extremes, coupled with pest and diseases that are often climate related, can impact outcomes. Public policy shifts, regulations, laws, and shifts in demand will be impact outcomes. Formative evaluation though can lessen the burden by seeking feedback throughout the life of the program. Internal factors such as the availability of base funding to ensure a core faculty and staff, availability of extramural funds, and programmatic demands that often exceed resources, all may affect outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Case Study
- Before-After (before and after program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

Description

Experiment station evaluation begins with HATCH project reviews and approval, with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provide a more summative assessment. Pre-planning with stakeholders of research continues to provide a strong bases for framing projects that have potential of adoption; with such approach outcomes become more easily identified. Research projects and clusters of research projects lend themselves well to case studies in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Most of the analysis leads either faculty, peers, or the research team themselves to investigate outcomes and impacts by asking so what? Experiment Station reviews, as do stakeholders and those

who provide extramural funding, are more demanding as to chronicling impact.

2. Data Collection Methods

- Case Study
- Observation
- Whole population
- Unstructured

Description

Data collection in this planned program tends to be unstructured feedback from stakeholders, peers, and administrators, rather than formal pencil and paper evaluation. In the area of community based programs, such as watershed development, joint OARDC and extension activities results in formal surveys that usually address adoption and processes rather than actual research findings per se. Observations with recorded biological, physical, and social data make up the bulk of data collection in this program. Annually, OARDC gathers individual faculty, program, and departmental data and measures against stated goals and objectives to provide another level of documenting outputs and outcomes.

V(A). Planned Program (Summary)

Program #3

1. Name of the Planned Program

Plant Systems-OARDC Led

2. Brief summary about Planned Program

Plant programs are a substantial component of Ohio's food, fiber, and agricultural industry, providing jobs, value-added products, and a healthy supply of raw and manufactured products worldwide. The program is central to the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan that focuses on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas :(1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products. In 2008, the faculty group working in this area defined their mission as: to obtain knowledge about plants and their uses through innovation and discovery, and then disseminate that knowledge to benefit Ohio State University, the people of Ohio, and the world. Plant programs are a major economic force in Ohio. OARDC has provided scientific leadership at all levels in this program for over a century, including the Green Revolution in Asia. One example of OARDC and OSU Extension programming is tomatoes. The economic return on investment for Ohio tomatoes, based on OARDC economic simulations, rarely exceeds 5% for tomato paste. In contrast, these simulations indicate that whole-peel and diced products yield an average return on investment of 22%. In another area of study OARDC scientists found that lycopene and beta-carotene, key nutritional (and marketing) assets, are reduced by 18% and 22%, respectively, in fruits affected by yellow shoulder disorder (YSD). Beta-carotene is recognized as a nutrient due to pro-vitamin activity and lycopene consumption has been correlated with a reduction in certain cancers. The cause of color disorders such as YSD involves both plant genotype and environmental conditions. OARDC research has associated low levels of available potassium (K) and phosphorous (P) in soils with a higher incidence of YSD. Another soil factor strongly implicated is organic matter, with high YSD risk associated with soils having less than 1.5% organic matter. The effect of K fertigation through sub-surface irrigation lines on crop quality and quantity is showing promise. Foliar K applications have been ineffective in increasing either fruit yield or quality. Varieties of tomato differ in their susceptibility to color disorders, thus variety use may offer growers a strategy to manage fields with low K, P, or organic matter. OARDC and OSU Extension are promoting management practices that reduce YSD and optimize return on investment, while increasing the potential for health benefits. In 2008 OARDC scientists discovered the gene that controls the shape of the tomato. This opens new venues of more controlled harvest methods and processing, further enhancing the value of the tomato industry as well as informing fruit and vegetable research in general. The Plant Systems Planned Program embraces multiple levels ranging from investigations at the genetic level to studying all aspects of production and pathology. Such program positions Ohio as a major contributor to both basic and applied plant sciences, and substantially contributes to the food security at national and global levels. Ohio has consistently been a leading state in the production of corn and soybeans for both domestic and export markets. The Green Industry is often referred to as having its roots in Ohio. Genetic research provides a foundation for the program with inquiries from the genome level through gene pool studies. Emphasis is placed on pre-harvest programs to reduce risks for producers, processors, and consumers, and ensure high productivity. Plant management systems, as well as protecting plants from other plants, animal pests, and diseases is an area of research strength with emphasis on Integrated Pest Management (IPM). Producers, processors, and distributors in this program are well organized and rely heavily on OARDC for scientific information. Over the years they have been actively engaged in the process of research from needs identification to summative assessments of outcomes. OARDC research is disseminated by OSU Extension.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		10%	
202	Plant Genetic Resources and Biodiversity	15%		15%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		5%	
204	Plant Product Quality and Utility (Preharvest)	30%		20%	
205	Plant Management Systems	10%		10%	
206	Basic Plant Biology	0%		5%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		5%	
212	Pathogens and Nematodes Affecting Plants	5%		5%	
213	Weeds Affecting Plants	5%		5%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%		5%	
216	Integrated Pest Management Systems	15%		15%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Providing for the sustained and secure flow of food from the field and assuring producers, processors, distributors, and consumers that their plant-based food system is informed by the best science available is an expectation of OARDC. The science behind the system is not only critical for provision of food worldwide; it is also a major economic driver. Corn and soybeans collectively add two plus billion dollars to Ohio and the regional economy each year, with over $600 + million of soybean exports annually. As the price is increased worldwide based on demand for food and alternatives to petroleum, the return on investment will be strong. OARDC addresses direct needs of all these constituency groups by interacting with them and understanding their needs. Scientists also address needs before they ever arrive in the state, i.e. studying soybean rust and breeding Ohio varieties that have the greatest potential for resistance. There is no sector in Ohio that this planned program does not impact in that plant based food systems nurture the world. Much of the interactions are with organized groups of producers, processors, and consumers. Consumer demand for products is often relayed through feedback from other organized groups

such as food distributors, e.g. demand for a firmer fruit. Without a growing body of knowledge to create efficiencies and security in the plant based food systems, opportunities will be missed and society will not be well served. With over one hundred years of research history, a robust body of literature, and a well-developed network of clientele, supporters, and companion agencies and organizations, including OSU Extension, OARDC is well positioned to continue to effect positive change in this planned program. Effective research requires a mixture of laboratory, greenhouse, controlled study fields, and on-farm research to maximize knowledge. Emerging threats and need for a stronger and more secure food and fiber supply now demand planning of more advanced facilities such as a biosecurity lab.

2. Scope of the Program

- Multistate Research
- Integrated Research and Extension
- Multistate Integrated Research and Extension
- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

The issues within this program have been identified by our stakeholder communities, and/or via the scientific literature, reflect the more important issues and warrant allocation of resources. Understanding of this planned program and how society utilizes and depends on the associated research is key to present and future decision-making in provisioning of food, fiber, and environmental services. All citizens directly benefit from a safe, secure, and plentiful plant based food system. These lines of inquiry will provide necessary information to inform human enterprises. Research and education related to plant systems is a demand by society to meet current and future needs. It is assumed that base federal funding will continue to be available and leveraged to support this planned program and the scientific staff who carry out the lines of inquiry noted within the knowledge areas for this program. Likewise it is assumed that the federal base funding will be leverage for continuing to attract state and extramural funds.

2. Ultimate goal(s) of this Program

Goals for Plant Systems Plant production research will: - generate knowledge related to plant genomes, markers, structures, and similar areas of studies commensurate with the demand of other scientists and stakeholders who will apply this knowledge to their areas of plant breeding, growth, and development. - Provide at minimum one new contribution annually to the body of literature that will positively advance this area of study. Plant genetic resource research will: - advance the science of germplasm preservation, acquisition, and information systems over the next ten years to the extent that the genetic resources targeted for acquisition are preserved and that targeted plant systems in Ohio and the region can be considered secure in terms of systems preservation. - Enrich the gene pool and gene pool knowledge to the extent that breeding programs have the materials with the desired traits on-demand to move forward with releasing varieties, etc. Plant preharvest research will: - provide the necessary quality and utility data, including cultural practices, seed quality assurance, breeding, and other biological and physical investigations necessary to support preharvest practices that achieve the prerequisite yield, disease resistance, and other characteristics to retain Ohio status as a top soybean and corn producer and to advance other desirable crops as demand evolves, e.g. substitute crops for tobacco, disease resistance organics, and crops for biobased commodities. Plant management systems research will: - participate in modeling and sampling of crop data, including remote sensing, for the purpose of deriving systems that are cost effective and cost efficient for producers. - Evaluate production management systems, including organics, sustainable agriculture initiatives, small-scale farming/niche market systems for the purpose of increasing efficiency and effectiveness, thus making innovative farming systems more attractive to stakeholders. - support biosecurity research commensurate with the overt or potential threats. - Support OSU Extension's Master Gardening program by providing the green industry research necessary to advance the development of materials and field trails required to keep the program viable. Plant protection research will: - employ an integrated approach to protecting plants from harmful insects and other invertebrates, pathogens, vertebrates, and weeds to the extent that the research is required to mitigate impacts that have significant negative economic or environmental consequences. Investigations are of both current and forecasted threats.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	29.8	0.0
2011	0.0	0.0	28.3	0.0
2012	0.0	0.0	26.9	0.0
2013	0.0	0.0	25.6	0.0
2014	0.0	0.0	24.3	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Activities within this planned program will generate - in print research based publications targeted to (a) specific stakeholder groups, (b) support publics such as fellow agencies, political entities, (c) targeted populations, and (d) the broader general public, including mass media releases; - peer-reviewed journal articles; -commercialized techniques; - non-commericalized techniques that are distributed to those in need without costs (e.g. wetland construction techniques); - limited number of patents; -consultation services and meetings with stakeholders and supporters; -facilitation of training programs/workshops for other scientist and for specific groups of stakeholders, including international visitors; and -planning meeting with advisory groups to communicate findings and plan new research.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Demonstrations • One-on-One Intervention	• Newsletters • Web sites

3. Description of targeted audience

Targeted audiences include, but are not limited to: - specific individuals or groups who have expressed a need for plant systems information that is to be derived through new research, extracted from on-going research, or is derived from scientific literature. Often those requests are communicated to OARDC by an intermediary such as a staffer at a USDA office, NRCS, or a county extension agent; - fellow agencies or support organizations who will not only use the information but will also be brokers of that information, including embedding it into groups to encourage change; - populations who have not requested the information but will likely benefit from that information, e.g. home gardeners; - other scientists and scientific groups; - political entities; - extension personnel; - students for pre-school to post doctorate studies; and - news organizations.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 1 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	100	0	0
2011	100	0	0
2012	100	0	0
2013	100	0	0
2014	100	0	0

V(H). State Defined Outputs

1. Output Target

- peer-reviewed publications will be tracked

  2010 :100 **2011 :**100 **2012 :**100 **2013 :**100 **2014 :**100

- patents by number and who partnered/purchased/commercialized;

  2010 :1 **2011 :**0 **2012 :**0 **2013 :**1 **2014 :**0

- Number of graduate students completed

  2010 :31 **2011 :**31 **2012 :**31 **2013 :**31 **2014 :**0

V(I). State Defined Outcome

O. No	Outcome Name
1	Meet or exceed the demand of fellow scientists and stakeholders within the next ten years for materials relating to plant genetics and plant breeding technologies, including identification of molecular markers for elite germplasms
2	Provide at minimum one new contribution annually to the body of literature that will positively advance plant genetics, e.g. molecular techniques and materials to aid in low temperature plant tolerance research
3	Advance germplasm science over the next ten years to the extent that the genetic resources targeted for acquisition are preserved and can be considered secure in terms of systems preservation, e.g. short season crops or for studying rice pathogens
4	Enrich the gene pool, and knowledge thereof, to meet identified stakeholder needs, with incremental needs fulfillment by stakeholders in at least 25% of the areas annually-turf needs for nutrient uptake efficient materials, turf with greater traction, etc.
5	Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for -greater disease/pest resistance, e.g. rust, ash borer, develop glyphosate ready material, increase quantity and quality yield in crops such as soybeans
6	Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for - disease resistance of rootstocks such as for apple trees and green industry
7	Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for resistance to plant stresses, e.g. discoloration in products such as tomatoes reducing a $60 million loss annually in tomato industry
8	Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for molecular studies to better understand how immune systems in plants in inhibit diseases and how bacteria perturb the immune system
9	Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for gene recombination and interaction studies to inform decisions on importing new genetic stock, e.g. soybeans from northern China
10	Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for - developing longer lasting cultivars in terms of disease resistance such as in alfalfa
11	Annually provide adequate preharvest research findings, including field trial data, to support Ohio's status as a top soybean and corn producer
12	Release or support release by others of one special cultivar annually, e.g. grapes to replace tobacco in southeastern Ohio, low maintenance turf grass, nitrogen uptake efficient crops including foliar based fertilization, field crop cultivars
13	Promote and participate annually in at least one type of stakeholder participatory research initiative, e.g. sentinel plots on farms for soybean rust
14	Continually participate in and promote the development and timely release of modeling/forecasting programs that are cost effective and cost efficient for producers, e.g. WEEDCAST
15	Continually promote the full integration of all plant and animal pests, including microbes, into IPM planning and execution
16	Annually contribute to and report a basic or applied understanding of IPM, including all physical, biological, and chemical components of the plant system, to reduce environmental stresses, improve production, and lower costs when employed

Outcome #1

1. Outcome Target

Meet or exceed the demand of fellow scientists and stakeholders within the next ten years for materials relating to plant genetics and plant breeding technologies, including identification of molecular markers for elite germplasms

2. Outcome Type : Change in Condition Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems

Outcome #2

1. Outcome Target

Provide at minimum one new contribution annually to the body of literature that will positively advance plant genetics, e.g. molecular techniques and materials to aid in low temperature plant tolerance research

2. Outcome Type : Change in Condition Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology

Outcome #3

1. Outcome Target

Advance germplasm science over the next ten years to the extent that the genetic resources targeted for acquisition are preserved and can be considered secure in terms of systems preservation, e.g. short season crops or for studying rice pathogens

2. Outcome Type : Change in Condition Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
0	1	1	0	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms

- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology

Outcome #4

1. Outcome Target

Enrich the gene pool, and knowledge thereof, to meet identified stakeholder needs, with incremental needs fulfillment by stakeholders in at least 25% of the areas annually-turf needs for nutrient uptake efficient materials, turf with greater traction, etc.

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #5

1. Outcome Target

Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for -greater disease/pest resistance, e.g. rust, ash borer, develop glyphosate ready material, increase quantity and quality yield in crops such as soybeans

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #6

1. Outcome Target

Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for - disease resistance of rootstocks such as for apple trees and green industry

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #7

1. Outcome Target

Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for resistance to plant stresses, e.g. discoloration in products such as tomatoes reducing a $60 million loss annually in tomato industry

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #8

1. Outcome Target

Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for molecular studies to better understand how immune systems in plants in inhibit diseases and how bacteria perturb the immune system

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #9

1. Outcome Target

Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for gene recombination and interaction studies to inform decisions on importing new genetic stock, e.g. soybeans from northern China

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #10

1. Outcome Target

Enrich the gene pool and knowledge thereof in at least 25% of the areas annually for - developing longer lasting cultivars in terms of disease resistance such as in alfalfa

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #11

1. Outcome Target

Annually provide adequate preharvest research findings, including field trial data, to support Ohio's status as a top soybean and corn producer

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #12

1. Outcome Target

Release or support release by others of one special cultivar annually, e.g. grapes to replace tobacco in southeastern Ohio, low maintenance turf grass, nitrogen uptake efficient crops including foliar based fertilization, field crop cultivars

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants

- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #13

1. Outcome Target

Promote and participate annually in at least one type of stakeholder participatory research initiative, e.g. sentinel plots on farms for soybean rust

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #14

1. Outcome Target

Continually participate in and promote the development and timely release of modeling/forecasting programs that are cost effective and cost efficient for producers, e.g. WEEDCAST

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #15

1. Outcome Target

Continually promote the full integration of all plant and animal pests, including microbes, into IPM planning and execution

2. Outcome Type : Change in Action Outcome Measure

2010 :2 **2011 :** 1 **2012 :** 2 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

Outcome #16

1. Outcome Target

Annually contribute to and report a basic or applied understanding of IPM, including all physical, biological, and chemical components of the plant system, to reduce environmental stresses, improve production, and lower costs when employed

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources and Biodiversity
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 214 - Vertebrates, Mollusks, and Other Pests Affecting Plants
- 216 - Integrated Pest Management Systems

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Government Regulations
- Economy
- Public Policy changes
- Competing Public priorities
- Appropriations changes
- Natural Disasters (drought,weather extremes,etc.)
- Populations changes (immigration,new cultural groupings,etc.)
- Competing Programmatic Challenges

Description

Climatic extremes, pests, weeds, and diseases can impact outcomes within plant systems. As the food, fiber, and environmental economy adjust to the global marketplace, in conjunction with public policy shifts, regulations, and shifts in demand, outcomes will be impacted. Production agriculture is most sensitive to these shifts. Formative evaluation though can lessen the burden by seeking feedback throughout the life of the program. Internal factors such as the availability of base funding to ensure a core faculty and staff, availability of extramural funds, and programmatic demands that often exceed resources, all may affect outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Case Study
- Comparison between locales where the program operates and sites without program intervention

Description

Plant systems project evaluation begins with HATCH project reviews and approval, with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provides a more summative assessment. Pre-planning with stakeholders of research continues to provide a strong bases for framing projects that have potential of adoption; with such approach outcomes become more easily identified. Research projects and clusters of research projects lend themselves well to case studies in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Most of the analysis leads either faculty, peers, or the research team themselves to investigate outcomes and impacts by asking so what? Experiment Station reviews, as do stakeholders and those who provide extramural funding, are more demanding as to chronicling impact.

2. Data Collection Methods

- Unstructured
- Whole population
- Case Study
- Observation

Description

Data collection in the Plant Systems program tends to be unstructured feedback from stakeholders, peers, and administrators, rather than formal pencil and paper evaluation. Where strong, well-organized groups such as commodity groups exists, joint OARDC and extension activities result in formal surveys that usually address adoption of research rather than actual research findings per se. Observations with recorded biological and physical science data, and adoption and application, make up the bulk of data collection in this program. Annually, OARDC gathers individual faculty, program, and departmental data and measures against stated goals and objectives to provide another level of documenting outputs and outcomes.

V(A). Planned Program (Summary)

Program #4

1. Name of the Planned Program

Animal Systems-OARDC Led

2. Brief summary about Planned Program

The food animal industry in Ohio is a key contributor to the food, agricultural, and environmental economy. In 2008 the faculty group working in this area defined their mission as: to discover and communicate knowledge about animals and their products. The delivery of this mission is directed to the students of The Ohio State University, the citizens of Ohio and other parts of the world, the scientific community, stakeholders who are interested in animals used for food and fiber production, recreation, and companion purposes. Research performed in 2008 by Battelle, sponsored by the Ohio Soybean Council, shows the livestock sector having the following Ohio economic impacts: $3.6 billion in Ohio economic output; 45,692 jobs in the state directly or indirectly related the livestock sector; and generation of more than $396 million annually in personal income for Ohioans. This program is central to the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan that focuses on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas : (1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products. The food animal industry continually grows. For example, per capita consumption of chicken and turkey has increased dramatically since the 1970s. Nationally, chicken consumption has increased from 40 pounds per person in 1970 to present day 80 plus pounds per person. Turkey consumption has risen from 8 pounds in 1970 to current consumption of 17 plus pounds person. Breeders are focused on maximizing growth with an emphasis on the breast muscle. Every percent improvement in breast muscle yield is worth $100 plus million to the U.S. turkey industry, and is worth over $300 plus million to the U.S. broiler industry. OARDC scientists have provided a significant portion of research over the years to support this growth. OARDC is heavily invested in programs, facilities, and stakeholder networks at the local, state, regional and national levels that support this planned program. The program consists of multiple levels of research ranging from investigations at the genetic level to studying all aspects of food animal production, including aquaculture and new initiative such as goat meat production for a new immigrant population. Such program positions Ohio as a major contributor to both basic and applied animal sciences, and substantially contributes to the food security at national and global levels. OARDC scientist have provided leadership at all geographical levels, and worldwide for the past half a century. Genetic research provides a foundation for the program with inquiries from the genome level through gene pool studies. Nutrition and reproduction are major areas of emphasis demanded by stakeholders and by the state of academic understanding of the food animal system. Emphasis is placed on pre-harvest programs to reduce risks to producers, processors, and consumers, and ensure high productivity of quality products. Producers, processors, and distributors in this program are well organized and rely heavily on OARDC for scientific information. Over the years they have been actively engaged in the process of research from needs identification to summative assessments of outcomes. OARDC research is widely disseminated by OSU Extension, ensuring that research is distributed in a timely manner that leads to planned impacts within appropriate stakeholder groups.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	20%		15%	
302	Nutrient Utilization in Animals	20%		15%	
303	Genetic Improvement of Animals	10%		10%	
304	Animal Genome	10%		5%	
305	Animal Physiological Processes	0%		15%	
306	Environmental Stress in Animals	0%		5%	
307	Animal Production Management Systems	10%		10%	
308	Improved Animal Products (Before Harvest)	20%		15%	
311	Animal Diseases	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Providing for the sustained and secure flow of food animals to producers, processors, distributors, and consumers and knowledge that their animal-based food system is informed by the best science available are expectations of OARDC. The science behind the system is not only critical for provisioning the food worldwide; it is also a major economic driver in Ohio. OARDC addresses direct needs of all these constituency groups by interacting with them and understanding their needs. Scientists also address needs before they ever arrive in the state, e.g. studying potentially infectious animal diseases. Much of the interactions are with organized groups of producers, processors, distributors, and consumers. Consumer demand for products is often relayed through feedback fro other organized groups such as food distributors, e.g. demand for more tender and more marbled beef. Without a growing body of knowledge to create efficiencies and security in the animal based food systems, opportunities will be missed and society will not be well served. With over one hundred years of research history, a robust body of literature, and a well-developed network of clientele, supporters and companion agencies and organizations, including OSU Extension, OARDC is well positioned to continue to effect positive change in this planned program. Effective research requires a mixture of laboratory, animal enclosures, and on-farm research to maximize knowledge. Ohio is well invested in these throughout the state. Emerging threats now demand planning of more advanced facilities such as a biosecurity lab, particularly needed in the study infectious animal diseases.

2. Scope of the Program

- Integrated Research and Extension
- In-State Research
- Multistate Integrated Research and Extension
- Multistate Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Understanding the basic and applied science related to how animal systems are maintained and managed, and how food and the associated economy are maintained, meets society's overt and latent demands in this area. As we address problems and needs within our stakeholder communities, the organizations (OARDC and OSU Extension) become better prepared to take advantage of emerging opportunities or to more rapidly address problems within these areas. Other key assumptions are: The issues within this program have been identified by our stakeholder communities, and/or via the scientific literature, reflect the more important issues, and warrant allocation of resources; the understanding of this planned program and how society utilizes and depends on the associated research is key to present and future decision-making in provisioning of food and environmental services; all citizens directly or indirectly benefit from a safe, secure, and plentiful animal based food system. These lines of inquiry will provide necessary data to inform human enterprises; research and education related to food animal systems is a demand by society needed to meet current and future needs; and base federal funding will continue to be available and leveraged to support this planned program and the scientific staff who carry out the lines of inquiry noted within the knowledge areas for this program. Likewise it is assumed that the federal base funding will be leverage for continuing to attract state and extramural funds.

2. Ultimate goal(s) of this Program

Animal production research will: - work with all agriculturally important animals in Ohio to enhance reproductive performance that are both effective and economically efficient in meeting commensurate demands of the industry and consumers. Nutrient utilization research will: - provide the necessary research to enhance nutrient utilization for the purpose of production efficiency, economic viability, competitiveness, and animal health within the industry and provide consumers with greater value and quality at reduced environmental costs. Genetic research, including genomics, will: - work with our stakeholders to better understand and provide the genetic improvement information, including work at the molecular level, that is in current demand, or that is emerging as a potential demand. Animal management research will: -focus on improving management systematics for multiple farm types including organics, and will include modeling, decision-making, and alternative management strategies. Preharvest research will: - address demand from stakeholders for information to aid in improving the quantity and quality of animal products in a cost effective, environmentally friend manner that is socially acceptable. Research related to animal protection will: - focus primarily on animal diseases, both present ones and those that have likelihood of impacting this geographic region, to ensure that society has a safe and secure animal based food supply and that human and animal heath, business enterprises, and environmental security are not compromised

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	14.8	0.0
2011	0.0	0.0	14.1	0.0
2012	0.0	0.0	13.4	0.0
2013	0.0	0.0	12.7	0.0
2014	0.0	0.0	12.1	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Activities within this planned program will result in: - in print research based publications targeted to (a) specific stakeholder groups, (b) support publics such as fellow agencies, political entities, (c) targeted populations, and (d) the broader general

public, including mass media releases; - peer-reviewed journal articles; -commercialized techniques; - non-commericalized techniques that are distributed to those in need without costs; - limited number of patents; - consultation services and meetings with stakeholders and supporters; -facilitation of training programs/workshops for other scientist and for specific groups of stakeholders, including international visitors; and -planning meetings with advisory groups to communicate findings and plan new research.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Demonstrations • One-on-One Intervention	• Web sites • Newsletters

3. Description of targeted audience

Targeted audiences include, but are not limited to: - specific individuals or groups who have expressed a need for food animal systems information that is to be derived through new research, extracted from on-going research, or is derived from scientific literature. Often those requests are communicated to OARDC by an intermediary such as a staffer at a USDA office, NRCS, Ohio Department of Agriculture, or a county extension agent; - fellow agencies or support organizations who will not only use the information but will also be brokers of that information, including embedding it into groups to encourage change; -populations who have not requested the information but will likely benefit from that information, e.g. small or recreational farmers; - other scientists and scientific groups; - political entities; - extension personnel; - students for pre-school to post doctorate studies; - news organizations; and - business groups such as Farm Bureau or commodity groups.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 1 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	70	0	0
2011	70	0	0
2012	70	0	0
2013	70	0	0
2014	65	0	0

V(H). State Defined Outputs

1. Output Target

- peer-reviewed publications will be tracked

  2010 70 **2011** 70 **2012** 70 **2013** 70 **2014** 65

- patents by number and who partnered/purchased/commercialized;

  2010 0 **2011** 0 **2012** 1 **2013** 0 **2014** 0

- Number of graduate students completed.

  2010 23 **2011** 23 **2012** 23 **2013** 23 **2014** 0

V(I). State Defined Outcome

O. No	Outcome Name
1	Improve reproduction efficiency and enhanced application of new technologies over the next five years to fully meet the competitive demands faced by OARDC's stakeholders in areas such as early maturation, estrus, fertility, and ovulation
2	Provide research finding within ten years that are needed to reverse the fertility decline in animal populations such as dairy
3	Increase nutrition utilization for the purpose of increased growth and quality of products commensurate with consumer demand
4	Improve nutritional utilization, performance, and efficiency to the point that savings will off-set increases in costs of animal feed stocks
5	Show incremental gains annually in dietary research to increase utilization of food stocks (e.g. via better understanding of protozoal ecology), increase bioavailability of nutrients including trace minerals, and protect animal and human health
6	Meet the demand of fellow scientists and stakeholders within ten years for materials relating to genetics and breeding, including id of molecular markers for improved animal health and reproductively, and increased quality and quantity of products
7	Provide at minimum one new contribution annually to the body of literature that will positively food animal genetics, e.g. molecular techniques and materials to aid in identifying genetic codes of bacteria in that breaks down cellulose
8	Improve management for multiple animal farm types, including organics, that will produce higher yields for and lower costs to the producer and consumer and will allow the farmer to profit within a reasonable business plan
9	Annually advance modeling, decision-making, & alternative strategies to provide greater flow of needed information to food animal farmers to ensure business stability, including forage based cattle and niche market demands
10	Advance preharvest research over five years to the extent that new technologies are being adopted and showing profitability in area such as improved muscle growth, quality of meat, tenderness, lower fat in dairy products, etc.
11	Animal disease researchers will continue to serve on first responder teams when stakeholders have an immediate disease problem
12	Animal disease researchers will provide the necessary research to inform producers in a timely manner how to protect against known and present diseases, e.g. bovine mastitis
13	Animal disease researchers will advance the research frontiers in emerging disease investigations to the extent that OARDC continues to serve as a center for excellence

Outcome #1

1. Outcome Target

Improve reproduction efficiency and enhanced application of new technologies over the next five years to fully meet the competitive demands faced by OARDC's stakeholders in areas such as early maturation, estrus, fertility, and ovulation

2. Outcome Type : Change in Action Outcome Measure

2010 :2	**2011** : 1	**2012** : 1	**2013** :1	**2014** :0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

Outcome #2

1. Outcome Target

Provide research finding within ten years that are needed to reverse the fertility decline in animal populations such as dairy

2. Outcome Type : Change in Action Outcome Measure

2010 :0	**2011** : 0	**2012** : 0	**2013** :0	**2014** :0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 307 - Animal Production Management Systems

Outcome #3

1. Outcome Target

Increase nutrition utilization for the purpose of increased growth and quality of products commensurate with consumer demand

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011** : 0	**2012** : 1	**2013** :0	**2014** :0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

Outcome #4

1. Outcome Target

Improve nutritional utilization, performance, and efficiency to the point that savings will off-set increases in costs of animal feed stocks

2. Outcome Type : Change in Action Outcome Measure

2010 :0 **2011 :** 1 **2012 :** 0 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)

Outcome #5

1. Outcome Target

Show incremental gains annually in dietary research to increase utilization of food stocks (e.g. via better understanding of protozoal ecology), increase bioavailability of nutrients including trace minerals, and protect animal and human health

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 0 **2012 :** 0 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals

- 305 - Animal Physiological Processes
- 307 - Animal Production Management Systems
- 311 - Animal Diseases

Outcome #6

1. Outcome Target

Meet the demand of fellow scientists and stakeholders within ten years for materials relating to genetics and breeding, including id of molecular markers for improved animal health and reproductively, and increased quality and quantity of products

2. Outcome Type : Change in Action Outcome Measure

2010 : 0 **2011 :** 0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

Outcome #7

1. Outcome Target

Provide at minimum one new contribution annually to the body of literature that will positively food animal genetics, e.g. molecular techniques and materials to aid in identifying genetic codes of bacteria in that breaks down cellulose

2. Outcome Type : Change in Action Outcome Measure

2010 : 1 **2011 :** 1 **2012 :** 1 **2013 :** 1 **2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 307 - Animal Production Management Systems

Outcome #8

1. Outcome Target

Improve management for multiple animal farm types, including organics, that will produce higher yields for and lower costs to the producer and consumer and will allow the farmer to profit within a reasonable business plan

2. Outcome Type : Change in Action Outcome Measure

2010 :0 **2011 :**0 **2012 :**1 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

Outcome #9

1. Outcome Target

Annually advance modeling, decision-making, & alternative strategies to provide greater flow of needed information to food animal farmers to ensure business stability, including forage based cattle and niche market demands

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :**1 **2012 :**1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

Outcome #10

1. Outcome Target

Advance preharvest research over five years to the extent that new technologies are being adopted and showing profitability in area such as improved muscle growth, quality of meat, tenderness, lower fat in dairy products, etc.

2. Outcome Type : Change in Action Outcome Measure

2010 :0	**2011 :** 0	**2012 :** 1	**2013** :0	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

Outcome #11

1. Outcome Target

Animal disease researchers will continue to serve on first responder teams when stakeholders have an immediate disease problem

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013** :1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 306 - Environmental Stress in Animals
- 307 - Animal Production Management Systems
- 311 - Animal Diseases

Outcome #12

1. Outcome Target

Animal disease researchers will provide the necessary research to inform producers in a timely manner how to protect against known and present diseases, e.g. bovine mastitis

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013** :1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 305 - Animal Physiological Processes
- 307 - Animal Production Management Systems
- 311 - Animal Diseases

Outcome #13

1. Outcome Target

Animal disease researchers will advance the research frontiers in emerging disease investigations to the extent that OARDC continues to serve as a center for excellence

2. Outcome Type : Change in Condition Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Government Regulations
- Competing Programmatic Challenges
- Competing Public priorities
- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Populations changes (immigration,new cultural groupings,etc.)
- Appropriations changes

Description

Climatic extremes, coupled with animal diseases that are often climate related, can impact outcomes. Public policy shifts, regulations, and shifts in demand will be impact outcomes. Human values and environmental sensitivities of the populace to animal production and processing are also external factors that effect outcomes. Formative evaluation though can lessen the burden by seeking feedback throughout the life of the program. Internal factors such as the availability of base funding to ensure a core faculty and staff, availability of extramural funds, and programmatic demands that often exceed resources, all may affect outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- Comparison between locales where the program operates and sites without program intervention
- During (during program)
- Case Study

Description

Experiment station evaluation begins with HATCH project reviews and approval, with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provides a more summative assessment. Pre-planning with stakeholders of research continues to provide a strong bases for framing projects that have potential of adoption; with such approach outcomes become more easily identified. Research projects and clusters of research projects lend themselves well to case studies in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Most of the analysis leads either faculty, peers, or the research team themselves to investigate outcomes and impacts by asking so what? Experiment Station reviews, as do stakeholders and those who provide extramural funding, are more demanding as to chronicling impact.

2. Data Collection Methods

- Sampling
- Unstructured
- Case Study
- Observation

Description

Data collection in this planned program tends to be unstructured feedback from stakeholders, peers, and administrators, rather than formal pencil and paper evaluation. In the area of community based programs, such as certified animal products development, joint OARDC and extension activities results in formal surveys that usually address adoption of processes rather than actual research findings per se. Observations with recorded biological, physical, and social data make up the bulk of data collection in this program. Annually, OARDC gathers individual faculty, program, and departmental data and measures against stated goals and objectives to provide another level of documenting outputs and outcomes.

V(A). Planned Program (Summary)

Program #5

1. Name of the Planned Program

Food, Agricultural, and Biological Engineering Systems-OARDC Led

2. Brief summary about Planned Program

The research and extension activities of those working in the Food, Agricultural, and Biological Engineering Planned Program underpins the work of all units within the college and has impact from local to the international arena. In 2008 the faculty group working in this area defined this work as: to advance the science and application of engineering systems involving food, agriculture, environment and construction. This program is dedicated to advancing science, teaching principles and application, and disseminating knowledge of engineering and construction needed to efficiently produce, distribute, and process biological products (such as food, feed, fiber, and fuel) while conserving natural resources, preserving environmental quality, and ensuring the health and safety of people. This line of research is highly ranked nationally and has a history of innovation and leadership. Likewise it is central to the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan that focuses on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas : (1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products. Research related to structures and facilities is heavily focused on greenhouse technologies for the benefit of stakeholders and fellow research units. Additional research in broader areas of structures and facilities is often carried out at the request of OSU Extension, USDA/USDI partners, state partners such Ohio Department of Agriculture, and local entities such as Soil and Water Conservation Districts. Systems engineering and development of equipment and associated methodologies for industry efficiency are important lines of inquiry given the need to reduce costs. Such research seeks to advance the competitiveness of the various industries informed by OARDC research and OSU Extension programming. Research emphasis is also placed on waste disposal for the food and fiber industry. Given Ohio has a high water table and is a state in which the rural urban interface is a point of management concern, waste from animal industries and food processing are primary focal areas. Engineering solutions are also sought to minimize air quality impacts from associated industries. Without proper disposal systems, both risk from regulatory actions and negative public perception, where human and environmental heath issues arise, are issues of concern. Through partnerships within the college, across the university, and throughout the stakeholder community, scientists and staff working in this area have effected change and are most responsive to meeting stated needs. Additionally this line of research is necessary to take advantage of emerging opportunities.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
401	Structures, Facilities, and General Purpose Farm Supplies	20%		20%	
402	Engineering Systems and Equipment	30%		30%	
403	Waste Disposal, Recycling, and Reuse	50%		25%	
404	Instrumentation and Control Systems	0%		10%	
405	Drainage and Irrigation Systems and Facilities	0%		15%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Providing for the sustained and secure flow of food and fiber to/from producers, processors, distributors, and consumers, and assuring that their interests are informed by the best engineering science available, are expectations of OARDC. The engineering science behind the food and fiber systems is critical for provisioning of food worldwide. Engineering directly supports OARDC goals of production efficiency, economic viability, environmental stewardship, and social acceptability of practices introduced. OARDC addresses direct needs of all their constituency groups by interacting with them and understanding their needs. Much of engineering's interactions are with fellow research and extension units, and with organized groups of producers, processors, and consumers. Demand for their expertise and the processes and products generated are often in conjunction with or brokered through other academic units or support agencies and organizations. Without a growing body of engineering knowledge to create efficiencies and security in the food systems, opportunities will be missed and society will not be well served. With a long research history, a robust body of literature, and a well-developed network of clientele, supporters and companion agencies and organizations, including OSU Extension, OARDC is well positioned to continue to effect positive change by supporting and advancing food, agricultural and biological engineering sciences. Effective research requires a mixture of laboratory, animal enclosures, plant support facilities, and on-farm research support facilities and engineered processes, to maximize knowledge. Faculty and staff in this program provide research that leads to state of the art systems and facilities. Likewise, they provide the knowledge and technologies needed by stakeholders to make decisions regarding adoption of state of the art facilities and processes. Emerging threats now demand planning of more advanced facilities such as biosecurity laboratories; systems and facilities engineers are critical to such planning efforts.

2. Scope of the Program

- Multistate Research
- In-State Research
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

A client oriented research and development program by food, agricultural and biological engineers is critical to meeting society's overt and latent demands in this area. As we address problems and needs within our stakeholder communities, the organization (OARDC and OSU Extension) become better prepared to take advantage of emerging opportunities or to more rapidly address problems within these areas. Other key assumptions are: The issues within this program have been identified by our

stakeholder communities, and/or via the scientific literature, reflect the more important issues, and warrant allocation of resources; The understanding of this planned program and how society utilizes and depends on the associated research is key to present and future decision-making in provisioning of food, fiber, and environmental services; all citizens directly or indirectly benefit from a safe, secure, and plentiful food system supply support by state of the art engineering; these lines of inquiry will provide necessary to inform human enterprises; engineering research and education are demands by society needed to meet current and future needs; and base federal funding will continue to be available and leveraged to support this planned program and the scientific staff who carry out the lines of inquiry noted within the knowledge areas for this program. Likewise it is assumed that the federal base funding will be leverage for continuing to attract state and extramural funds.

2. Ultimate goal(s) of this Program

Engineering structures and facilities research will: - carry out investigations leading to the design of facilities and associated engineered process necessary to support the food, fiber, agricultural, and environmental needs of stakeholders and fellow research units. Engineering systems and equipment research will: - develop enhanced systems to support integrated plant growth systems (e.g. fertigation, monitoring, control) - improve systems to aid small farmers in taking advantage of alternatives to traditional commodity crops, e.g. hydroponics for vegetables and flowers - improve mechanical devices and instrumentation needed by stakeholders such as improved pesticide applicators, including biological pesticides - develop improved systems to aid in meeting new or yet to emerge or novel needs such as bioreactors to treat landfill waste biologically or reduction of axle loads of farm equipment to prevent compaction of agricultural soils. Waste disposal engineering research will: - inform the process of collecting, storing, processing, and distributing waste products from plant and animal agriculture - advance study and modeling of state of the art integrated systems - join with ecological engineers to determine improved strategies for ecological based engineered systems for waste management, e.g. constructed wetlands, multistage farm ditches - carry out studies to determine and aid rural residents, businesses, and industries in utilizing effective onsite waste disposal systems.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	2.3	0.0
2011	0.0	0.0	2.2	0.0
2012	0.0	0.0	2.1	0.0
2013	0.0	0.0	2.0	0.0
2014	0.0	0.0	1.9	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Activities within this planned program will result in: - in print research based publications targeted to (a) specific stakeholder groups, (b) support publics such as fellow agencies, political entities, (c) targeted populations, and (d) the broader general public, including mass media releases; - peer-reviewed journal articles; - commercialized techniques; - non-commericalized techniques that are distributed to those in need without costs (e.g. wetland construction techniques); - limited number of patents; - consultation services and meetings with stakeholders and supporters; - facilitation of training programs/workshops for other scientist and for specific groups of stakeholders, including international visitors; and - planning meeting with advisory groups to communicate findings and plan new research.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• One-on-One Intervention • Demonstrations	• Newsletters • Web sites

3. Description of targeted audience

Targeted audiences arinclude, but not limited to: - specific individuals or groups who have expressed a need for engineering information that is to be derived through new research, extracted from on-going research, or is derived from scientific literature. Often those requests are communicated to OARDC by an intermediary such as a staffer at a USDA office, NRCS, Ohio Department of Agriculture, Soil and Water Conservation Districts or a county extension agent; - fellow academic units that rely on engineers to create systems and processes needed to support not only the research, but also the adoption of the research findings by stakeholders - fellow agencies or support organizations who will not only use the information but will also be brokers of that information, including embedding it into groups to encourage change; - populations who have not requested the information but will likely benefit from that information, e.g. recreational animal owners; - other scientists and scientific groups; - political entities; - extension personnel; - students for pre-school to post doctorate studies; - news organizations; and - business groups such as small town administrators, county commissioners, or commodity groups

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :** 1 **2014 :** 0

3. Expected Peer Review Publications

-

Year	Research Target	Extension Target	Total
2010	17	0	0
2011	17	0	0
2012	17	0	0
2013	17	0	0
2014	15	0	0

V(H). State Defined Outputs

1. Output Target

- number of graduate students completed

2010 :18 **2011 :**18 **2012 :**18 **2013 :**18 **2014 :**15

- peer-reviewed publications will be tracked in terms of name and tier of journal, as well as record of citations of the article

2010 :17 **2011 :**17 **2012 :**17 **2013 :**17 **2014 :**0

- patents by number and who partnered/purchased/commercialized;

2010 :1 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

V(I). State Defined Outcome

O. No	Outcome Name
1	- provide appropriate facilities and engineering processes commensurate with stakeholders demand to the extent that they have all the information necessary for making adoption decisions
2	- provide appropriate facilities and engineering processes commensurate with fellow research units demands necessary to inform their research efforts in a timely manner
3	- develop enhanced systems to support integrated plant growth systems that will annually result in increased productivity at reduced costs for the industry
4	- improve systems to that will permit small farmers to take advantage of alternatives to traditional commodity crops at a rate commensurate with demand, with an expectation of at least three economically successful adoptions per year
5	- improve mechanical devices and instrumentation needed by stakeholders to the extent that no less than one patent is awarded within each five year period
6	- develop improved systems to aid in meeting new or yet to emerge or novel needs and annually demonstrate progress to at least one stakeholder group or publish a peer-reviewed journal article of the results
7	- advance development of state of the art integrated waste management systems to the extent that OARDC and Ohio are viewed as one of the top ten programs/states in this area nationally
8	- advance the knowledge of ecological based engineered systems for waste management to the extent within five years that, where cost effective and appropriate, they will be adopted over mechanical systems
9	- aid rural stakeholders through research and extension with onsite waste disposal systems to the extent that within ten years 95% of all rural Ohio onsite waste management systems meet state standards -

Outcome #1

1. Outcome Target

- provide appropriate facilities and engineering processes commensurate with stakeholders demand to the extent that they have all the information necessary for making adoption decisions

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	0	1	0	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 404 - Instrumentation and Control Systems
- 405 - Drainage and Irrigation Systems and Facilities

Outcome #2

1. Outcome Target

- provide appropriate facilities and engineering processes commensurate with fellow research units demands necessary to inform their research efforts in a timely manner

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 404 - Instrumentation and Control Systems
- 405 - Drainage and Irrigation Systems and Facilities

Outcome #3

1. Outcome Target

- develop enhanced systems to support integrated plant growth systems that will annually result in increased productivity at reduced costs for the industry

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	0	1	0	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 401 - Structures, Facilities, and General Purpose Farm Supplies

- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 404 - Instrumentation and Control Systems
- 405 - Drainage and Irrigation Systems and Facilities

Outcome #4

1. Outcome Target

- improve systems to that will permit small farmers to take advantage of alternatives to traditional commodity crops at a rate commensurate with demand, with an expectation of at least three economically successful adoptions per year

2. Outcome Type : Change in Action Outcome Measure

2010 3 **2011 :** 3 **2012 :** 3 **2013** 3 **2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 404 - Instrumentation and Control Systems
- 405 - Drainage and Irrigation Systems and Facilities

Outcome #5

1. Outcome Target

- improve mechanical devices and instrumentation needed by stakeholders to the extent that no less than one patent is awarded within each five year period

2. Outcome Type : Change in Condition Outcome Measure

2010 0 **2011 :** 0 **2012 :** 1 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 404 - Instrumentation and Control Systems
- 405 - Drainage and Irrigation Systems and Facilities

Outcome #6

1. Outcome Target

- develop improved systems to aid in meeting new or yet to emerge or novel needs and annually demonstrate progress to at least one stakeholder group or publish a peer-reviewed journal article of the results

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 404 - Instrumentation and Control Systems
- 405 - Drainage and Irrigation Systems and Facilities

Outcome #7

1. Outcome Target

- advance development of state of the art integrated waste management systems to the extent that OARDC and Ohio are viewed as one of the top ten programs/states in this area nationally

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	0	1	0	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 404 - Instrumentation and Control Systems
- 405 - Drainage and Irrigation Systems and Facilities

Outcome #8

1. Outcome Target

- advance the knowledge of ecological based engineered systems for waste management to the extent within five years that, where cost effective and appropriate, they will be adopted over mechanical systems

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
0	0	1	0	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 404 - Instrumentation and Control Systems
- 405 - Drainage and Irrigation Systems and Facilities

Outcome #9

1. Outcome Target

- aid rural stakeholders through research and extension with onsite waste disposal systems to the extent that within ten years 95% of all rural Ohio onsite waste management systems meet state standards -

2. Outcome Type : Change in Condition Outcome Measure

2010 : 0	2011 : 0	2012 : 0	2013 : 0	2014 : 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 404 - Instrumentation and Control Systems
- 405 - Drainage and Irrigation Systems and Facilities

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Government Regulations
- Appropriations changes
- Natural Disasters (drought,weather extremes,etc.)
- Competing Programmatic Challenges
- Public Policy changes
- Economy
- Populations changes (immigration,new cultural groupings,etc.)
- Competing Public priorities

Description

Climatic extremes, economic shifts such as interest rates to borrow money for facilities, public policy shifts, regulations, and shifts in demand will be impact outcomes. Human values and environmental sensitivities to Agriculture processes and facilities of the populace are also external factors that effect outcomes, e.g. engineering of large farms. Formative evaluation though can lessen the burden by seeking feedback throughout the life of the program. Internal factors such as the availability of base funding to ensure a core faculty and staff, availability of extramural funds, and programmatic demands that often exceed resources, all may affect outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Comparison between locales where the program operates and sites without program intervention
- Case Study
- Before-After (before and after program)
- During (during program)

Description

Experiment station evaluation begins with HATCH project reviews and approval, with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provide a more summative assessment. Pre-planning with stakeholders of research continues to provide a strong bases for framing projects that have potential of adoption; with such approach outcomes become more easily identified. Research projects and clusters of research projects lend themselves well to case studies in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Most of the analysis leads either faculty, peers, or the research team themselves to investigate outcomes and impacts by asking so what? Experiment Station reviews, as do stakeholders and those who provide extramural funding, are more demanding as to chronicling impact.

2. Data Collection Methods

- Unstructured
- Case Study
- Observation

Description

Data collection in this planned program tends to be unstructured feedback from stakeholders, peers, and administrators, rather than formal pencil and paper evaluation. In the area of community based programs, joint OARDC and extension activities results in more formal surveys that usually address adoption of technologies such as new ditch technologies rather than actual research findings per se. Observations with recorded engineering/other physical, biological, and social data make up the bulk of data collection in this program. Annually, OARDC gathers individual faculty, program, and departmental data and measures against stated goals and objectives to provide another level of documenting outputs and outcomes.

V(A). Planned Program (Summary)

Program #6

1. Name of the Planned Program

Food Systems-OARDC Led

2. Brief summary about Planned Program

Food and food security are high priority items all across our nation and the world. To meet growing demand, food scientists continue to make advances in techniques and processes that improve the quality of food, expand food preservation, protect against pathogens, advance detection systems for identifying threats to food security, and increase functionality. Due to the complexity of food systems, a robust research and extension program is required to meet needs and contribute to a safe and secure food supply. This planned program emphasis is reflected in and is central to the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan that focuses on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas : (1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products. The programs impacts are far-reaching. For example, OARDC works with NASA to heat food and sterilize waste in space. Using ohmic heating, packaging containing electrodes has been developed allowing astronauts to enjoy a hot meal. The techniques are needed on a possible mission to Mars. A parallel study has resulted in a new way to peel tomatoes using very little lye-an environmental waste problem-and preserve the nutrient-rich peel for use in sauces and purees. Currently, more than 12 million tons of tomatoes nationwide are processed into tomato sauce, puree, paste, and whole and diced products. Ohio produces over 177,000 tons of processing tomatoes, valued at nearly $14 million annually. Human nutrition and health continue to be major focal areas for OARDC and OSU Extension. As baby boomers enter their retirement years, cancer and heart concerns grow, and obesity is listed as a national problem, each incremental improvement in health care will have a major impact on society. In nutraceuticals research, for example, OARDC scientists are working with medical researchers in a 'crop to clinic'; program to examine how phytochemicals in foods fight certain human health problems. Current research focuses on nutrients found in berries to determine if they can stop or slow some types of cancer. OARDC research is making food safer, lengthening its shelf life, and providing expertise to medical researchers and food companies on how to protect food from pathogens. Salmonellosis, for example, is a food-borne disease with 1.4 million cases nationwide with a $2.3 billion cost annually. Eggs are the primary source. OARDC scientists found that by treating whole shell eggs with a combination of ozone, mild heat, and slight pressure significantly reduced contamination in eggs without damaging their quality. Ohio is the second-largest egg producer in the country with production valued at well over $300 million annually. Salmonellosis can have tremendous negative economic impact in Ohio. Food technologies and processes that are being developed not only contribute to meeting today's demands but also are laying the ground work to help meet yet to be determined needs.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	45%		20%	
502	New and Improved Food Products	20%		15%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		10%	
701	Nutrient Composition of Food	0%		10%	
702	Requirements and Function of Nutrients and Other Food Components	15%		15%	
703	Nutrition Education and Behavior	0%		5%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.	0%		10%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	20%		15%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Advanced studies in systems related to food are critical to providing for the sustained and secure flow of food in the producer - processor - distributor - consumer chain. Assuring that all their interests are informed by the best food science available is an expectation of OARDC. Food science research by agricultural experiment stations and companion extension programs are mandatory to meet domestic demand and in provisioning food worldwide. Food science programs directly supports OARDC and OSU Extension's broader goals of production efficiency, economic viability, environmental stewardship, and social acceptability of technologies and products introduced. OARDC addresses direct needs of all their constituency groups by regularly interacting with them and understanding their needs. Food scientists interact with fellow research and extension units, and with organized groups of producers, processors, distributors, and consumers. Demand for their expertise, processes, and a product is high. Without a growing body of knowledge in this area to create plentiful, high quality, safe products for the food systems, opportunities will be missed and society will not be well served. With a sound body of literature, and a well-developed network of industrial partners, clientele, supporters, and companion agencies and organizations, including OSU Extension, OARDC is well positioned to continue to effect positive change in the science behind food systems. Effective research in this area requires modern laboratory facilities and access to industrial partners' facilities, as well as access to consumers who are the ultimate evaluators of the outcomes.. Faculty and staff in this program effectively provide the knowledge and technologies needed by stakeholders to inform production, processing, distribution, and consumer choices.

2. Scope of the Program

- In-State Research
- Multistate Research
- Multistate Integrated Research and Extension
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

A client oriented research and development program in the food sciences is critical to meeting society's overt and latent demands in this area. As we address problems and needs within our stakeholder communities, the organizations (OARDC and OSU Extension) become better prepared to take advantage of emerging opportunities or to more rapidly address problems within these areas. Other key assumptions are: the issues within this program have been identified by our stakeholder communities, and/or via the scientific literature, reflect the more important issues, and warrant allocation of resourcesl; the understanding of this planned program and how society utilizes and depends on the associated research is key to present and future decision-making in provisioning of food domestically and worldwide; all citizens directly benefit from a safe, secure, and plentiful food supply supported by an advanced research and extension program in this area; these lines of inquiry will provide necessary knowledge to inform human enterprises; food systems research and education are demands by society needed to meet current and future needs; and base federal funding will continue to be available and leveraged to support this planned program and the scientific staff who carry out the lines of inquiry noted within the knowledge areas for this program. Likewise it is assumed that the federal base funding will be leverage for continuing to attract state and extramural funds.

2. Ultimate goal(s) of this Program

Food processing research will: - advance the study and improvement of the quality, functionality, and preparation/preservation of food, including relevant methodologies, techniques, and processes. Food products research will: - provide the necessary research to improve and develop new foods; - advance research frontiers in food quality; and - contribute to the understanding and development of functional foods, including nutraceuticals. Food component research will: - grow fundamental knowledge about human nutritional requirements to foster human health and better understanding the relationship between foods consumed and physical and psychological impacts. Food safety research will: - expand knowledge pertaining to pathogens and the human food supply at the genetic, organism specific, food processing, and product distribution levels.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	11.2	0.0
2011	0.0	0.0	10.6	0.0
2012	0.0	0.0	10.1	0.0
2013	0.0	0.0	9.6	0.0
2014	0.0	0.0	9.1	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Activities within the Food Systems planned program will result in : -in print research based publications targeted to (a) specific stakeholder groups including industrial partners, (b) support publics such as fellow agencies, political entities, (c) targeted populations, and (d) the broader general public, including mass media releases; - peer-reviewed journal articles; - commercialized techniques; - non-commercialized techniques that are distributed to those in need without costs (e.g. enhanced preservation methods for home food canning); - limited number of patents; - consultation services and meetings with stakeholders and supporters; - facilitation of training programs/workshops for other scientist and for specific groups of stakeholders, including international visitors; and - planning meeting with advisory groups to communicate findings and plan new research.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• One-on-One Intervention • Demonstrations	• Web sites • Newsletters

3. Description of targeted audience

Targeted audiences are, but not limited to: - specific individuals or groups who have expressed a need for food processing and product information that is to be derived through new research, extracted from on-going research, or is derived from scientific literature; - fellow academic units that partner with food scientists to create systems and processes needed to support not only the research, but also the adoption of the research findings by stakeholders - fellow agencies or support organizations who will not only use the information but will also be brokers of that information, including embedding it into groups to encourage change; - populations who have not requested the information but will likely benefit from that information, e.g. persons who engage in home canning of food; - other scientists and scientific groups; - political entities; - extension personnel; - students from pre-school to post doctorate studies; - news organizations; and - business and industrial groups.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**1 **2012 :**0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	35	0	0
2011	35	0	0
2012	35	0	0
2013	35	0	0
2014	30	0	0

V(H). State Defined Outputs

1. Output Target

- peer-reviewed publications will be tracked

2010	2011	2012	2013	2014
35	35	35	35	30

- patents by number and who partnered/purchased/commercialized;

2010	2011	2012	2013	2014
0	1	0	0	0

- Number of graduate student completed

2010	2011	2012	2013	2014
33	33	33	33	0

V(I). State Defined Outcome

O. No	Outcome Name
1	Advance processing techniques, e.g. electrostatic coating, to achieve the desired traits requested by industrial partners, that are manifested in consumer demand studies, or that are novel technologies that may meet latent needs
2	Contribute to the advancement of food packaging technologies, e.g. ultrasonic sealing, controlled environment packaging, to the extent that, annually, the risk of contamination due to packaging is reduced measurably.
3	Participate in the creation of a standardized model and protocols for studying functional foods within five years for the purpose of providing consumers with more informed functional choices that are currently available
4	Advance the study of stacking functional foods that have a lower than expected societal demand (e.g. soy) with more desirable foods such as tomato products as a means of providing consumers with more access than is currently present.
5	Expand utilization of products with known functionality or nutraceutical value and give consumers greater informed consumer choice, including the bioavailability of the desire substance in the food, than they presently have.
6	Reduce health risk by releasing at least one major study each five years demonstrating nutritional health benefits, e.g. carotenoids and cataracts, anthocyanins and colon cancer or as a substitute for artificial dyes.
7	Reduce health risk by releasing at lest one major study each five years demonstrating negative nutritional side effects, fatty acids and obesity or obesity-related hepatic stealosis or prostate cancer.
8	Advance the understanding of the potential role of trace minerals such as the role of selenium in protection against breast cancer or copper's protecting against cardiovascular diseases to that extent society can make science–based choices.
9	Annually document a contribution regarding how to reduce food borne pathogens in the food supply chain.
10	Expand the knowledge base for contamination detection within packaged foods by developing or refining technologies such as magnetic resonance or infrared spectroscopy that will, within ten years, eliminate the problem.
11	- inform the process of collecting, storing, processing, and distributing waste products from plant and animal agriculture to the extent that there are demonstrated gains among multiple outcomes annually
12	Processing technology research such as pulse electronic field, high pressure, ohmic heating, and microwave will provide processors with a set of alternatives leading to efficiency and quality gains within economic realities annually.
13	Processing technology research will improve and optimize equipment and processing of food in such manner as meet consumer demand as or before that demand emerges.
14	Reduce through research and development the negative processing impacts on physio-chemical or molecular properties of food within varying parameters to make foods more acceptable and higher quality commensurate with demand.

Outcome #1

1. Outcome Target

Advance processing techniques, e.g. electrostatic coating, to achieve the desired traits requested by industrial partners, that are manifested in consumer demand studies, or that are novel technologies that may meet latent needs

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #2

1. Outcome Target

Contribute to the advancement of food packaging technologies, e.g. ultrasonic sealing, controlled environment packaging, to the extent that, annually, the risk of contamination due to packaging is reduced measurably.

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #3

1. Outcome Target

Participate in the creation of a standardized model and protocols for studying functional foods within five years for the purpose of providing consumers with more informed functional choices that are currently available

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	2	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components

- 703 - Nutrition Education and Behavior

Outcome #4

1. Outcome Target

Advance the study of stacking functional foods that have a lower than expected societal demand (e.g. soy) with more desirable foods such as tomato products as a means of providing consumers with more access than is currently present.

2. Outcome Type : Change in Action Outcome Measure

2010 : 0	**2011 :** 1	**2012 :** 0	**2013 :** 0	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #5

1. Outcome Target

Expand utilization of products with known functionality or nutraceutical value and give consumers greater informed consumer choice, including the bioavailability of the desire substance in the food, than they presently have.

2. Outcome Type : Change in Action Outcome Measure

2010 : 1	**2011 :** 1	**2012 :** 2	**2013 :** 2	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #6

1. Outcome Target

Reduce health risk by releasing at least one major study each five years demonstrating nutritional health benefits, e.g. carotenoids and cataracts, anthocyanins and colon cancer or as a substitute for artificial dyes.

2. Outcome Type : Change in Action Outcome Measure

2010 :0 **2011 :** 0 **2012 :** 1 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

Outcome #7

1. Outcome Target

Reduce health risk by releasing at lest one major study each five years demonstrating negative nutritional side effects, fatty acids and obesity or obesity-related hepatic stealosis or prostate cancer.

2. Outcome Type : Change in Action Outcome Measure

2010 :0 **2011 :** 0 **2012 :** 1 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

Outcome #8

1. Outcome Target

Advance the understanding of the potential role of trace minerals such as the role of selenium in protection against breast cancer or copper's protecting against cardiovascular diseases to that extent society can make science–based choices.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :1 **2011 :** 0 **2012 :** 1 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

Outcome #9

1. Outcome Target

Annually document a contribution regarding how to reduce food borne pathogens in the food supply chain.

2. Outcome Type : Change in Action Outcome Measure

2010 : 1	**2011 :** 1	**2012 :** 1	**2013 :** 1	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #10

1. Outcome Target

Expand the knowledge base for contamination detection within packaged foods by developing or refining technologies such as magnetic resonance or infrared spectroscopy that will, within ten years, eliminate the problem.

2. Outcome Type : Change in Action Outcome Measure

2010 : 0	**2011 :** 1	**2012 :** 0	**2013 :** 0	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #11

1. Outcome Target

- inform the process of collecting, storing, processing, and distributing waste products from plant and animal agriculture to the extent that there are demonstrated gains among multiple outcomes annually

2. Outcome Type : Change in Action Outcome Measure

2010 : 1	**2011 :** 1	**2012 :** 1	**2013 :** 1	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #12

1. Outcome Target

Processing technology research such as pulse electronic field, high pressure, ohmic heating, and microwave will provide processors with a set of alternatives leading to efficiency and quality gains within economic realities annually.

2. Outcome Type : Change in Action Outcome Measure

2010 : 1	2011 : 1	2012 : 1	2013 : 1	2014 : 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #13

1. Outcome Target

Processing technology research will improve and optimize equipment and processing of food in such manner as meet consumer demand as or before that demand emerges.

2. Outcome Type : Change in Action Outcome Measure

2010 : 1	2011 : 1	2012 : 1	2013 : 1	2014 : 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #14

1. Outcome Target

Reduce through research and development the negative processing impacts on physio-chemical or molecular properties of food within varying parameters to make foods more acceptable and higher quality commensurate with demand.

2. Outcome Type : Change in Action Outcome Measure

2010 : 1	2011 : 0	2012 : 1	2013 : 0	2014 : 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 701 - Nutrient Composition of Food

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Competing Public priorities
- Populations changes (immigration,new cultural groupings,etc.)
- Economy
- Government Regulations
- Competing Programmatic Challenges
- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes

Description

Climatic extremes to the extent they impact supply, economic shifts such as to cost of processing equipment or production costs, public policy shifts, regulations, and shifts in demand will be impact outcomes. Food trends/fades, food advertising agendas, new biological and chemical threats, and public nutritional health related issues are also external factors that effect outcomes. Formative evaluation though can lessen the burden by seeking feedback throughout the life of the program. Internal factors such as the availability of base funding to ensure a core faculty and staff, availability of extramural funds, and programmatic demands that often exceed resources, all may affect outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention
- Before-After (before and after program)
- Case Study
- During (during program)

Description

Experiment station evaluation begins with HATCH project reviews and approval, with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provide a more summative assessment. Pre-planning with stakeholders of research continues to provide a strong bases for framing projects that have potential of adoption; with such approach outcomes become more easily identified. Research projects and clusters of research projects lend themselves well to case studies in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Food scientists employ extensive formative evaluation in product design and testing. Most of the analysis leads either faculty, peers, or the research team themselves to investigate outcomes and impacts by asking so what? Experiment Station reviews, as do stakeholders who consume the food products and those who provide extramural funding, are more demanding as to chronicling impact.

2. Data Collection Methods

- Structured
- Unstructured
- Whole population
- Sampling
- On-Site
- Case Study

Description

Data collection in this planned program involves both structured, e.g. in taste test, and unstructured input/feedback from

stakeholders, support groups, partners such industrial groups, peers, and administrators. Focus group studies, as well as participant observation, are employed. Processors and consumers tend to make up the majority of the study populations. Observations and recording of physical, chemical,social, and biological data are most important to evaluating process and technique development, and consumer preference. Annually, OARDC gathers individual faculty, program, and departmental data and measures against stated goals and objectives to provide another level of documenting outputs and outcomes.

V(A). Planned Program (Summary)

Program #7

1. Name of the Planned Program

Bio-based Non-Food Value Chains-OARDC Led

2. Brief summary about Planned Program

The United States is highly dependent on crude oil imports to supplement its domestic sources for the creation of energy and other petroleum based products. Greater energy and economic independence are now national concerns. Our nation has become one of the most prosperous in the world in great part because of its ability to utilize its natural resource base to build the economy as the nation expanded from east to west. As the nation grew, so did the quantity, quality, and efficiency of agricultural output, feeding the domestic population and then the world. Food, agriculture, and natural resources continue to underpin national well-being. At the same time though, food and traditional fiber crops alone do not take full advantage of the economic and social good opportunities that are available to agriculture and natural resource stakeholders. To that end, OARDC and OSU Extension, and multiple partners, are exploring new opportunities for adding value to biobased products, beyond traditional food and fiber markets, through commercialization of new products. This planned program is one of three signature areas identified in the College of Food, Agricultural and Environmental Science 2008 Strategic Plan. In great part these products are demanded as a substitutes for certain petroleum based products due to the rising costs of such and the eventuality of declining supplies of crude oil. Two major thrust areas are now being advanced- -biobased fuels and biopolymer type products. Ohio's biomass, rich in agricultural, plant fiber, and food- processing wastes, is capable of producing at least 65 percent of Ohio's residential electricity needs. In an effort to harness the power of the state's abundant biomass and provide alternatives to record-high energy prices, OARDC is establishing a pioneering bio-energy research facility on its Wooster, Ohio campus. Funded by public and private monies, the facility's aim is to optimize different technologies, such as anaerobic digestion and fuel cells, for the biological conversion of biomass into scalable energy systems. The facility will also offer an industrial testing platform to verify the energy potential of various wastes from different industries. OARDC also informs ethanol development programs. Additionally, OARDC, OSU Extension, and their external partners have created the Ohio BioProducts Innovation Center (OBIC). OBIC will develop/identify bio-resource materials and chemical conversion technologies to generate industrial products such as lubricants and adhesives from raw materials grown in the state, including corn and soybeans. Combining development of unique germplasms (to be carried out within the Plant Systems Planned Program) with novel chemical-synthesis technologies, oils, carbohydrates, and proteins will produce specialty chemicals targeted for use in a range of bioproduct applications. Ultimately, OBIC's 'cell-to-sell' management plan links Ohio's research and commercial partners to focus academic research on market-based problems identified by business partners, which in turn lead to the commercialization of high-value industrial bioproducts and manufacturing solutions. Given that the global petrochemical industry is approximately 2 trillion annually, and biobased products will continue to fill the gaps in this market, as well as create new markets. Also given the demand by producers, industry and consumers, and the breadth of partnerships already established, biobased research is expected to be a major long-term research and outreach foci in Ohio and our organization. Combining Ohio's largest industry, food and agriculture, with Ohio's second largest industry, polymers, to take advantage of new industrial platforms in biobased products research and manufacturing will yield substantial economic activity and job creation. Thus this program is central to the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan that focuses on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas : (1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
511	New and Improved Non-Food Products and Processes	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Demand for alternative and value added uses for Ohio's renewable bio-based resources is strong. OARDC's role, in partnership with other research organization such as Battelle, is to inform the process. This line of research by agricultural experiment stations and companion extension programs are mandatory to meet domestic demand for new and innovative non-food products. Such research directly supports OARDC and OSU Extension's broader goals of production efficiency, economic viability, environmental stewardship, and social acceptability of technologies and products introduced. We addresses direct needs of all their constituency groups by regularly interacting with them and understanding their needs. Scientists working in biobased products have formed strong partnerships with industry to ensure that research informs development of commercialized products and processes that are in demand by some consumer group(s). Job growth is also most important. Without a growing body of knowledge in this area to create plentiful supply of new products, opportunities will be missed and society will not be well served. With a growing body of literature, and a well-developed network of industrial partners, clientele, supporters, and companion agencies and organizations, including OSU Extension, OARDC is well positioned to continue to effect positive change in adding value to bio-based non-food products through a well-planned research program.

2. Scope of the Program

- In-State Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Bio-based product research is a client-oriented program designed to meet society's overt and latent needs for alternative products and processes. As we address problems and needs within our stakeholder communities, the organization (OARDC and OSU Extension) become better prepared to take advantage of emerging opportunities or to more rapidly address problems within these areas. Other key assumptions are: the issues within this program have been identified by our stakeholder business partners, and/or via a growing body of scientific literature, reflect the more important issues in terms of priorities of stakeholders, and warrants allocation of resources; the understanding of this planned program and how society utilizes and depends on the associated research is key to present and future decision-making in provisioning of alternatives for some petroleum-based products; all citizens directly benefit from a secure and plentiful supply of non-petroleum based products and processes this program will generate; the program is supported by an advanced research and extension program and is required for commercialized products to emerge; these lines of inquiry are necessary to inform human enterprises; bio-based non-food research and extension education are demanded by society and required to meet current and future needs of society, especially as we move towards energy independence and as crude oil reserves decline; and base federal funding will continue to be available and leveraged to support this planned program and the scientific staff who carry out the lines of inquiry noted within the knowledge areas for this program. Likewise it is assumed that the federal base funding will be leverage for continuing to attract state and extramural funds.

2. Ultimate goal(s) of this Program

Goals in this planned program are designed to participate in providing the biological, chemical, physical, engineering, and social research necessary build a system for new and improved non-food processes and products: through the creation of partnership networks that involves all stakeholders at the appropriate point in the process necessary to make these research efforts true partnerships with fully vested partners; to meet societies growing demand for alternatives to petroleum based products where demands, and economic and technological realities, warrant; to meet yet undetermined needs of society as crude oil and natural gas supplies decline; that effectively utilizes Ohio and the region's plentiful supply of biomass, including waste steam materials, that has conversion potential; and that effectively utilizes agriculture's production capacity to produce plants that have the desired attributes required by new biobased industries for manufacturing alternative products.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	1.5	0.0
2011	0.0	0.0	1.4	0.0
2012	0.0	0.0	1.3	0.0
2013	0.0	0.0	1.2	0.0
2014	0.0	0.0	1.1	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Activities within bio-based non-food planned program will yield: - commercialized products and processes (primary focus); - number of patents; - planning meeting with advisory groups to communicate findings and plan new research; - online and in print research –based publications targeted to (a) specific stakeholder groups including industrial partners, (b) support publics such as fellow agencies, political entities, (c) targeted populations, and (d) the broader general public, including mass media releases; - peer-reviewed journal articles; - non-commercialized techniques that are distributed to those in need without costs; - consultation services and meetings with stakeholders and supporters; and - facilitation of training programs/workshops for other scientist and for specific groups of stakeholders, including international visitors.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• One-on-One Intervention	• Web sites

3. Description of targeted audience

Targeted audiences are, but are not limited to: - business and industry that have expressed a need for biobased product information that is to be derived through new research, extracted from on-going research, or is derived from scientific literature; - other stakeholders, with particular focus on consumers; - fellow academic units that partner with program scientists to create systems and processes needed to support not only the research, but also the adoption of the research findings by industrial partners; - fellow agencies or support organizations who will not only use the information but will also be brokers of that information, including embedding it into groups to encourage change; - populations who have not requested the information but will likely benefit from that information, e.g. general public; - other scientists and scientific groups; - political entities; - extension personnel; - students from middle school to post doctorate studies; and - news organizations.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 1 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	6	0	0
2011	6	0	0
2012	6	0	0
2013	6	0	0
2014	6	0	0

V(H). State Defined Outputs

1. Output Target

- Number of patents will be tracked

  2010 0 **2011** 0 **2012 :**1 **2013** 0 **2014** 0

- Number of peer-reviewed journal articles will be tracked

  2010 6 **2011** 6 **2012 :**6 **2013** 6 **2014** 6

- Number of graduate students completed.

  2010 0 **2011** 2 **2012 :**2 **2013** 1 **2014** 0

V(I). State Defined Outcome

O. No	Outcome Name
1	Programs in this area will develop strategies to engage and include producers, industrial partners, and consumers groups over a 5-year period resulting in effective leadership-oriented partnerships.
2	The program will build scientist/stakeholder cores to guide/provide biological, chemical, physical, engineering, and social research necessary to create new and improved processes and products commensurate with demand.
3	Annually the program will report, in conjunction with industrial partners, non-proprietary research gains made to the consuming public to garner interest in adoption of new products and processes when released.
4	Maintain an ongoing needs assessment program to identify yet to be determined needs of society for bio-based products as crude oil and natural gas supplies decline, as well as assessing impacts from other external factors.
5	By 2011,and one each five years thereafter, the program will contribute at least one alternative to a petroleum-based product or process that meets client needs with an acceptable point of purchase price.
6	Support, though research, the building of biobased development that annually, beginning in 2011, utilizes Ohio and the region's plentiful supply of biomass, including waste steam materials in such manner as to improve the economy.
7	Support, though research, the building of biobased development that annually, beginning in 2011, effectively utilizes agriculture's production capacity to produce plants that have the desired attributes for manufacturing.

Outcome #1

1. Outcome Target

Programs in this area will develop strategies to engage and include producers, industrial partners, and consumers groups over a 5-year period resulting in effective leadership-oriented partnerships.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 511 - New and Improved Non-Food Products and Processes

Outcome #2

1. Outcome Target

The program will build scientist/stakeholder cores to guide/provide biological, chemical, physical, engineering, and social research necessary to create new and improved processes and products commensurate with demand.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 0	**2012 :** 1	**2013 :**0	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 511 - New and Improved Non-Food Products and Processes

Outcome #3

1. Outcome Target

Annually the program will report, in conjunction with industrial partners, non-proprietary research gains made to the consuming public to garner interest in adoption of new products and processes when released.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 511 - New and Improved Non-Food Products and Processes

Outcome #4

1. Outcome Target

Maintain an ongoing needs assessment program to identify yet to be determined needs of society for bio-based products as crude oil and natural gas supplies decline, as well as assessing impacts from other external factors.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 511 - New and Improved Non-Food Products and Processes

Outcome #5

1. Outcome Target

By 2011,and one each five years thereafter, the program will contribute at least one alternative to a petroleum-based product or process that meets client needs with an acceptable point of purchase price.

2. Outcome Type : Change in Action Outcome Measure

2010 :0	**2011 :** 1	**2012 :** 0	**2013** :0	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 511 - New and Improved Non-Food Products and Processes

Outcome #6

1. Outcome Target

Support, though research, the building of biobased development that annually, beginning in 2011, utilizes Ohio and the region's plentiful supply of biomass, including waste steam materials in such manner as to improve the economy.

2. Outcome Type : Change in Action Outcome Measure

2010 :0	**2011 :** 1	**2012 :** 0	**2013** :0	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 511 - New and Improved Non-Food Products and Processes

Outcome #7

1. Outcome Target

Support, though research, the building of biobased development that annually, beginning in 2011, effectively utilizes agriculture's production capacity to produce plants that have the desired attributes for manufacturing.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :0	**2011 :** 1	**2012 :** 0	**2013** :0	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 511 - New and Improved Non-Food Products and Processes

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Natural Disasters (drought,weather extremes,etc.)
- Government Regulations
- Populations changes (immigration,new cultural groupings,etc.)
- Economy
- Competing Programmatic Challenges
- Other (Supply and cost of crude oil)

Description

Supply, costs, and demand for petroleum products, and shifting projections of world reserves of crude oil and natural gas, as well as U.S. access to these, are critical external factors. Availability of biobased raw products in Ohio, and regionally, and at what costs are external factors. Economic shifts such as cost of processing equipment or production costs, public policy shifts, regulations, and shifts in demand will be impact outcomes. Product trends/fades, advertising agendas, and public perceptions as to petroleum reserves are also external factors that effect outcomes. Internal factors such as the availability of base funding to ensure a core faculty and staff, availability of extramural funds, and programmatic demands that often exceed resources, all may affect outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Before-After (before and after program)
- Case Study

Description

Evaluation in this area, while following a pattern similar to other projects at OARDC, will be highly oriented to industrial partners and supporters. Formative and summative evaluation are/will be regularly palnned in that the goal is to as rapidly as feasible commercialize products to meet demand. Experiment station evaluation, per se, begins with HATCH project reviews and approval, with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provide a more summative assessment. Pre-planning with stakeholders of research continues to provide strong bases for framing all projects; with such approach outcomes become more easily identified. Research projects and clusters of research projects lend themselves well to case studies and meta analysis in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Program scientists employ extensive formative evaluation in product design and testing. Most of the analysis leads either faculty, peers, or the total research team to investigate outcomes and impacts by asking
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2. Data Collection Methods

- Observation
- Structured
- Unstructured
- Case Study

Description

Data collection in this planned program involves both structured and unstructured input/feedback from stakeholders, support groups, peers, and administrators. The most significant point of data collection though will be gathering appropriate data for an analysis of the processes and scientific findings that led to product creation. It is here that case studies and meta analysis, as

well as unstructured formative evaluation, will play the greatest role. Focus group studies, as well as participant observation, are employed. Consumer data at all levels of the program will be necessary in that products must meet customer needs. Observations and recording of relevant physical, chemical, biological, engineering, and social data are most important to evaluating process and product development. Annually, OARDC gathers individual faculty, program, and departmental data and measures against stated goals and objectives to provide another level of documenting outputs and outcomes.

V(A). Planned Program (Summary)

Program #8

1. Name of the Planned Program

Human Health and Safety-OARDC Led

2. Brief summary about Planned Program

Agricultural crops (both plant and animal), their residues, renewable natural resources, and the related manufacturing processes and products, all have human health and safety risks associated with them. The human health and safety planned program is central to the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan that focuses on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas : (1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products. This planned program is focused, through aggressive research and extension programming, on reducing safety hazards within our sectors. In 2008 the primary faculty group working in OARDC's food and animal health program wrote: emerging pathogens, zoonoses, and microbial contamination of food and the environment threaten agricultural productivity, sustainability, and public health worldwide. Our misson is to protect and enhance animal and public health through research, education and outreach; and to support the animal industries in economically producing safe, wholesome food in an environmentally and socially responsible manner. Emerging and re-emerging zoonotic diseases, for example, are considered an important threat to public health. One group of scientist, in conjunction with a number of other colleges studies the diagnosis, epidemiology, pathogenesis, and control of zoonotic diseases in the animal reservoir and the environment. Development of new sensitive tests for astroviruses facilitates the diagnosis of the disease, epidemiology of the infection and a variety of other studies. Studies are also being initiated on emerging animal and plant diseases such as avian influenza viruses, soybean rust, and sudden oak death. While these are emerging diseases that threaten American agriculture, they may also harbor a possible threat to public health. Agriculture leads the nation in occupational unintentional-injury death rates in the U. S. OARDC research tracks the agents, nature of the fatal incident, and demographics. Surveillance of agricultural work related fatalities are necessary to guide both present and future research and outreach initiatives. Surveillance of agricultural work related fatalities provide guidance to direct both present and future research and outreach initiatives. Gathered agricultural fatal injury data are being incorporated into a central database; analyzed on a yearly basis; and trends determined over a five-year period. Data are being posted to a website for use by county extension agents and other interested professionals. Data and emerging trends appear in Ohio research reports. Many Ohioans suffer and sometimes die in response to allergens produced by arthropods, such as dust mites. Asthma and allergy patients need solutions other than drugs. The goal is to develop and test economically efficient, socially acceptable, and environmentally benign strategies for controlling allergen producers. Some 10.3% of adults in Ohio have asthma, which is greater than any other chronic disease. The percentage of children suffering from asthma approaches 15% in some areas with minority and lower income families suffering the most. In the US, about 5,000 people die from asthma annually. In 2001, $760,000,000 was spent to treat asthma (hospitalizations) patients in Ohio and the costs continue to rise at an alarming rate. Because asthma is a chronic disease it is one of the most expensive to manage. Thus, health care organizations are eager for novel developments in reducing or preventing asthma. Our research offers a solution in integrated pest management of allergen producers as more than half of the asthma sufferers are sensitive to indoor allergens, especially dust mites. IN addition, studies that address overall human health, health risk factors and healthy lifestyles are found in this planned program.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
721	Insects and Other Pests Affecting Humans	25%		20%	
722	Zoonotic Diseases and Parasites Affecting Humans	50%		40%	
723	Hazards to Human Health and Safety	25%		25%	
724	Healthy Lifestyle	0%		15%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Providing for human health and safety within our related industries and among producers, processors, distributors, and consumers, using the best science and extension programs available, is an expectation. The science behind advancing human health and safety, including healthy lifestyles, has both personal consequences as well as importance to insuring a safe, stable society and protecting the economy from unnecessary losses. OARDC and OSU Extension addresses direct needs of their constituency groups by regularly interacting with them and understanding their needs. These programs directly support OARDC's broader goals of production efficiency, economic viability, environmental stewardship, and social acceptability by better protecting the workforce who produces, and the consumers who buy, the technologies and products from the agriculture and natural resource sectors. Without a growing body of knowledge to help protect society, opportunities will be missed for social and economic security, and society will not be well served. OARDC and OSU Extension are well positioned to continue to effect positive change in this planned program. Effective research requires a mixture of laboratory, in-home, and on-farm research to maximize knowledge. Emerging threats now demand planning of more advanced facilities such as a biosecurity lab, particularly needed as the threats prevail from terrorists. To meet growing demand of better human safety, scientists continue to make advances in techniques and processes that advance safety from both accidents and from exposure. Due to the complexity of the problem, research and extension programs are integrated in multiple academic departments across multiple colleges at Ohio State University.

2. Scope of the Program

- In-State Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

A client oriented research, development and outreach program in the human health and safety is critical to meeting society's overt and latent needs in this area. As we address problems and needs within our stakeholder communities, the organization (OARDC and OSU Extension) become better prepared to take advantage of emerging opportunities or to more rapidly address these problems. Other key assumptions are: The issues within this program have been identified by our stakeholder communities, and/or via the scientific literature, reflect the more important issues, and warrant allocation of resources; The understanding of this planned program and how society utilizes and depends on the safety research is key to present and future decision-making in provisioning for society domestically and worldwide; All citizens directly benefit from advanced human safety research and extension programs; These lines of inquiry are necessary to inform human enterprises. Such research and education efforts are demanded by society to meet current and future needs.

2. Ultimate goal(s) of this Program

Human health and safety research will: - advance the study of insects, ticks, and mites to protect human health, including

methods of control. Human health and safety research will: - seek to better understand the means and methods related to transmission of zoonotic diseases to humans, including prevention; and - grow fundamental and applied knowledge as to animal reservoirs for zoonotics. Human health and safety research will: - increase the understanding and mitigation of hazards to human health related to accidents, exposure to, and risks within the agriculture and natural resource sectors; - to increase knowledge regarding human health and healthy lifestyles.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	1.8	0.0
2011	0.0	0.0	1.7	0.0
2012	0.0	0.0	1.6	0.0
2013	0.0	0.0	1.5	0.0
2014	0.0	0.0	1.4	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Activities within human health and safety planned program a will yield : -in print research based publications targeted to (a) specific stakeholder groups including industrial partners, (b) support publics such as fellow agencies, political entities, (c) targeted populations, and (d) the broader general public; - peer-reviewed journal articles; commercialized techniques; non-commercialized techniques that are distributed to those in need without costs; limited number of patents; consultation services and meetings with stakeholders and supporters; facilitation of training programs/workshops for other scientist and for specific groups of stakeholders, including international visitors; and planning meeting with advisory groups to communicate findings and plan new research.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• One-on-One Intervention • Demonstrations	• Newsletters • Web sites

3. Description of targeted audience

Targeted audiences are, but are not limited to: - specific individuals or groups who have expressed a need for health and safety information that is to be derived through new research, extracted from on-going research, or is derived from scientific literature; -fellow academic units that depend on scientists in this program for support information and for new health and safety technologies and approaches/measures fellow agencies or support organizations who will not only use the information but will also extend that information; - populations who have not requested the information but will likely benefit from that information; other scientists and scientific groups; political entities; extension personnel; students from pre-school to post doctorate studies; news organizations; and business and industrial groups.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 : 0 **2011 :** 0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	18	0	0
2011	18	0	0
2012	18	0	0
2013	18	0	0
2014	35	0	0

V(H). State Defined Outputs

1. Output Target

- Peer-reviewed publications will be tracked

  2010 : 18 **2011 :** 18 **2012 :** 18 **2013 :** 18 **2014 :** 35

- Patents by number and who partnered/purchased/commercialized will be documented.

  2010 : 0 **2011 :** 0 **2012 :** 0 **2013 :** 0 **2014 :** 0

- Number of graduate students completed

  2010 : 10 **2011 :** 10 **2012 :** 10 **2013 :** 10 **2014 :** 0

V(I). State Defined Outcome

O. No	Outcome Name
1	Annually release studies on insects, ticks, and mites to protect human health that will provide a set of alternatives leading to health gains with lowered risks, and within economic realities, for the affected populations.
2	Advance the understanding of means and methods related to transmission of zoonotic diseases to humans, including prevention, that meets consumer demand/health threat, as or before such emerges.
3	Reduce through research, development, and outreach the negative impact of farm-, recreation-, or industry-related accidents within agriculture and natural resources.
4	Reduce through research, development, and outreach the exposure to biohazards, pathogens, and similar to the extent that annually such are reduced per capita with an overall time and economic savings to those who may be affected.
5	Reduce health risk by releasing at least one major study each five years demonstrating techniques, procedures, or products that lessen the chance of contacting, or the impact if contacted, zoonotic diseases.
6	Reduce safety risk by releasing at least one major study to either manufacturers and/ or consumers that will reduce or prevent work or play related accidents every three years.
7	create a growing base of knowledge that supports improving human health as it relates to food, environment, and lifestyle

Outcome #1

1. Outcome Target

Annually release studies on insects, ticks, and mites to protect human health that will provide a set of alternatives leading to health gains with lowered risks, and within economic realities, for the affected populations.

2. Outcome Type : Change in Action Outcome Measure

2010 : 1	**2011 :** 1	**2012 :** 1	**2013 :** 1	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 721 - Insects and Other Pests Affecting Humans
- 722 - Zoonotic Diseases and Parasites Affecting Humans

Outcome #2

1. Outcome Target

Advance the understanding of means and methods related to transmission of zoonotic diseases to humans, including prevention, that meets consumer demand/health threat, as or before such emerges.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 0	**2011 :** 0	**2012 :** 1	**2013 :** 0	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 721 - Insects and Other Pests Affecting Humans
- 722 - Zoonotic Diseases and Parasites Affecting Humans

Outcome #3

1. Outcome Target

Reduce through research, development, and outreach the negative impact of farm-, recreation-, or industry-related accidents within agriculture and natural resources.

2. Outcome Type : Change in Action Outcome Measure

2010 : 2	**2011 :** 3	**2012 :** 2	**2013 :** 1	**2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety

Outcome #4

1. Outcome Target

Reduce through research, development, and outreach the exposure to biohazards, pathogens, and similar to the extent that annually such are reduced per capita with an overall time and economic savings to those who may be affected.

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	2	0	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety
- 724 - Healthy Lifestyle

Outcome #5

1. Outcome Target

Reduce health risk by releasing at least one major study each five years demonstrating techniques, procedures, or products that lessen the chance of contacting, or the impact if contacted, zoonotic diseases.

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
0	1	0	0	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 721 - Insects and Other Pests Affecting Humans
- 722 - Zoonotic Diseases and Parasites Affecting Humans

Outcome #6

1. Outcome Target

Reduce safety risk by releasing at least one major study to either manufacturers and/ or consumers that will reduce or prevent work or play related accidents every three years.

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
0	0	1	0	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety

Outcome #7

1. Outcome Target

create a growing base of knowledge that supports improving human health as it relates to food, environment, and lifestyle

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 721 - Insects and Other Pests Affecting Humans
- 722 - Zoonotic Diseases and Parasites Affecting Humans

- 723 - Hazards to Human Health and Safety
- 724 - Healthy Lifestyle

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Government Regulations
- Other (Equipment design)
- Economy
- Populations changes (immigration,new cultural groupings,etc.)
- Natural Disasters (drought,weather extremes,etc.)
- Public Policy changes
- Competing Public priorities
- Appropriations changes
- Competing Programmatic Challenges

Description

Certain weather conditions play a major role in creating unsafe working conditions and for encouraging the growth and spread of pests and diseases that can be transmitted to humans. Shifts in economy can impact manufacturers abilities to attend to or government responsiveness to human health and safety. Within this program area public monies, and the fluctuations in appropriations of such, have dramatic effect on human safety, as do levels of regulations. Likewise public policy and the publics priorities and perceptions, especially regarding risks, are major external factors impacting this program. Priority of this research for limited dollars and the resulting competition impact the extent of research that can be carried out. Other factor is migrant populations entering the workforce without fully understanding the risks. New populations who have recently immigrated into the area, often do not understand risk and are subjected to injury or disease because of uninformed choices. Even items such safety equipment or safety protocols as to acceptable levels of public exposure to certain zoonotic diseases are major external factors. Likewise public willingness to learn safety procedures in terms of equipment, pests, or zoonotic disease threats are factors that are beyond the researchers control. Often times formative evaluation though can lessen the impact of externalities by seeking feedback throughout the life of the program. Internal factors such as the availability of base funding to ensure a core faculty and staff, availability of extramural funds, and programmatic demands that often exceed resources, all may affect outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Before-After (before and after program)

Description

Experiment station evaluation begins with HATCH project reviews and approval, with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provide a more summative assessment. Pre-planning with stakeholders of health and safety research continues to provide strong bases for framing projects that have potential of adoption; with such approach outcomes become more easily identified. Research projects and clusters of research projects lend themselves well to case studies in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Analysis of secondary data, e.g. accident data, medical records, is a primary source of data. Also effective analysis leads either faculty, peers, or the research team themselves to investigate outcomes and impacts by asking so what? Experiment Station reviews, as do stakeholders with health and safety concerns, and those who provide extramural funding, are becoming more demanding as to chronicling impact.

2. Data Collection Methods

- Structured
- Sampling
- Other (field tests of equipment)
- Observation
- Case Study
- Unstructured

Description

Data collection in this planned program involves both structured, e.g. systematic sampling, and unstructured input/feedback from stakeholders, support groups, partners such industrial groups, peers, and administrators. Focus group studies, as well as case studies, are employed. Manufacturers and consumers tend to make up the majority of the study populations. Observations and recording of physical, chemical, sociological, and biological data are most important to evaluating process and technique development. Medical records are key secondary sources of information when they can be accessed. Annually, OARDC gathers individual faculty, program, and departmental data and measures against stated goals and objectives to provide another level of documenting outputs and outcomes.

V(A). Planned Program (Summary)

Program #9

1. Name of the Planned Program

Agricultural, Environmental, and Development Economics-OARDC Led

2. Brief summary about Planned Program

The Agricultural, Environmental, and Development Economics Planned Program supports OARDC and OSU Extension's full range of planned programs and in meeting the needs of our stakeholders. In 2008 the faulty group leading this research defined their mission as: to generate knowledge and disseminate impartial information through application of economic and business principles to the challenges of agriculture, the food system, the environment, and economic development. This planned program is central to the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan that focuses on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas :(1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products. This program contributes to both basic and applied understandings within our home College's four-element paradigm-production efficiency, economic viability through value added, social acceptably of our contributions, and environmental compatibility of products and practices emanating from our planned programs. Stakeholder demand for knowledge regarding production economics, management strategies, and associated business related information is high as would be expected in a state with an 90 plus billion dollar agriculture sector. Without a sound research and extension program to inform production, business management, and other financial aspects, Ohio's 90 billion dollar food and agricultural industry would be at risk. Understanding of market economics, because of both traditional market forces and the new global economy, are more critical than ever as producers, processors, and distributors factor in the multiple forces that govern the business risks they take and the decisions they make. Strong stakeholder communication has provided those conducting research and extension in this program area a sound understanding of stakeholder needs. The food and fiber industry demands a robust natural resource base and a sustained flow of environmental services. Understanding the multiple economic factors that govern the wise use and sustainability of these resources and services is addressed under this program. From carbon trading to the economics of river restoration, knowledge generated in this area of the planned program has a high demand statewide, nationally, and internationally. The new world economy has added emphasis to this program's long history of international trade and development research. Ohio has both strong export and import markets for agriculture products, thus the need to allocate resources to advance the understanding of and practices within international efforts. Generating sound applied knowledge, and providing our stakeholders the best science based information available, require that science to be rooted in strong theory and methodology. To that end this program devotes a portion of its effort to advancing theoretical understandings and improved research methodologies. Advances in areas such as experimental economics are supporting research that helps reduce risk and improve profitability. Understanding the economics and social impacts of domestic programs and polices emanating from government is necessary to aid stakeholders in their decision making and to inform those who make policy as to impact or how to create polices that will yield the desired impact. Policy research ranges from environmental policy and land use to many aspects of price and income related policy. Economic inquiry, whether focused on profitability or on maintaining environmental services and associated amenity values, has a long history of providing the science behind the agriculture scene.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management	20%		10%	
602	Business Management, Finance, and Taxation	20%		10%	
603	Market Economics	15%		15%	
604	Marketing and Distribution Practices	0%		5%	
605	Natural Resource and Environmental Economics	15%		10%	
606	International Trade and Development	15%		5%	
607	Consumer Economics	0%		5%	
608	Community Resource Planning and Development	0%		5%	
609	Economic Theory and Methods	0%		20%	
610	Domestic Policy Analysis	15%		10%	
611	Foreign Policy and Programs	0%		5%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

An effective and efficient food, agriculture and natural resource industry requires generation and application of economic theory, policy, and practice. Eleven million people in a relative small state, with high rates of agriculture sector activity, from production to processing to consumption, and major land use/ urban interface issues, yield complex social and business climates. As these are coupled with shifting market forces and new economies, the research output and associated impacts from this program are pivotal to success. How well the use of capital, human capital, and other resources are understood will greatly influence the long-term outcomes and impacts of all planned programs within this Plan of Work. Agriculture experiment stations and extension programs, especially in a state such as Ohio, have a heightened obligation to understand the multiple dimensions of economics to increase both quality and quantity of products and services that are important to the citizens of Ohio. Individuals, families, and communities, as well as businesses, related agencies, etc. involved in the food and fiber industry need the research information that is generated through this program. Programs regarding how people sustain their enterprises within the

rural landscape, as well as how they learn, make decisions, and organize for these enterprises, both personal and corporate, are important from an applied perspective. Work in these knowledge areas is well and grounded theoretically with an extensive peer-reviewed literature base. The challenges lie in applying what is known to new and emerging issues and generating lines of research as needed to ensure that the citizens of Ohio's needs are met and that economies do not become an impediment to food and fiber production.

2. Scope of the Program

- Integrated Research and Extension
- Multistate Integrated Research and Extension
- Multistate Research
- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Understanding economics from both basic and applied perspective of how agriculture related human enterprises function and are maintained is important. Knowledge of economics is prerequisite to maintaining the human enterprise of agriculture. As the economic problems and needs within these stakeholder communities are addressed, the organization (OARDC and OSU Extension) becomes better prepared to take advantage of emerging opportunities or to more rapidly address problems within these areas. Other key assumptions are: the economic issues within this program have been identified by our stakeholder communities, and/or via the scientific literature, and reflect the more important issues, thus warranting allocation of resources; the understanding of this planned program and how society utilizes and depends on the associated research is key to present and future decision-making in provisioning of food, fiber, and environmental services; to a greater or lesser extent all citizens at some point in their life directly benefit from this area of inquiry; these lines of inquiry will provide necessary information to inform human enterprises while protecting both the individual and corporate estate; this is an important area of study for society and will be utilized for enhanced decision-making by stakeholders and all citizens; research and education related to the multiple facets of economics are demanded by society to meet current and future needs; these economic issues are manifested at some community level and those stakeholders who are most vested will become involved; others involvement will be limited yet they will reap the benefits of a sound basic and applied understanding of this research and extension program; and base federal funding will continue to be available and leveraged to support this planned program and the scientific staff who carry out the lines of inquiry noted within the knowledge areas for this program. Likewise it is assumed that the federal base funding will be leverage for continuing to attract state and extramural funds.

2. Ultimate goal(s) of this Program

Advance knowledge regarding economic choices related to protection, management, size/scale/growth factors, and overall profitability required to support Ohio's agriculture industry and meet stakeholder demand. Grow the understanding of agribusiness management and associated systems necessary to support Ohio's agriculture industry and meet stakeholder demand. Expand knowledge base of market economics, including but not limited to domestic trade, regulation, supply and demand, and market performance and analyses. Develop and expand applicable knowledge of natural resource and environmental economics commensurate with demand from multiple stakeholders for multiple outcomes, e.g. profit, preservation, esthetics. Explore and advance theoretical and applied economics of international trade and development as it relates to Ohio and national needs. Enhance understanding of domestic economic policy analysis in terms of government policy impact on agriculture and natural resources.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	7.2	0.0
2011	0.0	0.0	6.8	0.0
2012	0.0	0.0	6.5	0.0
2013	0.0	0.0	6.2	0.0
2014	0.0	0.0	5.9	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Food, Agricultural and Economics Development planned program activities will yield: -online and in print research - based publications targeted to (a) specific stakeholder groups including industrial partners, (b) support publics such as fellow agencies, political entities, (c) targeted populations, and (d) the broader general public; -peer-reviewed journal articles; -non-commercialized techniques that are distributed to those in need without costs; - consultation services and meetings with stakeholders and supporters; -facilitation of training programs/workshops for other scientist and for specific groups of stakeholders, including international visitors; and -planning meeting with advisory groups to communicate findings and plan new research.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• One-on-One Intervention • Demonstrations	• Web sites • Newsletters

3. Description of targeted audience

Targeted audiences include, but are not limited to: specific individuals or groups who have expressed a need for economic findings related to some aspect of human capital that is to be derived through new research, extracted from on-going research, or is derived from scientific literature; fellow academic units that depend on scientists in this program for support information and for the approaches/measures they generate; fellow agencies or support organizations who will not only use the economic information but will also extend that information; populations who have not requested the information but will likely benefit from that information; other scientists and scientific groups; political entities; extension personnel; students from junior high school to post doctorate studies; news organizations; and - business and industrial groups.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :**0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	30	0	0
2011	30	0	0
2012	30	0	0
2013	30	0	0
2014	25	0	0

V(H). State Defined Outputs

1. Output Target

- Peer-reviewed publications will be tracked

2010 :30 **2011 :**30 **2012 :**30 **2013 :**30 **2014 :**25

- Report number of graduate students completed

2010 :3 **2011 :**3 **2012 :**4 **2013 :**4 **2014 :**0

V(I). State Defined Outcome

O. No	Outcome Name
1	New knowledge of production variations in markets that help producers, processors, and distributors have requisite information for enhanced decision making leading to decreased costs of inputs and an increase in profits/outputs.
2	Advanced knowledge of how to market and manage quality attributes of commodities leading to demonstrated value added/ profits for producers, processors, and distributors, and reported satisfaction/needs attainment among consumers.
3	Business management knowledge in targeted areas, e.g. risk management, weather insurance, impacts of land use shifts, grant management that are necessary for and result in increased profitability for stakeholders.
4	Research findings on novel programs such as pollution trading, carbon trading, conservation programs, cooperatives, etc. that results in enhanced profits, new sources of income, and/or prevention of loss of profits or loss of other resources, e.g. soil.
5	Relational contracting theory and practice information that will contribute to reduction of risks, improving profits, and adding stability to the system that meet stated stakeholder needs.
6	Stakeholders will have the necessary models that will improve on the forecasting of risk, demand, and prices in various commodity sectors leading to enhanced decision making, increased profits, and reductions in uncertainly.
7	Resultant management models that explain potential impacts of new/emerging trends e.g. trade agreements, bio-terrorism threats, and renewable fuels requirements, on specific agriculture sectors to the extent that negative impacts can be mitigated in a timely manner.
8	Market economies and efficiencies studies relating to factors such as pricing, finance, supply and demand, etc. ensuring that stakeholders are informed and their identified needs, e.g. lower operating costs, become more attainable.
9	Research finding on valuing environmental resources, e.g. wetlands, river restoration, and how it applies to stakeholder needs for demonstrated gains in profits, resources sustained, and/or actions mitigated.
10	Biocomplexity analysis to understand human-nature interactions at the landscape level that informs human enterprises, leading to demonstrated profitability, environmental protection, and/or improvements in quality of stakeholders' lives.
11	Increase profitability, reduce environmental impact, and/or improve quality of stakeholders' lives through bio-resource utilization efficiency and effectiveness research such as biomass to energy, nitrogen utilization, biocides, etc.
12	Market and non-market valuation of environmental resources, e.g. steelhead trout fishing, open space, that have often lacked economic justification that meets client needs, and informs individual, group, and government decision making.
13	Advance knowledge of vertical markets in developing counties that when applied leads to documented increased trade with the US.
14	Exchange rate, trade policy, and similar uncertainties research findings that lead to documented mitigation for stakeholders of certain negative effects of international trade.
15	New policy analysis research that informs policy development and fosters demonstrated gains for stakeholders in areas such as conservation programs, farmland protection, Farm Credit System resources, etc.

Outcome #1

1. Outcome Target

New knowledge of production variations in markets that help producers, processors, and distributors have requisite information for enhanced decision making leading to decreased costs of inputs and an increase in profits/outputs.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 609 - Economic Theory and Methods

Outcome #2

1. Outcome Target

Advanced knowledge of how to market and manage quality attributes of commodities leading to demonstrated value added/ profits for producers, processors, and distributors, and reported satisfaction/needs attainment among consumers.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 606 - International Trade and Development
- 610 - Domestic Policy Analysis

Outcome #3

1. Outcome Target

Business management knowledge in targeted areas, e.g. risk management, weather insurance, impacts of land use shifts, grant management that are necessary for and result in increased profitability for stakeholders.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 605 - Natural Resource and Environmental Economics
- 606 - International Trade and Development
- 607 - Consumer Economics
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis

Outcome #4

1. Outcome Target

Research findings on novel programs such as pollution trading, carbon trading, conservation programs, cooperatives, etc. that results in enhanced profits, new sources of income, and/or prevention of loss of profits or loss of other resources, e.g. soil.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 605 - Natural Resource and Environmental Economics
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs

Outcome #5

1. Outcome Target

Relational contracting theory and practice information that will contribute to reduction of risks, improving profits, and adding stability to the system that meet stated stakeholder needs.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 603 - Market Economics
- 606 - International Trade and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis

Outcome #6

1. Outcome Target

Stakeholders will have the necessary models that will improve on the forecasting of risk, demand, and prices in various commodity sectors leading to enhanced decision making, increased profits, and reductions in uncertainly.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 606 - International Trade and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs

Outcome #7

1. Outcome Target

Resultant management models that explain potential impacts of new/emerging trends e.g. trade agreements, bio-terrorism threats, and renewable fuels requirements, on specific agriculture sectors to the extent that negative impacts can be mitigated in a timely manner.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 605 - Natural Resource and Environmental Economics
- 606 - International Trade and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs

Outcome #8

1. Outcome Target

Market economies and efficiencies studies relating to factors such as pricing, finance, supply and demand, etc. ensuring that stakeholders are informed and their identified needs, e.g. lower operating costs, become more attainable.

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 605 - Natural Resource and Environmental Economics
- 606 - International Trade and Development
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs

Outcome #9

1. Outcome Target

Research finding on valuing environmental resources, e.g. wetlands, river restoration, and how it applies to stakeholder needs for demonstrated gains in profits, resources sustained, and/or actions mitigated.

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

Outcome #10

1. Outcome Target

Biocomplexity analysis to understand human-nature interactions at the landscape level that informs human enterprises, leading to demonstrated profitability, environmental protection, and/or improvements in quality of stakeholders' lives.

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 605 - Natural Resource and Environmental Economics
- 606 - International Trade and Development
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis

Outcome #11

1. Outcome Target

Increase profitability, reduce environmental impact, and/or improve quality of stakeholders' lives through bio-resource utilization efficiency and effectiveness research such as biomass to energy, nitrogen utilization, biocides, etc.

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	1	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 605 - Natural Resource and Environmental Economics
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis

Outcome #12

1. Outcome Target

Market and non-market valuation of environmental resources, e.g. steelhead trout fishing, open space, that have often lacked economic justification that meets client needs, and informs individual, group, and government decision making.

2. Outcome Type : Change in Action Outcome Measure

2010 :	2011 :	2012 :	2013 :	2014 :
1	1	1	0	0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 605 - Natural Resource and Environmental Economics
- 606 - International Trade and Development
- 607 - Consumer Economics
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis

Outcome #13

1. Outcome Target

Advance knowledge of vertical markets in developing counties that when applied leads to documented increased trade with the US.

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 606 - International Trade and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis

Outcome #14

1. Outcome Target

Exchange rate, trade policy, and similar uncertainties research findings that lead to documented mitigation for stakeholders of certain negative effects of international trade.

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 606 - International Trade and Development
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 609 - Economic Theory and Methods

- 610 - Domestic Policy Analysis

Outcome #15

1. Outcome Target

New policy analysis research that informs policy development and fosters demonstrated gains for stakeholders in areas such as conservation programs, farmland protection, Farm Credit System resources, etc.

2. Outcome Type : Change in Action Outcome Measure

2010 :1	**2011 :** 1	**2012 :** 1	**2013 :**1	**2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Populations changes (immigration,new cultural groupings,etc.)
- Natural Disasters (drought,weather extremes,etc.)
- Competing Public priorities
- Economy
- Public Policy changes
- Competing Programmatic Challenges
- Government Regulations
- Appropriations changes

Description

Shifts in economy impact all aspects of peoples lives, psychologically, socially, business wise, and physically. Within this program area public monies, and the fluctuations in appropriations of such, have dramatic (both positive and negative) effect on human well being, as do levels of government regulations. Likewise public policy, priorities, and perceptions, including popular culture and trends/fads, are major external factors impacting this program. Priority of economics research for limited dollars, and the resulting competition, impact the extent that research can be carried out. Other factors such as economic conditions and needs of migrant populations entering the community and workforce, or new populations who have recently immigrated into the area, and are ill prepared to sustain themselves socially and monetarily, are impacts. To an extent though, it is these various external factors that are studied in relationship to economic theory that yields the valued research generated by the scientists in this program. Weather related factors impact the conditions and attributes that are being studied by creating uncertainty that cannot be controlled for. Internal factors such as the availability of base funding to ensure a core faculty and staff, availability of extramural funds, and programmatic demands that often exceed resources, all may affect outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Before-After (before and after program)
- Case Study

Description

Experiment station evaluation begins with HATCH project reviews and approval, with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provide a more summative assessment. Pre-planning with stakeholders who are interested in the economics research and extension continues to provide strong bases for framing projects that have potential of adoption; with such approach outcomes are more easily identified. Research projects and clusters of research projects lend themselves well to case studies in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Scientists working in economics, because of their training, are much more focused on evaluation and social oriented research methodologies than are most faculty, thus the stakeholder input is substantial. Experiment Station reviewers, as do stakeholders with economics concerns, and those who provide extramural funding, all, are becoming more demanding as to chronicling impact.

2. Data Collection Methods

- On-Site
- Telephone
- Case Study
- Mail
- Sampling
- Structured
- Unstructured

Description

Experiment station evaluation begins with HATCH project reviews and approval, with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provide a more summative assessment. Pre-planning with stakeholders who are interested in the economics research and extension continues to provide strong bases for framing projects that have potential of adoption; with such approach outcomes are more easily identified. Research projects and clusters of research projects lend themselves well to case studies in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Scientists in this area, because of their training, are much more focused on evaluation and social oriented research methodologies than are most faculty, thus the stakeholder input is substantial.

V(A). Planned Program (Summary)

Program #10

1. Name of the Planned Program

Human and Community Resource Development-OARDC Led

2. Brief summary about Planned Program

Food, agriculture, and natural resources industries in Ohio, annually contributing 90 plus billion dollars to the sate economy, are dependent on investments in human capital. To that end a Human and Community Resource Development Planned Program (HCRD) collectively guides outcome/impact-based research and associated extension efforts. This program is central to the College of Food, Agricultural, and Environmental Sciences 2008 Strategic Plan that focuses on advancing education, scholarship, knowledge acquisition, and information diffusion in three signature areas : (1) food security, production, and human health; (2) environmental quality and sustainability; and (3) advanced bioenergy and biobased products. Programs that advance the understanding of how rural individuals and communities utilize their resources to effectively participate in the agriculture economy is central to understanding the phenomena of human capital. First individuals and families are studied to better grasp how family structures function and what is required for their well-being. Rapid changes in sociological parameters and in technologies influence how individuals, families, and communities organize and behave in order to maintain functionality within the rural economy. Within this program are also foci directed towards program design, administration/management, and the analytical tools needed for evaluation and assessment. Now, more than ever, outcome-based planned programs need the tools and techniques within this program to aid in more rapidly moving programs, technologies, and products into society. A well-educated society is often the key to adoption of these new programs, technologies, and products. To that end agricultural and environmental communication and education are program foci. While this planned program contributes to the broader College of Food, Agricultural, and Environmental Sciences' goals of production efficiency, economic viability, and environmental compatibility, it provides major research and extension leadership in understanding and extending the concept of social acceptability of agricultural industry practices.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	0%		10%	
802	Human Development and Family Well-Being	15%		15%	
803	Sociological and Technological Change Affecting Individuals, Families and Communities	40%		20%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	0%		5%	
805	Community Institutions, Health, and Social Services	0%		5%	
901	Program and Project Design, and Statistics	10%		10%	
902	Administration of Projects and Programs	15%		15%	
903	Communication, Education, and Information Delivery	20%		20%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

To maintain and effective food, agriculture, and natural resource program throughout the state requires investment in the human side of the agricultural equation. With 11 million people in a relative small state, the demand for consumptive and non-consumptive uses of the resources continues to grow. How human capital and their programs are investigated in will greatly influence the long-term outcomes of all planned programs within this Plan of Work. Agriculture experiment stations and extension programs, especially in a state such as Ohio, have a heightened obligation to understand the societal component to meet the multiple outcomes desired by society. Individuals, families, and communities as well as businesses, related agencies, etc. that are involved in the food and fiber industry need the research information that is generated through this program. Programs regarding how people live, work, and function within the rural landscape, as well as how they learn, make decisions and organize for personal and human enterprises are important. Work in these knowledge areas is well-grounded theoretically and extensive applied peer-reviewed literature exists. The challenges lie in applying what is known to new and emerging issues and generating lines of basic research as needed to ensure that the citizens of Ohio's needs are met and that human issues do not become an impediment to food and fiber production.

2. Scope of the Program

- Multistate Integrated Research and Extension
- Multistate Research
- Integrated Research and Extension
- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

A key assumption is that by understanding the social underpinnings (both basic and applied) of how individuals and communities are maintained is an important component of agriculture. Knowledge of rural populations, their built environment, how they organize themselves, and the influence of sociological and technological changes are prerequisite to maintaining the human enterprise of agriculture. Multiple issues related to the human condition, both rural and urban, as well as issues related to rural urban interface, human ecology, and social responsibility with food, agricultural, and environmental enterprises, are areas of inquiry and extension education. As the problems and needs within these stakeholder communities are addressed, the organization (OARDC and OSU Extension) becomes better prepared to take advantage of emerging opportunities or to more rapidly address problems within these areas. Other key assumptions are: The issues within this program have been identified by our stakeholder communities, and/or via the scientific literature, reflect the more important issues and warrant allocation of resources; The understanding of this planned program and how society utilizes and depends on the associated research is key to present and future decision-making in provisioning of food, fiber, and environmental services; To a greater or lesser extent all citizens at some point in their life directly benefit from this area of inquiry; These lines of inquiry will provide necessary information to inform human enterprises while protecting individuals, families and communities. This is an important area of study for society and will be utilized for enhanced decision-making by stakeholders and all citizens; Research and education related to human capital is a demand by society to meet current and future needs. These issues are manifested at some community level and those stakeholders who are most vested will become involved; others involvement will be limited yet they will reap the benefits of a sound basic and applied understanding of these research and extension programs; and base federal funding will continue to be available and leveraged to support this planned program and the scientific staff who carry out the lines of inquiry noted within the knowledge areas for this program. Likewise it is assumed that the federal base funding will be leverage for continuing to attract state and extramural funds.

2. Ultimate goal(s) of this Program

Human and community resource development research will: advance the understanding of human development and family/societal well-being to better understand the role of human capital in agriculture and natural resources, in both the rural and urban setting as well as the ecology of human enterprises; expand knowledge of how rural populations, their organizations, their built and social environments, and associated technologies, including changes, effect individuals, families, groups and communities in terms of functionality within the business of agriculture/natural resources; improve upon program and project design in order to effect outcomes; study project formulation and administration in order to better understand and promote creativity, productivity, partnerships, collaboration, and proficiency within our own programs; and provide applied insights into multiple dimensions of communication, education and information services to advance the teaching and learning process within agriculture and natural resources.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	3.3	0.0
2011	0.0	0.0	3.1	0.0
2012	0.0	0.0	2.9	0.0
2013	0.0	0.0	2.8	0.0
2014	0.0	0.0	2.7	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The activities carried out in this Human and Community Resource Development planned program will result in: in print research; based publications targeted to (a) specific stakeholder groups including industrial partners, (b) support publics such as fellow agencies, political entities, (c) targeted populations, and (d) the broader general public; peer-reviewed journal articles; non-commercialized techniques that are distributed to those in need without costs; consultation services and meetings with

stakeholders and supporters; facilitation of training programs/workshops for other scientist and for specific groups of stakeholders, including international visitors; and planning meeting with advisory groups to communicate findings and plan new research.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• One-on-One Intervention • Demonstrations	• Web sites • Newsletters

3. Description of targeted audience

Targeted audiences include, but not limited to,: specific individuals or groups who have expressed a need for information related to some aspect of human capital that is to be derived through new research, extracted from on-going research, or is derived from scientific literature; fellow academic units that depend on scientists in this program for support information and for approaches/measures; fellow agencies or support organizations who will not only use the social information but will also extend that information; populations who have not requested the information but will likely benefit from that information; other scientists and scientific groups; political entities; extension personnel; students from pre-school to post doctorate studies; news organizations; and business and industrial groups.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	17	0	0
2011	17	0	0
2012	17	0	0
2013	17	0	0
2014	15	0	0

V(H). State Defined Outputs

1. Output Target

- Peer-reviewed publications will be tracked

2010 : 17	**2011 :** 17	**2012 :** 17	**2013 :** 17	**2014 :** 15

- Number of gradaute students completed.

2010 : 8	**2011 :** 8	**2012 :** 8	**2013 :** 8	**2014 :** 0

V(I). State Defined Outcome

O. No	Outcome Name
1	Advance human capital and sociological studies that will inform strategies for expanding and strengthening the agricultural workforce leading to improved quality and quantity of jobs in rural areas yielding demonstrated economic growth.
2	Advance human capital and sociological studies that will inform strategies for strengthening individual and family well-being, and community stability, e.g. grandmother daycare in single head households.
3	Develop a more complete understanding of the relationship between learning style and cognitive abilities of Ohio agricultural students to inform teaching –learning leading to gain score increases within and a better-educated workforce.
4	Conduct statewide survey research to better understand public attitudes, perceptions, opinions, and behaviors related to select topics in agriculture, annually documenting how those data impact decision-making, e.g. public policy, industrial decisions.
5	Investigate shifts in rural-urban interface, land use, immigration, and similar changes to determine if community policies and/or levels of social capital in the community can shape the future of agriculture in face of urbanization pressures.
6	Improve through research the understanding of and skill development for decision-making by local farmers that will result in improved farm viability and competitiveness at the rural-urban interface.
7	Develop a conceptual framework within five years that will inform programming for developing statewide leadership characteristics, skills, and attitudes in a core of present and future leaders in order to advance a more socially responsible industry.
8	Study rural educational systems relative to educational resources, curriculum, instructional delivery, and student learning to the extent necessary to inform decision-makers how to improve rural education systems as requested.
9	Investigate the social implications of structural changes in agriculture and their economic implications, documenting challenges and opportunities for rural individuals, families, groups and communities, including business and government.
10	Investigate project formulation and administration to the extent that the findings help the institution to document gains in creativity, productivity, partnerships, collaboration, and proficiency within five years.
11	Advance understanding of communication, education and information services to show gain scores in the teaching and learning process within related agriculture and natural resources programs.

Outcome #1

1. Outcome Target

Advance human capital and sociological studies that will inform strategies for expanding and strengthening the agricultural workforce leading to improved quality and quantity of jobs in rural areas yielding demonstrated economic growth.

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 805 - Community Institutions, Health, and Social Services
- 901 - Program and Project Design, and Statistics

Outcome #2

1. Outcome Target

Advance human capital and sociological studies that will inform strategies for strengthening individual and family well-being, and community stability, e.g. grandmother daycare in single head households.

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services

Outcome #3

1. Outcome Target

Develop a more complete understanding of the relationship between learning style and cognitive abilities of Ohio agricultural students to inform teaching –learning leading to gain score increases within and a better-educated workforce.

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 901 - Program and Project Design, and Statistics

- 902 - Administration of Projects and Programs
- 903 - Communication, Education, and Information Delivery

Outcome #4

1. Outcome Target

Conduct statewide survey research to better understand public attitudes, perceptions, opinions, and behaviors related to select topics in agriculture, annually documenting how those data impact decision-making, e.g. public policy, industrial decisions.

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 901 - Program and Project Design, and Statistics
- 903 - Communication, Education, and Information Delivery

Outcome #5

1. Outcome Target

Investigate shifts in rural-urban interface, land use, immigration, and similar changes to determine if community policies and/or levels of social capital in the community can shape the future of agriculture in face of urbanization pressures.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services
- 901 - Program and Project Design, and Statistics

Outcome #6

1. Outcome Target

Improve through research the understanding of and skill development for decision-making by local farmers that will result in improved farm viability and competitiveness at the rural-urban interface.

2. Outcome Type : Change in Action Outcome Measure

2010 :1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being

- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services
- 901 - Program and Project Design, and Statistics
- 903 - Communication, Education, and Information Delivery

Outcome #7

1. Outcome Target

Develop a conceptual framework within five years that will inform programming for developing statewide leadership characteristics, skills, and attitudes in a core of present and future leaders in order to advance a more socially responsible industry.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 1 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services
- 901 - Program and Project Design, and Statistics
- 902 - Administration of Projects and Programs
- 903 - Communication, Education, and Information Delivery

Outcome #8

1. Outcome Target

Study rural educational systems relative to educational resources, curriculum, instructional delivery, and student learning to the extent necessary to inform decision-makers how to improve rural education systems as requested.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 1 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services
- 901 - Program and Project Design, and Statistics
- 903 - Communication, Education, and Information Delivery

Outcome #9

1. Outcome Target

Investigate the social implications of structural changes in agriculture and their economic implications, documenting challenges and opportunities for rural individuals, families, groups and communities, including business and government.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 1 **2012 :** 1 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 901 - Program and Project Design, and Statistics
- 903 - Communication, Education, and Information Delivery

Outcome #10

1. Outcome Target

Investigate project formulation and administration to the extent that the findings help the institution to document gains in creativity, productivity, partnerships, collaboration, and proficiency within five years.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 1 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 901 - Program and Project Design, and Statistics
- 902 - Administration of Projects and Programs

Outcome #11

1. Outcome Target

Advance understanding of communication, education and information services to show gain scores in the teaching and learning process within related agriculture and natural resources programs.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 1 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 901 - Program and Project Design, and Statistics
- 903 - Communication, Education, and Information Delivery

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Competing Public priorities
- Natural Disasters (drought,weather extremes,etc.)
- Populations changes (immigration,new cultural groupings,etc.)
- Public Policy changes
- Government Regulations
- Appropriations changes
- Other (Trends and fads)
- Economy
- Competing Programmatic Challenges

Description

Weather can play a major role in creating adverse working and living conditions thus impacting people who are the focus of this planned program. Shifts in economy impact all aspects of peoples lives, psychologically, socially, and physically. Within this program area public monies, and the fluctuations in appropriations of such, have dramatic (both positive and negative) effect on human well-being, as do levels of government regulations. Likewise public policy and the publics priorities and perceptions, including popular culture and trends/fads, are major external factors impacting this program. Priority of social science research for limited dollars, and the resulting competition, impact the extent that research can be carried out. Other factors such as migrant populations entering the community and workforce, or new populations who have recently immigrated into the area, and are ill-prepared to sustain themselves socially and monetarily. Learning styles, disabilities, ones background/ education, and similar effect how one learns and how they will use any new knowledge gained. Often, individuals traits are well inculcated into that individuals psyche and behavior and change is slow. Internal factors such as the availability of base funding to ensure a core faculty and staff, availability of extramural funds, and programmatic demands that often exceed resources, all may affect outcomes.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Comparisons between program participants (individuals,group,organizations) and non-participants
- During (during program)
- Before-After (before and after program)
- Case Study
- Comparison between locales where the program operates and sites without program intervention

Description

Experiment station evaluation begins with HATCH project reviews and approval, with formative evaluation of the annual progress reports. Final project reports, reports to those providing extramural funds, and peer- review of journal articles provide a more summative assessment. Pre-planning with stakeholders who are interested in the human and community development research and extension continues to provide strong bases for framing projects that have potential of adoption; with such approach outcomes are more easily identified. Research projects and clusters of research projects lend themselves well to case studies in that each project or faculty program is a case with a set of objectives and outputs defined within a specific context. Scientist in this area, because of their training, are much more focused on evaluation and social science research methodologies than are most faculty, thus the stakeholder input is substantial. Experiment Station reviewers, as do stakeholders with human capital concerns, and those who provide extramural funding, are becoming more demanding as to chronicling impact.

2. Data Collection Methods

- Structured
- Case Study
- Telephone
- Sampling
- Mail
- On-Site
- Unstructured

Description

Data collection in this planned program involves both structured, e.g. systematic sampling, and unstructured input/feedback from stakeholders, support groups, partners such agricultural educators, peers, fellow research units, and administrators. Statewide telephone sampling is a major data gathering technique used. Focus group studies, as well as participant observation, are also employed. Observations and recording of sociological and educational data are most important to evaluating process and technique development. Secondary sources of information such as educational records or community data are utilized Annually, OARDC gathers individual faculty, program, and departmental data, and measures against stated goals and objectives to provide another level for documenting outputs and outcomes.

V(A). Planned Program (Summary)

Program #11

1. Name of the Planned Program

New Start for Financial Success (Extension)

2. Brief summary about Planned Program

New Start For Financial Success literally offers a "new start" for Ohio families and households who file bankruptcy. To discharge their debt by filing bankruptcy, clients must first complete a debtor education class. To fill this need, Extension developed New Start, a Department of Justice-approved class that follows U.S. Bankruptcy Court guidelines. Participants receive a certificate of completion to give to the court. Now in 44 Ohio counties, New Start has been a well-received local option for bankruptcy filers. This program is an example of long-term teamwork between the OSU Healthy Finances team and the Ohio Department of Justice. The two-hour class allows Ohioans to meet the bankruptcy law's post-filing debtor education requirement and give them a fresh, new start to financial freedom. New Start is taught by OSU Extension family and consumer science educators who are skilled in teaching personal finance using a nonjudgmental, practical approach.

3. Program existence : Intermediate (One to five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

With bankruptcies on the rise Ohio saw a 14 percent increase the first six months of 2008 compared with a year earlier. The "New Start for Financial Success" program helps get people-back on their feet and keeps them there with tools for long-term financial success. New Start also satisfies financial management class requirements for filers of bankruptcy, and offers the classes locally, in 44 of Ohio's counties. New Start is designated as an Extension Signature Program. OSU Extension is approved to issue certificates to bankruptcy filers who must complete a Personal Finance Instruction Course (Debtor Education) before debts can be discharged. Because OSU Extension is one of many approved to issue the certificates, we are operating in a more competitive market. Professionals and individuals alike can gain from planning and being more prepared for the future. Communications is a key to positive family relationships and making sound financial decisions.

2. Scope of the Program

- Integrated Research and Extension
- Multistate Extension
- In-State Research
- In-State Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Families are declaring bankruptcy and need to complete the requirements of the 2005 bankruptcy laws. New Start was designed to increase the financial knowledge and skills of participants in an attempt to prevent the person from becoming a repeat bankruptcy filer.

2. Ultimate goal(s) of this Program

Program participants will increase their knowledge of developing a spending plan and budget, how they got into financial trouble, wise use of credit, and consumer information on spending.

Overall goal is that the bankruptcy filer learns enough information and applies enough of the financial principles to their financial life that they have a new start and do not find themselves repeating the mistakes that forced them into bankruptcy.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	16.0	0.0	0.0	0.0
2011	16.0	0.0	0.0	0.0
2012	16.0	0.0	0.0	0.0
2013	16.0	0.0	0.0	0.0
2014	16.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Two-hour course approved by the Department of Justice.
The subjects covered are budget development, money management, wise credit use and consumer information.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• One-on-One Intervention • Workshop • Group Discussion • Education Class	• Newsletters • Web sites

3. Description of targeted audience

Bankruptcy filers

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	2000	0	0	0
2011	2000	0	0	0
2012	2000	0	0	0
2013	2000	0	0	0
2014	2000	0	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	2	2
2011	0	2	2
2012	0	2	2
2013	0	2	2
2014	0	2	2

V(H). State Defined Outputs

1. Output Target

- # of educational sessions

  2010 :100 **2011 :**100 **2012 :**100 **2013 :**100 **2014 :**100

- Total number of volunteers participating in the planning and implementation of this program (e.g., committee members, teachers/trainers, unpaid staff, etc.)

  2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

- Total number of multi-state partnerships associated with this program

  2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of participants indicating the learning materials were helpful.
2	Number of participants indicating they learned something they can use.
3	Number of participants indicating they will use a budget at home.
4	Number of participants indicating they were more likely to set aside money for occasional expenses.
5	Number of participants indicating they were more likely to set aside money for unplanned expenses.
6	Number of participants indicating they were more likely to save money toward a goal.
7	Number of participants indicating they were more likely to keep debt below 20% of take-home pay.
8	Number of participants indicating they were more likely to adjust spending to match income.
9	Number of participants indicating they were more likely to know where their money goes.

Outcome #1

1. Outcome Target

Number of participants indicating the learning materials were helpful.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

Outcome #2

1. Outcome Target

Number of participants indicating they learned something they can use.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

Outcome #3

1. Outcome Target

Number of participants indicating they will use a budget at home.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

Outcome #4

1. Outcome Target

Number of participants indicating they were more likely to set aside money for occasional expenses.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

Outcome #5

1. Outcome Target

Number of participants indicating they were more likely to set aside money for unplanned expenses.

2. Outcome Type : Change in Action Outcome Measure

2010 0	**2011 :** 0	**2012 :** 0	**2013** 0	**2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

Outcome #6

1. Outcome Target

Number of participants indicating they were more likely to save money toward a goal.

2. Outcome Type : Change in Action Outcome Measure

2010 0	**2011 :** 0	**2012 :** 0	**2013** 0	**2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

Outcome #7

1. Outcome Target

Number of participants indicating they were more likely to keep debt below 20% of take-home pay.

2. Outcome Type : Change in Action Outcome Measure

2010 0	**2011 :** 0	**2012 :** 0	**2013** 0	**2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

Outcome #8

1. Outcome Target

Number of participants indicating they were more likely to adjust spending to match income.

2. Outcome Type : Change in Action Outcome Measure

2010 0	**2011 :** 0	**2012 :** 0	**2013** 0	**2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

Outcome #9

1. Outcome Target

Number of participants indicating they were more likely to know where their money goes.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Government Regulations

Description

{NO DATA ENTERED}

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- Time series (multiple points before and after program)
- Retrospective (post program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

- Sampling
- Whole population
- On-Site

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #12

1. Name of the Planned Program

Why Trees Matter: Next STEP (Extension)

2. Brief summary about Planned Program

The Why Trees Matter: Next STEP program helps OSU Extension calculate the dollar value of trees' environmental functions, shows types of trees that do this work the best, and demonstrates that community forests have significant economic, environmental and social benefits. New research-based tools provide information on energy savings, storm water remediation, air quality, and carbon sequestration of individual trees and plantings. The program was started in 2005, and currently involves OSUE educators and specialists in the ANR, CD, and 4-H program areas. Why Trees Matter focuses on the economic, environmental and social benefits of trees to Ohio citizens and communities. With the teachable moment for Ohioans of the importance of invasive species, the environmental services of trees, and the emerging emphasis of green infrastructure for sustainability, the time for Why Trees Matter is now.

3. Program existence : Intermediate (One to five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
104	Protect Soil from Harmful Effects of Natural Elements	5%		0%	
112	Watershed Protection and Management	20%		0%	
124	Urban Forestry	20%		0%	
141	Air Resource Protection and Management	20%		0%	
605	Natural Resource and Environmental Economics	15%		0%	
608	Community Resource Planning and Development	20%		0%	
	Total	100%		0%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Threats from new pests such as the emerald ash borer, the development of powerful new tools to calculate the benefits of trees

specifically, science-based software called i-Tree (jointly developed by The Davey Tree Expert Company, the Arbor Day Foundation, and the U.S. Forest Service) - and greater attention to "green" city planning combine to drive the effort.

2. Scope of the Program

- Integrated Research and Extension
- In-State Extension
- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

The program also includes 130 research sites throughout Ohio as part of the Ohio Street Tree Evaluation Program, development of the new Tree Research Evaluation and Extension plot at Secrest Arboretum, training of volunteer master tree stewards, and development of curricula/resources for educational programming.

2. Ultimate goal(s) of this Program

The goal is to develop public awareness and understanding of trees and the environmental services they provide. The long-term goal is an increase in tree canopy for Ohio communities, which translates to energy savings, carbon credits for governmental entities, improved air and water quality, and greater environmental awareness by Ohio citizens.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	10.0	0.0	0.0	0.0
2011	10.0	0.0	0.0	0.0
2012	10.0	0.0	0.0	0.0
2013	10.0	0.0	0.0	0.0
2014	10.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The Ohio Street Tree Evaluation Program (OSTEP), with 130 statewide research sites, aims to secure long-term data on how specific tree types look, last, and serve the environment.

The Community Tree Research Evaluation and Extension (TREE) Plot in the Ohio Agricultural Research and Development Center's Secrest Arboretum supports replicated plantings of key street-tree types, demonstration plots of trees' environmental benefits, and evaluation plots of new varieties.

The "Ohio Trees" Master Gardener Specialization Program trains volunteers for community street-tree projects.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Workshop • One-on-One Intervention • Demonstrations • Group Discussion	• Other 1 (Pod Casts) • Newsletters • Web sites

- Education Class

3. Description of targeted audience

Ohio citizens

Community Leaders/Officials

Master Volunteers

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults		Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target		Target	Target
2010	2000		0	200	0
2011	2000		0	200	0
2012	2000		0	200	0
2013	2000		0	200	0
2014	2000		0	200	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	2	2
2011	0	2	2
2012	0	2	2
2013	0	2	2
2014	0	2	2

V(H). State Defined Outputs

1. Output Target

- Number of programs presented.

  2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

- Number of volunteers participating in WTM educational programs.

  2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

- Number of volunteer hours committed to WTM programs.

2010	2011	2012	2013	2014
0	0	0	0	0

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of participants that appreciate the value of community forests.
2	Number of participants that have improved knowledge of tree identification.
3	Number of local communities demonstrating improved tree selection skills.
4	Dollar value of energy savings to Ohioans documented from WTM studies in local communities.
5	Dollar value of storm water remediation savings documented from WTM studies in local communities.
6	Dollar value of air quality benefits documented from WTM studies in local communities.

Outcome #1

1. Outcome Target

Number of participants that appreciate the value of community forests.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 124 - Urban Forestry
- 141 - Air Resource Protection and Management
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

Outcome #2

1. Outcome Target

Number of participants that have improved knowledge of tree identification.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 124 - Urban Forestry

Outcome #3

1. Outcome Target

Number of local communities demonstrating improved tree selection skills.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 124 - Urban Forestry
- 141 - Air Resource Protection and Management
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

Outcome #4

1. Outcome Target

Dollar value of energy savings to Ohioans documented from WTM studies in local communities.

2. Outcome Type : Change in Condition Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

Outcome #5

1. Outcome Target

Dollar value of storm water remediation savings documented from WTM studies in local communities.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 124 - Urban Forestry
- 605 - Natural Resource and Environmental Economics

Outcome #6

1. Outcome Target

Dollar value of air quality benefits documented from WTM studies in local communities.

2. Outcome Type : Change in Condition Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 141 - Air Resource Protection and Management
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes
- Government Regulations
- Economy
- Competing Public priorities
- Public Policy changes

Description

{NO DATA ENTERED}

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- {NO DATA ENTERED}

Description

{NO DATA ENTERED}

2. Data Collection Methods

- {NO DATA ENTERED}

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #13

1. Name of the Planned Program

Dining with Diabetes (Extension)

2. Brief summary about Planned Program

Healthy People are a major focus of OSUE Family and Consumer Sciences programming. Ten leading health indicators have been selected in "Healthy People 2010" a partnership between public, private and non-profit sectors to address chronic health issues facing Americans. They include physical activity, overweight and obesity.

Dining with Diabetes is a nutrition education program designed to help individuals with diabetes better manage their disease. Through this program Ohioans with this chronic condition will better manage their disease, reduce health costs and complications. In the long run helping them to reduce the risks of heart disease, cancer and obesity through improved diet and increased physical activity.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Obesity, heart disease, cancer and diabetes are becoming more prevalent in Ohio. According to Nancy Schaefer, public health nutritionist and health educator for the Ohio Health Department's Ohio Diabetes Prevention and Control Program, nationally, 24 million people have diabetes and 57 million have pre-diabetes. The number in Ohio is approaching 1 million. Diabetes is the fifth-leading cause of death in Ohio and the No. 1 cause of adult blindness, amputations, and kidney failure, which is overwhelming the healthcare system. The total estimated cost of diabetes in Ohio annually is nearly $6 billion dollars. The cost of chronic disease in terms of both money and quality of life is extensive.

2. Scope of the Program

- In-State Research
- Multistate Extension
- Integrated Research and Extension
- In-State Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Ohio residents are bombarded daily with nutrition and fitness information through the media. Due to the increases in overweight and incidence of chronic diseases, many individuals are seeking answers to their questions regarding a healthy lifestyle. OSU Extension is looked upon as the research based arm of the University and the best source to provide reliable

information.

While doctors help patients grapple with the medical side of the disease, diabetics also need basic information about what and how much to eat, and how to prepare meals. Dining with Diabetes is filling the void.

It is guided by social cognitive theory, which emphasizes the interaction of environment, participant, and behavior. If people can see the food sand taste it, they're more likely to go home and try it. The informal classroom setting also helps participants learn from each other and form bonds of support.

2. Ultimate goal(s) of this Program

Help participants manage their diabetes and reduce blood sugar levels.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	20.0	0.0	0.0	0.0
2011	20.0	0.0	0.0	0.0
2012	20.0	0.0	0.0	0.0
2013	20.0	0.0	0.0	0.0
2014	20.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Series of classes offered in participating counties

Newsletter

Training for program team provided by statewide Dining with Diabetes (DWD) Team and invited speakers

Curriculum review and development by DWD Team

Collaborations with agencies to offer programming include: Registered Dietitians, Certified Diabetes Educators, Health Professionals and support at the State level from the Ohio Department of Health

Media releases to promote programming

Partnerships with new organizations with funding sources to support county programming

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Demonstrations • Group Discussion • Education Class • One-on-One Intervention • Workshop	• Public Service Announcement • Billboards • TV Media Programs • Other 1 (Radio Programs) • Newsletters • Other 2 (Pamphlets, Brochures) • Web sites

3. Description of targeted audience

The Dining with Diabetes Program targets individuals with diabetes and their caregivers/family support members.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	2000	1000	100	0
2011	2000	1000	100	0
2012	2000	1000	100	0
2013	2000	1000	100	0
2014	2000	1000	100	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	4	4
2011	0	4	4
2012	0	4	4
2013	0	4	4
2014	0	4	4

V(H). State Defined Outputs

1. Output Target

- Collaborations formed/maintained

  2010 :4 **2011 :**4 **2012 :**4 **2013 :**4 **2014 :**0

- Number of classes

  2010 :50 **2011 :**50 **2012 :**50 **2013 :**50 **2014 :**0

- Total number of volunteers participating in the planning and implementation of this program (e.g., committee members, teachers/trainers, unpaid staff, etc.)

  2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of participants whose knowledge of diabetes management has increased.
2	Number of participants who understand the plate method.
3	Number of participants who are able to count carbohydrates.
4	Number of participants who are eating smaller portion sizes.
5	Number of participants who are practicing food safety techniques learned in class.
6	Number of participants who have lowered blood sugar levels.

Outcome #1

1. Outcome Target

Number of participants whose knowledge of diabetes management has increased.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 60	**2011 :** 65	**2012 :** 65	**2013 :** 65	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

Outcome #2

1. Outcome Target

Number of participants who understand the plate method.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 80	**2011 :** 81	**2012 :** 82	**2013 :** 82	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

Outcome #3

1. Outcome Target

Number of participants who are able to count carbohydrates.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 57	**2011 :** 59	**2012 :** 60	**2013 :** 67	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

Outcome #4

1. Outcome Target

Number of participants who are eating smaller portion sizes.

2. Outcome Type : Change in Action Outcome Measure

2010 : 35	**2011 :** 35	**2012 :** 35	**2013 :** 35	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

Outcome #5

1. Outcome Target

Number of participants who are practicing food safety techniques learned in class.

2. Outcome Type : Change in Action Outcome Measure

2010 0	**2011 :** 0	**2012 :** 0	**2013** 0	**2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

Outcome #6

1. Outcome Target

Number of participants who have lowered blood sugar levels.

2. Outcome Type : Change in Condition Outcome Measure

2010 0	**2011 :** 0	**2012 :** 0	**2013** 0	**2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Appropriations changes
- Economy
- Populations changes (immigration,new cultural groupings,etc.)
- Competing Public priorities
- Natural Disasters (drought,weather extremes,etc.)
- Competing Programmatic Challenges
- Public Policy changes

Description

{NO DATA ENTERED}

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- After Only (post program)
- During (during program)
- Before-After (before and after program)

Description

Evaluation instruments are specifically designed for each program and vary in content, delivery method and sample size.

2. Data Collection Methods

- Mail
- Sampling
- Unstructured
- Structured
- Observation
- Whole population
- On-Site
- Telephone

Description

EFNEP uses enrolled family demographics, a 24 hour food recall and a behavior checklist to determine behavior change. The Family Nutrition Program collects participant demographic information and uses a retrospective survey at the end of a program series to determine behavior change. Dining with Diabetes has a before and after survey and impact evaluation designed to document self-reported behavior change.

V(A). Planned Program (Summary)

Program #14

1. Name of the Planned Program

Real Money, Real World (Extension)

2. Brief summary about Planned Program

Real Money, Real World is an active, hands-on experience that gives young people the opportunity to make lifestyle and budget choices similar to those they will make as adults. It is intended to be a partnership of the county OSU Extension office, the school, and the business community. The program consists of three parts: a pre-simulation preparation, a hands-on budget management and decision-making simulation and a post-session evaluation of choices made.

Prior to the simulation, teachers prepare students for the simulation by going through the following four simple lessons:

• Lesson 1: How Occupation Affects Income

• Lesson 2: Deductions—What You See Is Not What You Get

• Lesson 3: How to Use Checking and Savings Accounts

• Lesson 4: Making Choices—Preparing for the Simulation

The participants select or are assigned occupations, then receive a monthly salary for that occupation, and a savings and checking account register. After subtracting the savings, taxes, and health insurance amounts, the "net" salary figure is deposited into the checking account and recorded in the check register. Then in Lesson 5, students proceed through the Real Money, Real World simulation. The simulation normally lasts about an hour. Community volunteers set up and staff booths representing real-life businesses. In this simulation, participants are to assume that they have completed basic educational requirements for their chosen career and are the sole income providers for their families. Students spend their "salaries" on items found in a typical monthly budget. They do this by visiting the appropriate booths: housing, transportation, insurance, utilities, food, clothing, entertainment, child care, communications, contributions, and credit. In addition, chance and financial advice booths are included. Throughout the activity, the participants keep track of their finances by recording them in the check register. Whether they have adequate funds or run out of money, they continue through the simulation and finish with either a positive or negative balance. In Lesson 6, teachers and students discuss the Real Money, Real World experience. Students complete a participant survey to evaluate the program and their experience with it.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	20%		0%	
806	Youth Development	80%		0%	
	Total	100%		0%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Anyone raising a teenager who covets a $200 cell phone knows that the earlier people begin their financial education the better. Enter Real Money, Real World a program that teaches high school students money management skills they will use for the rest of their lives. Alarming levels of debt, bankruptcies, and foreclosures throughout Ohio add up to a clear conclusion the state has a vital need for financial education. And starting early is key: a 2008 national survey revealed that high-school seniors could correctly answer just 48 percent of questions on financial basics such as credit, savings, insurance, and retirement. A 2008 evaluation of 3, 563 Ohio Real Money, Real World participants showed that the program raises awareness about the costs to maintain a household and the interrelationships among educational levels, jobs, and income.

2. Scope of the Program

- Multistate Extension
- Integrated Research and Extension
- In-State Extension
- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Real Money, Real World simulates real-life experiences to help make youth aware of the money management skills they need to be productive, successful members of society. The curriculum focuses on creating awareness of the correlation between education and earning power, and many classroom teachers are telling us this is one of the best finance teaching tools they've ever had. Real Money, Real World has been endorsed by the Ohio Treasurer of State's consumer finance Web site, and it supports standards of S.B. 311, which requires that Ohio high schools implement personal financial education programs for students entering high school in 2010. This eye-opening program is successful because of ongoing cooperation between county Extension offices, local schools and the business community; the OSUE Healthy Finances team; and the Workforce Preparation team.

2. Ultimate goal(s) of this Program

Goals of the Real Money, Real World program are: to increase participants' awareness that level of education and career influence future income; to help participants understand that spending money on one thing affects what they can spend on other things; and to increase participants' awareness that income and lifestyle choices affect the amount of money available for discretionary spending.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	20.0	0.0	0.0	0.0
2011	20.0	0.0	0.0	0.0
2012	20.0	0.0	0.0	0.0
2013	20.0	0.0	0.0	0.0
2014	20.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Real Money, Real World consists of a six-lesson curriculum to help young people become aware of the money-management skills they'll need for the rest of their lives. Designed to be a partnership of local Extension educators, schools, and community volunteers, the program focuses on basic finance principles, including how education and occupation affect income; how expenses and paycheck deductions add up; and how to be smart in using checking accounts, savings, and credit.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• One-on-One Intervention • Demonstrations • Workshop • Education Class • Group Discussion	• Other 1 (Pod Casts) • Web sites

3. Description of targeted audience

Ohio Youth Grades 5 to 9.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	500	18000	12000	0
2011	500	18000	12000	0
2012	500	18000	12000	0
2013	500	18000	12000	0
2014	500	18000	12000	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :**0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	1	1
2011	0	1	1
2012	0	1	1
2013	0	1	1
2014	0	1	1

V(H). State Defined Outputs

1. Output Target

- Total number of volunteers participating in the planning and implementation of this program (e.g., committee members, teachers/trainers, unpaid staff, etc.)

  2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

- total number of sessions

  2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of participants who increased awareness about what it costs to maintain a household.
2	Number of participants who increased awareness about how every spending decision affects other spending opportunities.
3	Number of participants who increased awareness about how the type of job they have affects how much money they will make.
4	Number of participants who increased feeling of importance about getting more education or training after high school.
5	Number of participants who increased feeling of importance about waiting to have children until financially ready. that includes both needs and wants.
6	Number of participants who increased feeling of importance about having a plan for spending that includes both needs and wants.
7	Number of participants who indicated their likeliness to make changes relative to getting more education or training after high school.
8	Number of participants who indicated their likeliness to make changes relative to learning how to make wise financial decisions.

Outcome #1

1. Outcome Target

Number of participants who increased awareness about what it costs to maintain a household.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 806 - Youth Development

Outcome #2

1. Outcome Target

Number of participants who increased awareness about how every spending decision affects other spending opportunities.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 806 - Youth Development

Outcome #3

1. Outcome Target

Number of participants who increased awareness about how the type of job they have affects how much money they will make.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 806 - Youth Development

Outcome #4

1. Outcome Target

Number of participants who increased feeling of importance about getting more education or training after high school.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 806 - Youth Development

Outcome #5

1. Outcome Target

Number of participants who increased feeling of importance about waiting to have children until financially ready. that includes both needs and wants.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0	**2011 :** 0	**2012 :** 0	**2013** 0	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 806 - Youth Development

Outcome #6

1. Outcome Target

Number of participants who increased feeling of importance about having a plan for spending that includes both needs and wants.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0	**2011 :** 0	**2012 :** 0	**2013** 0	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 806 - Youth Development

Outcome #7

1. Outcome Target

Number of participants who indicated their likeliness to make changes relative to getting more education or training after high school.

2. Outcome Type : Change in Action Outcome Measure

2010 0	**2011 :** 0	**2012 :** 0	**2013** 0	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 806 - Youth Development

Outcome #8

1. Outcome Target

Number of participants who indicated their likeliness to make changes relative to learning how to make wise financial decisions.

2. Outcome Type : Change in Action Outcome Measure

2010 :0 **2011 :** 0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 806 - Youth Development

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Government Regulations
- Economy
- Appropriations changes
- Competing Public priorities

Description

{NO DATA ENTERED}

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- {NO DATA ENTERED}

Description

{NO DATA ENTERED}

2. Data Collection Methods

- {NO DATA ENTERED}

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #15

1. Name of the Planned Program

Increasing Profitable Crop Yields Above Trendline-2014 (Extension)

2. Brief summary about Planned Program

The Agronomic Industry in the State of Ohio has $1.9 billion dollars of cash receipts generated on 55,577 farms involving 8.4 million acres for corn, soybean and wheat production. These commodities provide feed stocks for livestock and manufacturing industries throughout the state, giving economic and environmental impacts that directly or indirectly affect most Ohio citizens. Economic impacts of production practices to farm profitability are evaluated in conjunction with the environmental consequences. Economic impacts include reduced input cost, efficiency in input utilization and identification of enhanced income crop sectors.

Increasing Profitable Crop Yields Above Trendline-2014 aims to meet the growing demand for food, feed, fiber, fuel, and industrial uses of Ohio's crops. The year 2014 celebrates the 100th year of Extension education - at a time when new methods are needed to meet a growing crisis in world food and energy production. This multi-disciplinary program uses OSU Extension resources to help the agribusiness industry and producers get the most profit and product out of our farmland, while being environmentally and socially responsible. Even information provided in newsletters helps - for example, the value in 2007 of CORN (the Crop Observation and Recommendation Network) was estimated at more than $9 million in reduced crop production costs and/or increased yields.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
133	Pollution Prevention and Mitigation	5%		5%	
204	Plant Product Quality and Utility (Preharvest)	5%		5%	
205	Plant Management Systems	20%		20%	
211	Insects, Mites, and Other Arthropods Affecting Plants	15%		15%	
212	Pathogens and Nematodes Affecting Plants	13%		13%	
213	Weeds Affecting Plants	20%		20%	
402	Engineering Systems and Equipment	7%		7%	
601	Economics of Agricultural Production and Farm Management	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Food shortages, alternative crop uses, and climate changes have triggered three major global food crises over the past century. As populations soar, ethanol production increases, and more environmental stewardship initiatives take root, the capacity of the world's food supply will be stretched to its limit. Eventually, demand will outpace supply. Crop production trendlines are not keeping up with current population growth. One solution is to take our limited farm acres and produce more food, fuel, and fiber crops from that land. Every acre of ground must produce as much as it is environmentally, genetically, and technologically possible to produce.

Target audiences for direct involvement in these programs include farmers, agri-industry, and governmental agencies. The program includes specific areas of plant production including pest (weed, insect & disease) management, soil fertility, tillage/soil erosion, soil water/drainage, precision application of inputs and plant genetic evaluation.

2. Scope of the Program

- Integrated Research and Extension
- In-State Research
- In-State Extension
- Multistate Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Ohio, a leader in agriculture, food processing, and bioproduct innovations, is strategically positioned to meet the growing demands of the food, fuel, and fiber industries. OSU Extension is leading the efforts with this new multidisciplinary program that assists agribusinesses and producers to increase profitable crop yields in a socially and environmentally responsible way, adding more raw commodities for Ohio's business growth and export markets. This program utilizes the resources available to Ohio's Agronomic Crop Industry to help individuals maintain economically viable and environmentally compatible crop enterprises.

Many of the programs conducted are long term and proven methods to reach audiences with research based information and education. Adapting the programs and information for use of technology (web and broadcast) to reach new audience and efficiently delivery the program while balanced with a high touch philosophy are the challenge.

Focus group surveys of clientele have identified the following factors: Challenges identified included profitably fitting technology into production systems, economic challenges, and information overload. Profitably fitting technology into production is typified by examples such as Roundup Ready Technology, general GMO/conventional variety market demand shifts and seed treatments. Economic challenges included marketing, economies of scales issues and finding technology fits that have economic return. Agronomic information is readily available from many different resources. The difficulty is to know what information is meaningful to individual farming operations, plus issues related to reliability of information based on source. In addition, new pest problems such as soybean aphids were identified as new challenges.

Information gathering for today's farm audience includes:

Internet was the number one mentioned.

Trade magazines were mentioned but seem to be of somewhat limited value Radio was mentioned by one participate due to the hours spent in a vehicle.

Networking with other individuals from a variety of expertise areas

Speed of obtaining an answer has changed. Answers are needed the same day or even within an hour, to meet grower demands. Technology was suggested as an important tool in making timely answers available.

Non-biased information is a valued asset on farms. Research conducted on their farm or in close proximity had preference. Participants place a high value on research in general and like local research with similar soil types, environment, etc. Many do on-farm projects and think Extension could provide value to this activity in three areas: design and planning data analysis and interpretation. Technology (GPS, monitors and controllers) in data generation is another avenue for progress. Providing meaningful projects conducted in a timely manner is valued.

Participants feel the least comfortable with identification of disease and insect problems plus they want to know thresholds that make economic sense. This is the greatest new skill or information they need on their farm. They suggest regional identification workshops and providing pictures in the CORN newsletter.

The CORN newsletter, Pocket Field Guide, Weed Control Guide, and some use of the web site were mentioned as highly valued current products of the Team. Meetings received varied views, from being considered very good, to too much of the same old information. Farmers indicated less time and desire to go to meetings and workshops for a variety of reasons. Information brought to them through the web, e-mail or possibly localized workshops in season (during a three day rainy period) were most valued for the future.

2. Ultimate goal(s) of this Program

Through research, outreach, and education, OSU Extension educators with the Agronomics Crops, Forage, and Fruit and Vegetable teams will continue to strive to support the demands of crop and livestock producers while finding new crops for alternative energy and new ways to manage the land.

Long-term goals include:

Improve nutrient utilization efficiency on the farm and reduce environmental impact from added nutrients.

Help producers manage herbicide resistant weed and weed population shifts. Document weed population shifts and provide information to producers.

Help producers better manage insect population shifts. Document insect population shifts and provide information to producers. Develop threshold information for management of insects in field crops.

Help producers better manage disease. Document disease presence, yield loss potential and provide information to producers. Develop threshold information for management of diseases in field crops.

Maximize profit on the farm and minimize the environmental impact of agronomic crop production in Ohio.

Producers adapt technology which can have safety, efficiency and better input utilization impact on the farm.

Provide accurate and timely information, educational opportunities and conduct research projects addressing the needs of Ohio' s agronomic crop industry.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	17.0	0.0	0.0	0.0
2011	17.0	0.0	0.0	0.0
2012	17.0	0.0	0.0	0.0
2013	15.0	0.0	0.0	0.0
2014	15.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The program includes specific areas of plant production including pest (weed, insect & disease) management, soil fertility, tillage/soil erosion, soil water/drainage, precision application of inputs and plant genetic evaluation.

Increasing field crop yields through technology adoption.

Producing high-value crops on small tracts of land.

Growing alternative crops for bioenergy.

Crop Observation and Recommendation Network Newsletter

Crop Production Conference

Crop Profit

Multiple Regional/Local Agronomy Meeting/Workshops

Website

Local/On-Farm Research

Field Days

Bulletins/Fact Sheets/Publications

Work with Media and OSU Communications Technology

Building relationships with commodity organizations and agencies

Build relationships across other teams in OSU Extension.

Computer training on technologies for agronomic applications

Precision ag data management analysis and decision workshops

Develop educational programs and tools to improve the efficiency of nitrogen utilization to improve farm economics and reduce environmental impact.

Develop a user friendly manure nutrient credit spreadsheet for livestock and crop producers

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Other 1 (On-Farm Research) • Education Class • Group Discussion • Demonstrations • One-on-One Intervention • Workshop	• Newsletters • Web sites • Other 2 (Webcast) • Other 1 (Radio Programs)

3. Description of targeted audience

Grain Producers and cash forages of both commercial size and part-time

Agriculture Industry- Fertilizer chemical retailers, Input company representatives, crop advisors

Certified Crop Advisors

Non-agronomic specialized educators

Agency Soil and Water Conservation Districts, Natural Resources Conservation Service, Ohio Department of Agriculture and Environmental Protection Agency

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	5000	40000	0	1000
2011	5000	40000	0	1000
2012	5000	40000	0	1000
2013	4500	48000	0	800
2014	4500	48000	0	800

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 : 0 **2011 :** 0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	1	1
2011	0	1	1
2012	0	1	1
2013	0	1	1
2014	0	1	1

V(H). State Defined Outputs

1. Output Target

- Crop Observation and Recommendation Network Newsletter to be published 40 times per year, and to be distributed to 5,000 farmers and professionals.

  2010 : 5000 **2011 :** 5000 **2012 :** 5000 **2013 :** 5000 **2014 :** 0

- Multiple Regional/Local Agronomy Meeting totaling 40 which reaches 2500 people with agronomic information.

  2010 : 2500 **2011 :** 2500 **2012 :** 2500 **2013 :** 2500 **2014 :** 0

- Production and Issues Workshops totaling 15 reaching 300 people

  2010 : 80 **2011 :** 100 **2012 :** 100 **2013 :** 100 **2014 :** 0

- Website which reaches an estimated 60,000 hits per year

  2010 : 100000 **2011 :** 100000 **2012 :** 120000 **2013 :** 120000 **2014 :** 0

- Local/On-Farm Research project sites.

  2010 : 20 **2011 :** 20 **2012 :** 20 **2013 :** 20 **2014 :** 0

- Field Days totaling 5 location and reaching 500 people

2010 500 **2011** 500 **2012** 500 **2013** 500 **2014** 0

- Weed Control Guide for Ohio and Indiana 4000 distributed annually

2010 4000 **2011** 4000 **2012** 4000 **2013** 4000 **2014** 0

- Tri-State Fertilizer Recommendations for Corn, Soybean, Wheat and Alfalfa 250 distributed annually.

2010 250 **2011** 250 **2012** 250 **2013** 250 **2014** 0

- Field Crop Insects of Ohio distribution

2010 800 **2011** 800 **2012** 450 **2013** 450 **2014** 0

- Corn, Soybean, Wheat and Alfalfa Field Guide 1000 distributed annually

2010 1000 **2011** 1000 **2012** 1000 **2013** 1200 **2014** 0

- Corn Disease Management in Ohio distribution

2010 300 **2011** 300 **2012** 300 **2013** 300 **2014** 0

- Profitable Soybean Disease Management in Ohio 500 distributed annually

2010 500 **2011** 500 **2012** 500 **2013** 500 **2014** 0

- Wheat Disease Management in Ohio 250 distributed annually

2010 250 **2011** 250 **2012** 250 **2013** 250 **2014** 0

- Seed Treatment for Ohio Agronomic Crops 150 distributed annually

2010 150 **2011** 150 **2012** 150 **2013** 150 **2014** 0

- Ohio Agronomy Guide 700 distributed annually

2010 700 **2011** 700 **2012** 700 **2013** 700 **2014** 0

V(I). State Defined Outcome

O. No	Outcome Name
1	Those who participate in technology workshops will improve efficiency of field activities by $15 per acre.
2	25% of meeting participants will indicate they will implement new management practices based on information received at the meetings.
3	25% of Ohio's Corn acres will implement a nitrogen efficiency model for their farm.
4	25% of crop production acres will implement weed resistance management strategies.
5	Utilization of appropriate IPM practices for disease and insect will occur on 15% of Ohio crop acres.
6	Number of individuals taught about disease identification, control and scouting or key weed control concepts.
7	Number of participants with an increase in knowledge of farm financial analysis and risk management.
8	Number of farmers reporting positive changes in management and or profitability of their farm from use of the disease identification, control and scouting or key weed control concepts.
9	Number of farmers reporting positive changes in management and or profitability of their farm from use of information from farm financial analysis.
10	Reported economic impact of cost savings, increased yield or other increased profitability from use of CORN newsletter reported as total dollars.
11	Reported economic impact of cost savings, increased yield or other increased profitability from use of disease identification, control and scouting or key weed control concepts reported as total dollars.
12	Reported economic impact of cost savings, increased yield or other increased profitability resulting from farm financial analysis.

Outcome #1

1. Outcome Target

Those who participate in technology workshops will improve efficiency of field activities by $15 per acre.

2. Outcome Type : Change in Action Outcome Measure

2010 : 15	**2011 :** 15	**2012 :** 15	**2013 :** 15	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants

Outcome #2

1. Outcome Target

25% of meeting participants will indicate they will implement new management practices based on information received at the meetings.

2. Outcome Type : Change in Action Outcome Measure

2010 : 25	**2011 :** 25	**2012 :** 25	**2013 :** 25	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 402 - Engineering Systems and Equipment
- 601 - Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Target

25% of Ohio's Corn acres will implement a nitrogen efficiency model for their farm.

2. Outcome Type : Change in Action Outcome Measure

2010 : 25	**2011 :** 25	**2012 :** 25	**2013 :** 25	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems

Outcome #4

1. Outcome Target

25% of crop production acres will implement weed resistance management strategies.

2. Outcome Type : Change in Action Outcome Measure

2010 : 25	**2011 :** 25	**2012 :** 25	**2013 :** 25	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 213 - Weeds Affecting Plants

Outcome #5

1. Outcome Target

Utilization of appropriate IPM practices for disease and insect will occur on 15% of Ohio crop acres.

2. Outcome Type : Change in Condition Outcome Measure

2010 : 15	**2011 :** 15	**2012 :** 15	**2013 :** 15	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants

Outcome #6

1. Outcome Target

Number of individuals taught about disease identification, control and scouting or key weed control concepts.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 0	**2011 :** 0	**2012 :** 0	**2013 :** 0	**2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants

Outcome #7

1. Outcome Target

Number of participants with an increase in knowledge of farm financial analysis and risk management.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 213 - Weeds Affecting Plants
- 402 - Engineering Systems and Equipment
- 601 - Economics of Agricultural Production and Farm Management

Outcome #8

1. Outcome Target

Number of farmers reporting positive changes in management and or profitability of their farm from use of the disease identification, control and scouting or key weed control concepts.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants

Outcome #9

1. Outcome Target

Number of farmers reporting positive changes in management and or profitability of their farm from use of information from farm financial analysis.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 402 - Engineering Systems and Equipment
- 601 - Economics of Agricultural Production and Farm Management

Outcome #10

1. Outcome Target

Reported economic impact of cost savings, increased yield or other increased profitability from use of CORN newsletter reported as total dollars.

2. Outcome Type : Change in Condition Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 402 - Engineering Systems and Equipment
- 601 - Economics of Agricultural Production and Farm Management

Outcome #11

1. Outcome Target

Reported economic impact of cost savings, increased yield or other increased profitability from use of disease identification, control and scouting or key weed control concepts reported as total dollars.

2. Outcome Type : Change in Condition Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants

Outcome #12

1. Outcome Target

Reported economic impact of cost savings, increased yield or other increased profitability resulting from farm financial analysis.

2. Outcome Type : Change in Condition Outcome Measure

2010 :0 **2011 :** 0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 402 - Engineering Systems and Equipment
- 601 - Economics of Agricultural Production and Farm Management

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Competing Public priorities
- Competing Programmatic Challenges
- Economy
- Appropriations changes
- Government Regulations
- Natural Disasters (drought,weather extremes,etc.)

Description

{NO DATA ENTERED}

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Before-After (before and after program)
- Retrospective (post program)
- Case Study
- After Only (post program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

- Mail
- Whole population
- Tests
- Structured
- Journals
- Sampling
- Observation

Description
Use of audience response technology where audience members are given transponders that tally votes on questions presented through meetings.

V(A). Planned Program (Summary)

Program #16

1. Name of the Planned Program

Preparing Youth for Success (Extension)

2. Brief summary about Planned Program

As Ohio's economy continues the shift from an industrial to a knowledge base, its young people and volunteers supporting them need advanced skills to be successful. OSU Extension, through 4-H and other programming efforts, provides resources and support for volunteers who deliver educational programs focused on critical issues affecting youth. Educational programs foster a practical understanding and application of science, technology, engineering, math and other life skills that will lead to a more prepared young person pursuing a post-secondary education, entering the workforce, and becoming productive citizens of their communities.

3. Program existence : New (One year or less)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%		0%	
	Total	100%		0%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

It is the mission of 4-H to empower youth to reach their full potential working and learning in partnership with caring adults. The Ohio 4-H program seeks to promote positive youth development, facilitate learning, and engage youth in educational programs in order to enhance their quality of life. There is opportunity to build human and social capital in individual neighborhoods and communities by creating sustained volunteer-led groups that promote youth contribution. The educational priorities are: (1) Science, Engineering and Technology tied to scientific learning and discovery; and (2) Citizenship tied to the activities of people with institutions, government and communities for the common good.

2. Scope of the Program

- In-State Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

1. Young people will need to be involved in meaningful learning experiences.

2. Research will continue to support Positive Youth Development Practices/Programming as the most effective way for reaching youth.

3. Demands on family time will continue to be a factor in the programs youth choose.

4. There will continue to be risk factors that influence youth and the need for programs that address those factors.

5. Youth will face in increasing amount of choices and opportunities in all facets of their lives

2. Ultimate goal(s) of this Program

Educational programs foster a practical understanding and application of science, technology, engineering, math and other life skills that will lead to a more prepared young person pursuing a post-secondary education, entering the workforce, and becoming productive citizens of their communities.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	63.0	0.0	0.0	0.0
2011	63.0	0.0	0.0	0.0
2012	63.0	0.0	0.0	0.0
2013	63.0	0.0	0.0	0.0
2014	63.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct workshops
- Face to face and virtual meetings
- Develop curriculum
- Provide training to professionals, volunteers and youth
- Media and web site creations
- Partnering with businesses and other organizations

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Workshop • Group Discussion • One-on-One Intervention • Education Class • Demonstrations	• Other 2 (Emerging Technology) • Public Service Announcement • Other 1 (Pod Casts) • TV Media Programs • Newsletters • Web sites

3. Description of targeted audience

Youth - infant through 18 years of age

Parents of youth

Volunteers working with youth audiences

Teachers/Educators working with youth audiences

Youth (with a special focus on new and underserved audiences); Families; Volunteers; Youth Development Professional Staff; and Community Leaders involved in subject specific areas.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	20000	0	200000	0
2011	20500	0	210000	0
2012	21000	0	220000	0
2013	21500	0	230000	0
2014	22000	0	240000	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 : 0 **2011 :** 0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	20	0
2011	0	20	0
2012	0	20	0
2013	0	20	0
2014	0	20	0

V(H). State Defined Outputs

1. Output Target

- Number of youth enrolled/engaged in organized community 4-H clubs

  2010 : 80000 **2011 :** 80000 **2012 :** 80000 **2013 :** 80000 **2014 :** 80000

- Number of youth enrolled/engaged in after school 4-H programs

  2010 : 3000 **2011 :** 3000 **2012 :** 3000 **2013 :** 3000 **2014 :** 3000

- Number of youth enrolled/ engaged in military 4-H clubs

  2010 : 500 **2011 :** 500 **2012 :** 500 **2013 :** 500 **2014 :** 500

- Number of youth participating in Special Interest and short term programs

2010 :120000 **2011** :120000 **2012** :120000 **2013** :120000 **2014** :120000

- Number of youth participating in School Enrichment programs

2010 :75000 **2011** :75000 **2012** :75000 **2013** :75000 **2014** :75000

- Number of youth participating in 4-H overnight camping programs

2010 :18000 **2011** :18000 **2012** :18000 **2013** :18000 **2014** :18000

- Number of youth participating in 4-H day camping programs

2010 :30000 **2011** :30000 **2012** :30000 **2013** :30000 **2014** :30000

- Number of adult volunteers

2010 :20000 **2011** :20000 **2012** :20000 **2013** :20000 **2014** :20000

- Number of teen volunteers

2010 :7000 **2011** :7000 **2012** :7000 **2013** :7000 **2014** :7000

V(I). State Defined Outcome

O. No	Outcome Name
1	Increase understanding of decision making processes
2	Increase knowledge in educational topic being presented
3	Demonstrate decision making and problem solving skills
4	Practice improved basic life skills
5	Youth who have participated in 4-H programs possess transferrable workforce skills

Outcome #1

1. Outcome Target

Increase understanding of decision making processes

2. Outcome Type : Change in Knowledge Outcome Measure

2010 48000	**2011 :** 48000	**2012 :** 48000	**2013** 48000	**2014 :** 48000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #2

1. Outcome Target

Increase knowledge in educational topic being presented

2. Outcome Type : Change in Knowledge Outcome Measure

2010 60000	**2011 :** 60000	**2012 :** 60000	**2013** 60000	**2014 :** 60000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #3

1. Outcome Target

Demonstrate decision making and problem solving skills

2. Outcome Type : Change in Action Outcome Measure

2010 40000	**2011 :** 40000	**2012 :** 40000	**2013** 40000	**2014 :** 40000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #4

1. Outcome Target

Practice improved basic life skills

2. Outcome Type : Change in Action Outcome Measure

2010 32000	**2011 :** 32000	**2012 :** 32000	**2013** 32000	**2014 :** 32000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #5

1. Outcome Target

Youth who have participated in 4-H programs possess transferrable workforce skills

2. Outcome Type : Change in Condition Outcome Measure

2010 :32000	**2011 :** 32000	**2012 :** 32000	**2013** :32000	**2014 :**32000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Populations changes (immigration,new cultural groupings,etc.)
- Appropriations changes
- Economy
- Competing Programmatic Challenges

Description

{NO DATA ENTERED}

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Retrospective (post program)
- Comparisons between program participants (individuals,group,organizations) and non-participants

Description

{NO DATA ENTERED}

2. Data Collection Methods

- Sampling
- Mail
- Other (Web-based surveys)

Description

In order to document the measurable outcomes, it will be necessary to conduct an evaluation effort. This effort will include randomly selecting fifteen Ohio counties, and within each of those counties, five community 4-H clubs. It is estimated that about 1100 4-H youth will be in those clubs and near 150 volunteers. Either through a mail or web based survey, or a combination of both, information will be collected from both 4-H members and 4-H volunteers. The youth survey will include questions to obtain data on decision making skills obtained in the club experience as well as the amount of knowledge learned through their 4-H project. The 4-H volunteers will be asked to rate the increase in the ability of youth in their 4-H club to demonstrate decision making and problem solving skills, as well as the amount of transferable workforce skills that youth acquired in their 4-H club through club and project activities.

V(A). Planned Program (Summary)

Program #17

1. Name of the Planned Program

Strengthening Families & Communities (Extension)

2. Brief summary about Planned Program

Individuals and families face a wide range of challenges in their daily lives. OSU Extension research and programming will bring solutions to targeted statewide issues through Signature Programs and other offerings that transfer the latest creative and innovative thinking. Strengthening Families & Communities programming will focus on a full range of topics designed to teach people how to apply practical information to their daily lives in order to make informed choices about family financial management, healthy lifestyles, nutrition, and family relationships.

3. Program existence : Intermediate (One to five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
607	Consumer Economics	10%		0%	
703	Nutrition Education and Behavior	20%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	5%		0%	
723	Hazards to Human Health and Safety	10%		0%	
724	Healthy Lifestyle	20%		0%	
801	Individual and Family Resource Management	25%		0%	
802	Human Development and Family Well-Being	10%		0%	
	Total	100%		0%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

As determined through the use of statewide clientele surveys and focus groups, three key issues for residents of Ohio and the nation are economic stability, healthy lifestyles, and educational success. The nature of these complex key issues requires programming that is holistic and increasingly multidisciplinary. Across the breadth of four interdisciplinary Impact Areas, OSU Extension will focus teaching and outreach programming to engage with stakeholders to address these critical issues. Based upon local success, we will replicate programming across the state to meet local needs and to advance the progress achieved in initial programming implementation. We will build upon our experience and success to further address the needs of Ohioans. OSU Extension will focus the skills and abilities of personnel in nine multi-county Extension Education and Research Areas to deliver the latest knowledge, while maintaining an emphasis on local programming needs. The research and educational technologies we support empower people and communities to solve problems and improve their lives. Specifically, Extension works to improve the quality of life for all Ohio citizens. Strengthening the lives and communities of Ohio through research-based educational programming (activities at the core of OSU Extension's mission) are keys to the long-term competitive sustainability of Ohio's high standard of living.

2. Scope of the Program

- Multistate Extension
- In-State Extension
- Multistate Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

OSU-Extension has a strong history of helping to identify and meet community needs. Our team of campus- and field-based faculty and staff work collaboratively to design and implement research-based, non-biased educational curricula and programming. We have several already developed programs that target a range of clientele. Each is tailored to meet the larger environmental and developmental needs of the target audience. Particular attention is given to ensuring that the program materials are immediately relevant, contextually grounded, and based on sound pedagogical theories. The Conceptual Programming Model (CPM) guides the development of our programming. The CPM specifies that organizational and social conditions be assessed to determine programming opportunities, focusing attention on the importance of understanding audience needs, delineating outcomes to be achieved, designing appropriate, audience-responsive learning activities to achieve those outcomes, and specifying evaluation methods to document impact. Further, it assumes that program planners will draw upon necessary principles and tenants from relevant theories (e.g., Behavioral, Cognitive, Affective, Communications, Human Development, Economic, Psychological, Social, etc). Social Learning and Stages of Change theories are also foundational to our program development. Many of our programs are developing or have developed evidence that they work to increase awareness, knowledge, skills and improve behavior, largely via quasi-experimental designs (e.g., pre/post testing).

2. Ultimate goal(s) of this Program

Participants will apply practical information to their daily lives in order to make informed choices about family financial management, healthy lifestyles, nutrition, and family relationships resulting in reduced health care expenditures, financial security at all life stages, improved quality of life, and more resilient families and communities.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	20.0	0.0	0.0	0.0
2011	20.0	0.0	0.0	0.0
2012	20.0	0.0	0.0	0.0
2013	20.0	0.0	0.0	0.0
2014	20.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

• conduct formal and informal needs assessments

• develop programming materials and curricula

• conduct meetings, workshops and educational sessions

• conduct program evaluation and applied research

• form and sustain community partnerships

• train volunteers, paraprofessionals, and other community agency/organization professionals

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Demonstrations • Workshop • One-on-One Intervention • Group Discussion • Education Class	• Newsletters • Public Service Announcement • Web sites

3. Description of targeted audience

Strengthening Families and Communities programming is tailored to meet the needs of the intended audience. For example school programming is age appropriate whereas programs at Senior Centers are targeted to individuals living alone or with one other person in terms of food preparation. The end result is a program that has the potential to encompass all residents of the county. Below is a listing of the specific groups we intend to reach with targeted awareness, educational and skills-development programming:

• parents of children ages birth to 18, including, but not limited to: teen, step, adoptive, foster, single, divorcing, incarcerated, fathers who may not have yet established paternity, and grandparents

• adults in, or thinking about entering, intimate relationships

• young adults

• older adults and those who care for them

• baby boomers, especially women

• limited resource families, including mothers with young children and food stamp recipients

• new employees

• bankruptcy filers

• debt burdened individuals and couples

• first time homebuyers

• individuals with diabetes and their caregivers/family support members

• food establishment managers and food service employees

• volunteer food preparers

• child care providers

• teachers

• social service professionals

• general consumers (other formal or informal education)

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	175000	300000	0	0
2011	175000	300000	0	0
2012	175000	300000	0	0
2013	175000	300000	0	0
2014	175000	300000	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	10	10
2011	0	10	10
2012	0	10	10
2013	0	10	10
2014	0	10	10

V(H). State Defined Outputs

1. Output Target

- Educational sessions held with two or more participants

2010 3168 **2011** 3168 **2012** 3168 **2013** 3168 **2014** 3168

- Volunteers participating in the planning and implementation of the program.

2010 5000 **2011** 5000 **2012** 5000 **2013** 5000 **2014** 5000

V(I). State Defined Outcome

O. No	Outcome Name
1	# of participants who increased knowledge on topic presented as a result of the education program/session(s)
2	# of participants who plan to adopt one or more recommended practices as a result of the education program/session(s)
3	# of participants who actually adopt one or more recommended practices as a result of this education program/session(s)

Outcome #1

1. Outcome Target

# of participants who increased knowledge on topic presented as a result of the education program/session(s)

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :50000	**2011 :** 50000	**2012 :** 50000	**2013** :50000	**2014 :**50000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 703 - Nutrition Education and Behavior
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 723 - Hazards to Human Health and Safety
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being

Outcome #2

1. Outcome Target

# of participants who plan to adopt one or more recommended practices as a result of the education program/session(s)

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :50000	**2011 :** 50000	**2012 :** 50000	**2013** :50000	**2014 :**50000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 703 - Nutrition Education and Behavior
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 723 - Hazards to Human Health and Safety
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being

Outcome #3

1. Outcome Target

# of participants who actually adopt one or more recommended practices as a result of this education program/session(s)

2. Outcome Type : Change in Action Outcome Measure

2010 :25000	**2011 :** 25000	**2012 :** 25000	**2013** :25000	**2014 :**25000

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 703 - Nutrition Education and Behavior
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 723 - Hazards to Human Health and Safety
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Government Regulations
- Appropriations changes
- Competing Programmatic Challenges
- Natural Disasters (drought,weather extremes,etc.)
- Competing Public priorities
- Economy

Description

{NO DATA ENTERED}

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- Case Study
- Other (program records)
- Retrospective (post program)
- Time series (multiple points before and after program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- After Only (post program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

- Observation
- Whole population
- Sampling
- Telephone
- On-Site
- Case Study
- Tests
- Mail

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #18

1. Name of the Planned Program

Advancing Employment and Income Opportunities (Extension)

2. Brief summary about Planned Program

Innovation and entrepreneurship will drive Ohio's move to the knowledge economy. OSU Extension is uniquely positioned to help. The Community Economic, Small Business, and Job Development programs of OSU Extension are tailored to local community needs in every county throughout the state, whether metropolitan, rural, or a combination.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
602	Business Management, Finance, and Taxation	34%		0%	
608	Community Resource Planning and Development	33%		0%	
801	Individual and Family Resource Management	33%		0%	
	Total	100%		0%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Communities, individuals and families must find ways to thrive in the rapidly changing economic environment. Therefore, community leaders and residents need to develop new strategies for addressing these changes.

2. Scope of the Program

- Integrated Research and Extension
- In-State Extension
- Multistate Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

By investing in OSU Extension Faculty and Staff time and expertise with the intent to teach community leaders and citizens integrated activities including research, teaching, providing technical assistance, coaching, facilitating and forming coalitions, communities and leaders will implement new strategies.

2. Ultimate goal(s) of this Program

Empowering communities, individuals and families to create, expand, and retain economic opportunities.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	17.0	0.0	0.0	0.0
2011	17.0	0.0	0.0	0.0
2012	17.0	0.0	0.0	0.0
2013	17.0	0.0	0.0	0.0
2014	17.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Workshops,
- Programs,
- Curriculum Development,
- Leadership Development,
- Development of on-line resources, and
- Research to build plans and implement strategies;

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Education Class • Workshop • One-on-One Intervention • Other 1 (Public Forums) • Group Discussion	• Web sites

3. Description of targeted audience

Community Leaders, economic development professionals, citizens (families and individuals)

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	1000	300000	100	1000
2011	1100	330000	110	1100
2012	1200	363000	121	1200
2013	1300	399300	133	1300
2014	1400	439200	146	1400

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	10	10
2011	0	11	11
2012	0	12	12
2013	0	14	14
2014	0	17	17

V(H). State Defined Outputs

1. Output Target

- # of volunteers who have participated

2010 0 **2011** 0 **2012** :0 **2013** 0 **2014** 0

- # of volunteer hours

2010 0 **2011** 0 **2012** :0 **2013** 0 **2014** 0

V(I). State Defined Outcome

O. No	Outcome Name
1	# of participants who increased their financial literacy
2	# of participants who have developed an integrated plan for achieving financial security
3	# of participants who understand their roles in the development of a community economy;
4	# of participants using information to make community decisions
5	# of community plans developed and adopted
6	# of participants who reduced total debt
7	# of jobs created and retained

Outcome #1

1. Outcome Target

# of participants who increased their financial literacy

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 801 - Individual and Family Resource Management

Outcome #2

1. Outcome Target

# of participants who have developed an integrated plan for achieving financial security

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 801 - Individual and Family Resource Management

Outcome #3

1. Outcome Target

# of participants who understand their roles in the development of a community economy;

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 608 - Community Resource Planning and Development
- 801 - Individual and Family Resource Management

Outcome #4

1. Outcome Target

# of participants using information to make community decisions

2. Outcome Type : Change in Action Outcome Measure

2010	2011	2012	2013	2014
0	0	0	0	0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 608 - Community Resource Planning and Development
- 801 - Individual and Family Resource Management

Outcome #5

1. Outcome Target

# of community plans developed and adopted

2. Outcome Type : Change in Action Outcome Measure

2010	2011	2012	2013	2014
0	0	0	0	0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 608 - Community Resource Planning and Development

Outcome #6

1. Outcome Target

# of participants who reduced total debt

2. Outcome Type : Change in Condition Outcome Measure

2010	2011	2012	2013	2014
0	0	0	0	0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 801 - Individual and Family Resource Management

Outcome #7

1. Outcome Target

# of jobs created and retained

2. Outcome Type : Change in Condition Outcome Measure

2010	2011	2012	2013	2014
0	0	0	0	0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation

- 608 - Community Resource Planning and Development
- 801 - Individual and Family Resource Management

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Competing Public priorities
- Economy
- Public Policy changes
- Appropriations changes
- Government Regulations

Description

{NO DATA ENTERED}

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Before-After (before and after program)
- After Only (post program)
- Retrospective (post program)
- Comparisons between program participants (individuals,group,organizations) and non-participants

Description

Evaluation instruments are specifically designed for each program and vary in content, delivery method and sample size.

2. Data Collection Methods

- On-Site
- Sampling
- Observation
- Unstructured
- Mail
- Structured
- Whole population
- Telephone

Description

EFNEP uses enrolled family demographics, a 24 hour food recall and a behavior checklist to determine behavior change. The Family Nutrition Program collects participant demographic information and uses a retrospective survey at the end of a program series to determine behavior change. Dining with Diabetes has a before and after survey and impact evaluation designed to document self-reported behavior change.

V(A). Planned Program (Summary)

Program #19

1. Name of the Planned Program

Enhancing Agriculture and the Environment (Extension)

2. Brief summary about Planned Program

Ohio’s diverse agricultural, horticultural, and forestry industries contribute more than $94 billion to the state’s economy every year. OSU Extension assists with technology, marketing, and educational support advancing Ohio’s position in the global marketplace. OSU Extension also works to enhance and sustain the environment and natural areas in the state, balancing economic advancement with environmental sustainability. OSUE works with farmers to strengthen their businesses, adopt new technology, and improve efficiency while protecting the environment. OSUE helps to grow Ohio's important green industry by creating jobs, improving workforce skills, and enriching the knowledge of professionals in turfgrass management, landscaping, and nursery companies. Using OSUE as a resource, homeowners enhance the value of their homes and communities, and OSUE trains Master Gardener volunteers to apply and share research-based yard and garden information. OSUE protects Ohio's natural environment by working with landowners in managing woodlands and preserving streams and other water resources, such as Lake Erie.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
104	Protect Soil from Harmful Effects of Natural Elements	5%		0%	
112	Watershed Protection and Management	5%		0%	
123	Management and Sustainability of Forest Resources	5%		0%	
133	Pollution Prevention and Mitigation	5%		0%	
205	Plant Management Systems	10%		0%	
216	Integrated Pest Management Systems	5%		0%	
307	Animal Production Management Systems	10%		0%	
308	Improved Animal Products (Before Harvest)	10%		0%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	10%		0%	
315	Animal Welfare, Well-Being and Protection	10%		0%	
402	Engineering Systems and Equipment	10%		0%	
403	Waste Disposal, Recycling, and Reuse	10%		0%	
601	Economics of Agricultural Production and Farm Management	5%		0%	
	Total	100%		0%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Collectively, Ohio's diverse commercial agricultural, horticultural, and forestry industries contribute more than $94 billion annually to Ohio’s economy. Global economic forces, competition for land use, and urban/suburban sprawl will continue to challenge the aforementioned industries to strategically position their businesses to remain sustainable into the future.

Transitional agriculture commodity production will continue its bi-modal distribution in farm size and scale with a very small percentage of farm production units contributing an increasing share of total gross production. Small/mid-size farms will continually need to become entrepreneurial by differentiating their commodities and evaluating direct and other value-added marketing alternatives. Continued growth and evolution of Ohio's "green industry" (nursery/landscape, turfgrass, and floriculture) will present unique opportunities for new university investments in research and Extension personnel at the state, regional and county levels to provide timely research-based information.

Ohio is a densely populated state with many metropolitan areas and a rural landscape increasingly occupied by homeowners seeking amenities of country living. Growing metropolitan areas and division of land into small plots for home construction places heavy demands on the state's fixed land base and other elements of the natural environment, especially water. These factors of growth lead to increased competition among individuals and interest groups regarding the multiple alternative uses of the state's natural endowment of resources. Ohioans are also concerned with overarching issues including global climate change, invasive species, and farm-land preservation. The challenge is to raise awareness and understanding that development should proceed in concert with economic, environmental and societal health.

2. Scope of the Program

- In-State Extension
- Multistate Integrated Research and Extension
- Integrated Research and Extension
- Multistate Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

OSU Extension Agriculture and Natural Resources program area's multi-disciplinary teams will continue to conduct applied research and identify the most efficient means to disseminate research-based information through just-in-time electronic newsletters, programs, field days and satellite series. Newly identified teams and working groups will be developed as needs and issues are identified by clientele groups.

OSU Extension works in collaboration with others having a stake in the natural environment including individuals, volunteer groups, community leaders, business leaders, elected and appointed officials, and non-government organizations to identify, develop, and deliver educational programs that target the many natural resource use and restoration issues faced by communities and regions,. Extension and its partners provide the educational basis for maintaining and improving the natural resource base while simultaneously striking a balance with sustainable yields from our land, water, forest, and mineral resources.

2. Ultimate goal(s) of this Program

Ohio's agriculture and green industries will generate a $4 – 5 million gross increase over the next 5 years through implementation of OSU Research and Extension programs, products, and recommendations.

Incorporate environmental components into programs primarily aimed at producers of agricultural products in Ohio.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	58.0	0.0	0.0	0.0
2011	58.0	0.0	0.0	0.0
2012	58.0	0.0	0.0	0.0
2013	58.0	0.0	0.0	0.0
2014	58.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Develop and deliver curriculum to increase application and utilization of bioenergy applications including waste digesters and cellulosic based technologies by directing energy team to develop and deliver educational programming.

Enhance the adaptation of production techniques through utilization of on-farm research to work directly with producers to evaluate practices to enhance productivity and profitability.

Conduct workshop training sessions for livestock haulers, food animal veterinarians, livestock producers, consultants and integrators.

Prepare and distribute research-based educational materials in the areas of animal welfare and bio-security through worksheets, factsheets, web-based sites, podcasts, and emerging technologies.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	**Indirect Methods**
• Demonstrations • One-on-One Intervention • Workshop • Education Class	• Public Service Announcement • Newsletters • Web sites

3. Description of targeted audience

Ohio farm families, commercial green-industry companies, consumer horticulture advocates, commodity/farm advocacy groups, federal/state agricultural/environmental agencies, state-wide consumer groups, volunteer groups, community leaders, business leaders, elected and appointed officials, and non-government organizations

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	20000	100000	2000	0
2011	20000	100000	2000	0
2012	20000	100000	2000	0
2013	20000	100000	2000	0
2014	20000	100000	2000	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

V(H). State Defined Outputs

1. Output Target

- number of volunteers involved in delivery and implementation of program.

  2010 0 **2011** 0 **2012 :**0 **2013** 0 **2014** 0

- number of multi-state partnerships

  2010 0 **2011** 0 **2012 :**0 **2013** 0 **2014** 0

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of producers that demonstrate an increase in biosecurity knowledge and skills.
2	Number of food animal producers that increase their knowledge of the how to mitigate animal biosecurity hazards and risks on their farm operations and agribusinesses.
3	Increased knowledge of current practices and emerging technologie.
4	Number of youth shows/county fairs that implement animal ID/quality assurance programs.
5	Number of producers (or units represented) adopting energy efficient practices (energy conservation plans, more efficient equipment, etc.)
6	Increase profitability for the food animal sector of the Ohio agricultural industry.

Outcome #1

1. Outcome Target

Number of producers that demonstrate an increase in biosecurity knowledge and skills.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :0 **2011 :** 0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 216 - Integrated Pest Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
- 403 - Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Target

Number of food animal producers that increase their knowledge of the how to mitigate animal biosecurity hazards and risks on their farm operations and agribusinesses.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :0 **2011 :** 0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
- 315 - Animal Welfare, Well-Being and Protection
- 402 - Engineering Systems and Equipment

Outcome #3

1. Outcome Target

Increased knowledge of current practices and emerging technologie.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
- 315 - Animal Welfare, Well-Being and Protection
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management

Outcome #4

1. Outcome Target

Number of youth shows/county fairs that implement animal ID/quality assurance programs.

2. Outcome Type : Change in Action Outcome Measure

2010 0 **2011 :** 0 **2012 :** 0 **2013** 0 **2014 :** 0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
- 315 - Animal Welfare, Well-Being and Protection
- 402 - Engineering Systems and Equipment
- 601 - Economics of Agricultural Production and Farm Management

Outcome #5

1. Outcome Target

Number of producers (or units represented) adopting energy efficient practices (energy conservation plans, more efficient equipment, etc.)

2. Outcome Type : Change in Action Outcome Measure

2010 :0 **2011 :** 0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 216 - Integrated Pest Management Systems
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse

Outcome #6

1. Outcome Target

Increase profitability for the food animal sector of the Ohio agricultural industry.

2. Outcome Type : Change in Condition Outcome Measure

2010 :0 **2011 :** 0 **2012 :** 0 **2013 :**0 **2014 :**0

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
- 315 - Animal Welfare, Well-Being and Protection
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Government Regulations
- Economy
- Appropriations changes
- Natural Disasters (drought,weather extremes,etc.)
- Competing Public priorities
- Public Policy changes

Description

{NO DATA ENTERED}

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- {NO DATA ENTERED}

Description

{NO DATA ENTERED}

2. Data Collection Methods

- {NO DATA ENTERED}

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program #20

1. Name of the Planned Program

Business Retention and Expansion Initiative (Extension)

2. Brief summary about Planned Program

The Ohio BR&E program has aimed to strengthen the capacity of local leaders and residents to affect economic conditions in more than 140 communities since 1986. With the Internet, many of the program's resources are now available to participating communities via the web, providing a great deal of flexibility to the participants in how the program is delivered. Ultimately, the program aims to engage community stakeholders in a formal dialogue in order to empower local development officials and community at large to act on economic development issues of strategic importance.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
608	Community Resource Planning and Development	100%		0%	
	Total	100%		0%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Local communities lack an understanding of community issues related to economic development. Local officials lack knowledge of existing business needs and resulting expansion strategies. Relations among community stakeholders (businesses, residents, local leaders/officials) are fragmented. This program aims to address all three concerns, and does so relying on over 20 years of practical application in the field.

2. Scope of the Program

- In-State Extension
- Multistate Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

For the program to succeed, it is assumed that community stakeholders are desirous of cultivating relationships and local officials and community decision-makers value research-based information. The format has been tried and tested since 1986, evolving over time to best meet community stakeholders' needs.

2. Ultimate goal(s) of this Program

The program goal: Community leaders, residents, and businesses will engage in ongoing, meaningful dialogue that will lead to the retention of existing jobs, creation of new jobs, and ultimately creation of new businesses.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	3.0	0.0	0.0	0.0
2011	4.0	0.0	0.0	0.0
2012	4.0	0.0	0.0	0.0
2013	3.0	0.0	0.0	0.0
2014	3.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

BR&E Program Outputs include: BR&E training, on-site workshops and one-on-one consultation, volunteer organizational efforts, continuous update of BR&E hard copy and web-based materials such as questionnaires, reports, and presentations in cooperation with development officials, elected officials, businesses, and community stakeholders including Extension professionals.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
• Workshop • One-on-One Intervention • Demonstrations • Group Discussion	• Web sites • Other 1 (Podcasts)

3. Description of targeted audience

Local development officials, community volunteers, Extension professionals (direct); community stakeholders (indirect)

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	2000	10000	0	0
2011	2500	10000	0	0
2012	2500	10000	0	0
2013	2200	10000	0	0
2014	2200	10000	0	0

2. (Standard Research Target) Number of Patent Applications Submitted

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	5	5
2011	0	5	5
2012	0	5	5
2013	0	5	5
2014	0	5	5

V(H). State Defined Outputs

1. Output Target

- Formal training workshops

  2010 :10 **2011 :**10 **2012 :**10 **2013 :**10 **2014 :**10

- one-on-one consultations

  2010 :250 **2011 :**250 **2012 :**250 **2013 :**250 **2014 :**250

- formal community presentation of findings

  2010 :25 **2011 :**25 **2012 :**25 **2013 :**25 **2014 :**25

- web-based questionnaires

  2010 :15 **2011 :**15 **2012 :**15 **2013 :**15 **2014 :**15

- hard-copy questionnaires

  2010 :1000 **2011 :**1000 **2012 :**1000 **2013 :**1000 **2014 :**1000

- Number of program planning and implementation volunteers

  2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

- Number of program planning and implementation volunteer hours donated

  2010 :0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

V(I). State Defined Outcome

O. No	Outcome Name
1	Local leaders and community residents will be more familiar with different ways of analyzing data and more capable of interpreting data needed to make important community decisions.
2	Local leaders and community residents will use BR&E data and other secondary data available to make better-informed community decisions.
3	Jobs will be created and retained as a result of ongoing, meaningful dialogue among community leaders, residents, and businesses.

Outcome #1

1. Outcome Target

Local leaders and community residents will be more familiar with different ways of analyzing data and more capable of interpreting data needed to make important community decisions.

2. Outcome Type : Change in Knowledge Outcome Measure

2010 200	**2011 :** 250	**2012 :** 300	**2013** 250	**2014 :** 200

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

Outcome #2

1. Outcome Target

Local leaders and community residents will use BR&E data and other secondary data available to make better-informed community decisions.

2. Outcome Type : Change in Action Outcome Measure

2010 200	**2011 :** 250	**2012 :** 300	**2013** 250	**2014 :** 200

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

Outcome #3

1. Outcome Target

Jobs will be created and retained as a result of ongoing, meaningful dialogue among community leaders, residents, and businesses.

2. Outcome Type : Change in Condition Outcome Measure

2010 400	**2011 :** 500	**2012 :** 600	**2013** 500	**2014 :** 400

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes

Description

Economic growth period may enable business growth despite assistance resulting from ongoing, meaningful dialogue among community leaders, residents, and businesses.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Retrospective (post program)

Description

Ongoing (annually) web-based program evaluation tools are used to track key program indicators and inform program modification efforts. Retrospective pretest-post test evaluation tools are used at the conclusion of program workshops and training sessions throughout the year to document change in knowledge, awareness, and anticipated behavior. Informal program evaluation and impact documentation feedback is also collected via conversations with program participants.

2. Data Collection Methods

- Unstructured
- Whole population
- Telephone
- On-Site
- Sampling

Description

{NO DATA ENTERED}