2013 Oklahoma State University Combined Research and Extension Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

This plan of work is a joint plan for the Oklahoma Agricultural Experiment Station (OAES) and the Oklahoma Cooperative Extension Service (OCES) - entities of the Division of Agricultural Sciences and Natural Resources at Oklahoma State University. Oklahoma contains a broad array of natural resources, agricultural production regions, commodities produced, communities, families, businesses, and industries. Vast forage production areas, the ability to graze winter wheat, and the sub climate of the high plains have made cattle production an enormous industry in Oklahoma. Wheat, poultry, hay for sale, cotton, nursery crops, forest products, oilseed crops, nuts and vegetables all play an important role in the broad agricultural economy. Management of natural resources is significantly affected by ecosystem degradation and loss of services, land use changes and habitat fragmentation, and climate change. These challenges summarize a global phenomenon in which human activities, both directly and indirectly, influence the management of natural resources. Rapidly changing communities ranging in population from those defined as frontier-like to thriving cities also exist within the state's boundaries. High levels of unemployment and low incomes plague portions of the state. Human health issues are major economic and social concerns as Oklahoma often ranks high in risk factors such as child and adult obesity and diseases such as heart disease and diabetes. The level of value added to raw products in the state is low and needs to improve to continue to help diversify rural economies. Considerable untapped opportunity exists for the improved use of natural resources for recreation and the development of bio-based industries with an emphasis on sustainable energy. Oklahoma does not sit in a vacuum. Issues, challenges, and opportunities with respect to agricultural production, the environment and natural resources, communities and markets, scientific discovery, economic downturn, and technology development exist with Oklahoma's neighbor states, within the region and nation.

A planning process conducted in late 2011 and early 2012 identified a set of **"drivers"** as highly influential in shaping many of the issues expected to be important to Oklahoma citizens, agriculture, natural resources, families, businesses, and communities, as well as, scientific inquiry in the future.

- **Climate Variability**
- **Consumer and Public Preferences and Expectations**
- **Energy**
- **Land Use and Natural Resources**
- **Market Volatility**
- **Pests and Invasive Species**
- **Population and Demographics**
- **Public Policy & Government Regulation**
- **Quality of Life**
- **Water**
- **Technology**

A draft set of goals were established based on the drivers and the input form the broad-based advisory groups accessed by the Division. They are:

OAES GOALS

Develop systems that add value to and increase efficiency, safety and sustainability of animal and plant production systems.

Research efforts will seek to : 1) increase nutritive value, improve food safety, and reduce risk associated with climate variability and increased competition for water; 2) develop systems capable of maintaining economically sustainable levels of production; and identify economically and environmentally sustainable methods of control for pests and invasive species which threaten Oklahoma's agriculture, environment, economy, and population to include pests affecting agricultural production (animal and plant), turf, ornamentals, human health, food safety, construction, and natural resources (e.g., forests, lakes, stream, range land, wildlife); and 3) develop new products that are derived from agricultural products grown in Oklahoma.

Develop renewable sources of energy.

Researchers will develop knowledge and technology and integrate into systems that can provide new potential sources of income for Oklahoma. Research efforts will seek to identify agricultural production systems and best management practices (BMPs) to help conserve energy (renewable or non-renewable) and reduce the cost of production.

Evaluate existing and new marketing and economic development systems and public policies.

Research programs will be developed to evaluate marketing systems and government policies that affect the lives of Oklahoma's agricultural producers and consumers. Researchers will provide recommendations to producers and government officials to aid in their decision making process to help insure that marketing and policy systems are economically sustainable.

Develop best management practices to help conserve Oklahoma's vast natural resources.

Oklahoma's land, air, water resources and wildlife (i.e., forests, wild animal and plant populations, rangeland, soils, lakes, and streams) provide benefits for all Oklahomans. Research will be conducted to design and develop management methods to utilize natural resources in a sustainable, economically, and environmentally sound manner.

Develop effective management practices and efficient systems that sustain and conserve water resources.

Oklahoma's water resources provide benefits for all Oklahomans. Research will be conducted to develop best management practices to sustain water resources and to use water in the most efficient, effective, environmentally sound and equitable manner for all citizens and all segments of the economy and in support of our other natural resources.

OCES GOALS

Provide educational opportunities to help improve the quality of life for all Oklahomans.

Achieving this goal will require expanding the diversity of the audiences we serve and the delivery of educational and service programs that improve the vitality and sustainability of Oklahoma's families, businesses, and rural and urban communities. Through these programs OCES will address grass-roots identified issues and needs such as those related to health, family resiliency, understanding of food and fiber production, personal finances, nutrition, food safety and security, housing, economic development, recreation, land and resource use, human capital, and youth competencies in science, life skills and critical thinking.

Educate and inform crop and livestock producers and land owners of appropriate new

technologies, changing production methods, and economic conditions that impact their businesses.

Examples include changes resulting from higher energy costs and the potential use of forages for energy production. Both will lead to changes in cropping systems and livestock feed sources. The "Drivers" identified indicate there will be increased competition for water that will call for less irrigation and/or more efficiency in plant water utilization (drought resistant plants, etc.). Other factors include climate variability, rising input costs, evolving markets, food safety issues, and changing government policies and regulations.

Increase natural resource conservation and environmental educational programming.

Chief among these educational programs will be programs on best management practices for the conservation of energy and water resources. Other conservation education efforts include (but are not limited to) soil and wildlife conservation and management of pests and invasive species and environmental protection. These efforts will include programming for many audiences in the general population as well as agricultural producers.

Develop and conduct enhanced risk management educational programs.

Agricultural and natural resource managers have always faced substantial risks from weather and changing markets. But recent events (drought, record level commodity and input prices) and a number of the leading "Drivers" identified as influencing Oklahoma agriculture (climate variability, energy, market variability, water, pests and invasive species, and government policies and regulations) indicate higher levels of risk in the future. These programs should help managers design organization, production, marketing, and management systems that improve sustainability in the face of increased risk levels.

Make a positive difference in the lives of an increased number of Oklahoma 4-H members with emphasis on 4-H programs to attract more minority and urban youth.

The goal of 4-H is to provide youth with life skills that contribute to them being better citizens and more resilient individuals. National research has shown the advantages of 4-H participation include higher educational accomplishment and higher motivation for future education. In addition, youth in 4-H are more civically active and make more community and civic contributions than youth in other out-of-school activities. These accomplishments and impacts are because of the positive youth development provided by state extension specialists and the supportive families, caring volunteers, and dedicated county educators who work with youth.

The OAES and OCES missions provide direction to address all of the issues, challenges and opportunities related to the areas discussed above. As part of the Land Grant System, the OAES and OCES provide a continuum from the generation of knowledge and technologies to the transfer of the knowledge and technologies and their practical applications to the final users. The OAES deals with research problems and needs that are identified throughout the agricultural, food and natural resource systems and within the scientific community. OCES concentrates on the delivery of research-based education, technology, and information for agricultural producers, food and agricultural businesses, families and youth, and communities. Much of the needs assessment occurs at the grassroots level through the OCES, as well as, through industry, commodity groups, community organizations, advisory boards, professional associations, agencies and governmental entities. Most of the issues and challenges identified are diverse and complex. In recognition of this reality, the OAES and OCES have organized much of their efforts into multi-disciplinary, issued-based teams. In addition, most teams have members representing research and extension programming efforts. The programming presented in this plan of work was largely developed by many of these teams.

This plan of work represents only a portion of the total effort of the OAES and OCES. However, it does represent the breadth of work to be done and addresses many of the high priority issues identified by stakeholders. Just as the teams are integrated from a research and extension standpoint and among

disciplines they are integrated with respect to funding sources. This plan includes more effort than that which could be accomplished by the federal appropriations and the required match alone. Each program is likely to employ federal funding, state and/or local funding as well as grant and contract resources.

The overall goal of this plan developed by the OAES and OCES is to use scientific knowledge and related technologies and information to help Oklahoma (as well as the region and nation) use its agricultural, natural resource, and human base to foster economic development, improve the environment and its management, and the quality of life of its citizens. The impacts of these efforts include economically successful and competitive agricultural and natural resource producers, an adequate supply of healthy food, a healthy and well-nourished population, a balanced and thriving ecosystem with environmentally-sustainable industries, and enhanced economic opportunity and quality of life for all of Oklahoma's residents. OCES and OAES programs also reach beyond the state, region and nation as programs improving grain and food storage, fertilizer use, horticulture crop production, food processing and many more touching developing countries around the world and helping to improve stability and security.

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

Year	Extension		Research	
	1862	1890	1862	1890
2013	244.5	0.0	85.0	0.0
2014	245.5	0.0	85.0	0.0
2015	243.5	0.0	83.0	0.0
2016	243.5	0.0	83.0	0.0
2017	244.5	0.0	83.0	0.0

II. Merit Review Process

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

- Internal University Panel
- Combined External and Internal University Panel
- Expert Peer Review
- Other (Administrative Review)

2. Brief Explanation

All Experiment Station projects, whether supported by Hatch or McIntire-Stennis funds, are peer reviewed prior to submission. It should be noted that stakeholder input into the planning process, position priorities, and research areas to be pursued by the scientists could be considered as the initial step in the review process.This valuable input helps in the merit and relevancy of our projects; it is a continual practice during the decision process to fill new

positions, and direct research efforts and approaches to high priority needs.

Each department in OAES is required to have three reviews for a project (selected by the appropriate Department Head), with one of those reviews being external to the department.In those cases, this will be from another department in the Division, from another College at OSU, or another state with expertise in the area. These reviews are approved at both the departmental and OAES Directorate levels before submission to NIFA. The principal investigator is required to respond to the comments provided by the reviewers before final approval is granted.Most departments utilize the attached checklist.

All OAES/OCES teams are required to have a team plan of work which is reviewed by team members, the administrative leaders, and the appropriate OAES/OCES assistant and associate directors. All team plans of work are reviewed with respect to relevance, the Division Strategic Plan, stakeholder input, and team competitive advantage.All individual OCES plans of work (5-year and annual) developed by county, area, district and state program professionals are reviewed in reference to quality and relevance by at least two individuals with program and/or administrative responsibility pertinent to the individual's program area. The reviewers assess the merit of the program plans of work with respect to issues, needs, and problems identified through stakeholder input, quantity of effort planned in relation to appointment, and plans to evaluate and report program quality and impact. County Educator plans are reviewed by the appropriate district subject matter specialist, district director, and state program leader (when appropriate). Area and district specialist plans are reviewed by the district director, the subject matter department head, and appropriate assistant director/state program leader. State specialist plans are reviewed by the appropriate department head and the appropriate assistant director/state program leader.

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?

The planned programs are based on input from stakeholder groups (see stakeholder sections), staff, and scientists who identified high priority issues. Some are programs that are long-term and enduring in nature and others may be relatively new and directed at recently identified priorities. NIFA and Oklahoma State University strategic plans as well as state and federal legislative initiatives play a roll in which priority issues can and will be addressed. In many cases, stakeholders are involved in the implementation of applied research efforts and educational/demonstration activities. Numerous stakeholder groups provide funding to help undertake high priority programming on issues deemed to have strategic importance to those stakeholders.

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

In general all research programs serve to train a multicultural group of graduate students. The Division diversity plan encourages all teams and units to seek means and methods to be more inclusive of diverse personnel and audiences. Some examples of the types of special efforts afforded by planned programs follow.

In 2011, approximately 12% of all attendees at OCES events were Native American origin. This is about 40% above the U.S. Census Bureau estimate of 8.6% of all Oklahomans as Native American. We continue to make special efforts to reach the Native American community including a special set of talks with leaders of some of the tribes sponsored by our university president and through pursuit of special grants to direct youth programming toward

tribal youth. Estimates show that events drew 5.1% African Americans compared to 7.4% in the general population - however, only 1.2% of the farm operators are African American. Nutrition and youth programs combined reached about 6.5% of this demographic and we continued to have special urban youth educators in two of our counties in 2011. While there are difficulties of estimating Hispanic participants it would appear that about 5% attendees could be identified as Hispanic compared to the census bureau estimate of 8.9% in the general population. We continue to try new means to improve Hispanic participation including cultural awareness training, translation and purchase of Spanish language materials, and special training opportunities for high percentage Hispanic labor forces. We hired a Spanish speaking professional as an Hispanic Community Educator in one of our two most populated counties in FY11. This hire has made considerable progress in the community and we expect the improved communications will allow us to reach more of this demographic.

The Farm and Agribusiness Management program team works closely with the E (Kika) de la Garza Institute for Goat Research at Langston University (1890 Institution) which permits both entities to better reach a significant underserved populations of agricultural producers (including African American and Hispanics) in the goat production and marketing arena. This team has a longstanding effort to improve the education opportunities specifically directed at women involved and interested in agriculture.

The Agricultural Biosecurity program involves numerous non-traditional stakeholder groups. Through these efforts many underserved audiences will be contacted and provided an opportunity to participate in program activities.

The Integrated Pest Management program team often works closely with many of the tribal (Native American) environmental specialists in conducting program activities and providing input on tribal land usage and pest programs. This team also has opportunity to reach many Hispanics through some of its work with applicator training. This team also has several joint efforts with Langston University.

The Community Resource and Economic Development program has the opportunity to reach underserved populations on a regular basis. For example the rural service and infrastructure activities often provide the most help for underserved populations. Rural medical and health facilities retention and expansion is a primary example of this. This program team often works with Langston University (rural development roundtable) to find ways to reach a broader audience. Most of the rural economic development programs have a positive effect on income levels in otherwise lower-income areas. This program worked closely with the Greenwood District (a traditional African-American district) in Tulsa on numerous development projects.

The Oklahoma 4-H Youth Development program typically reaches well over 500,000 participants per year with between 25% and 29% of the participants comprised of non-white audiences. We expect the youth program activities outlined in this plan of work will have similar success in reaching underserved populations in the state.

The OCES 4-H Youth program has just been awarded a Youth mentoring grant from National 4-H Council which targets Native American youth ages 10-17. The new tribal grant funding opportunity was originally designed to fund one mentoring site in the states with 1994 land grants. We appealed and got to apply and actually got funds for three sites. These are 15 month projects through National 4-H Council funded by Juvenile Justice. We hope to get a renewal next year. We are partnering with the Choctaw, Cherokee, and Chickasaw Nations as

new collaborators and continue to work with Creeks with the longer term Indian Reservation grant. With these new projects we hope to link about 60 youth with 20 or more mentors at each location. These are just getting underway in FY2012. The kids involved can be from any tribe, not just those that geographically cover that area.

The Family Resiliency and Economic Well-Being and Human Nutrition and Health program has a long history of reaching large numbers of low-income, under-served and minority audiences. Through nutrition activities, activities with the courts and prisons, activities with low income populations, welfare and related program participants, etc. this program team reaches tens of thousands of individuals from underserved groups every year. This team regularly reaches a much higher percentage of Black Females and Native American males, and Native American females than the general population. We expect the program activities will continue to reach these audiences.

The Plant Biological Technologies program and the Structure and Function of Macromolecules program teams both are heavily involved in undergraduate research training and mentoring programs. This program typically has special grants to involve minority students in research. These undergraduate research training programs have typically concentrated on African American students and Native American students.

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

The planned program teams developed outcomes that they project to occur in relation to the program activities. It is projected that many of these outcomes will occur during the plan period, however it is very likely that many of the programs will have resultant outcomes that occur beyond the plan period, often well beyond. In addition, it is likely that many other outcomes will occur because of the planned programs. The teams will hope to also capture a measure of some of these outcomes as well. Teams will be careful to try to establish base levels to do a better job in estimating the outcomes and impacts of programs. Most outcomes will have impacts of some nature. When feasible and reasonable, the teams will attempt to capture meaningful measures of the impact of the outcomes. Teams are expected to document progress relative to projected outcomes, and impact when appropriate.

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

In the Division of Agricultural Sciences and Natural Resources at Oklahoma State University, planning (strategic and program) is critical in the development of faculty and staff and the direction of their efforts. Because these programs are strongly guided by the input from stakeholders and the publics served by the Division, historically the programs of the Oklahoma Agricultural Experiment Station (OAES) and the Oklahoma Cooperative Extension Service (OCES) have proven very effective in serving the state, region and nation. The planned programs outlined in this plan of work are expected to continue that success in meeting the recognized needs of producers, families, communities, entrepreneurs, businesses, governments, and science and technology. The OAES and OCES believe strongly in the need to develop and support multidisciplinary teams to provide the knowledge discovery, technology development and education and information delivery necessary to meet the issues facing Oklahoma and the nation. Most of the teams have members with responsibilities in research and team members with responsibilities in extension, as well as many with joint appointments. In addition, most of the teams have members with state-level responsibilities as well as those with area and county responsibilities. This team concept will allow OAES and OCES to continue to serve the publics and identified stakeholders in an efficient and effective manner into the future.

IV. Stakeholder Input

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

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public
- Other (Professional journals, meetings, etc.)

Brief explanation.

Collecting, analyzing, and communicating stakeholder input is a continuous and broad-based process within the Oklahoma Cooperative Extension Service (OCES) and the Oklahoma Agricultural Experiment Station (OAES). In this process, a variety of strategies and techniques are used to seek stakeholder input and encourage participation. The Division of Agricultural Sciences and Natural Resources (DASNR) has a broad-based advisory council representing industry, agencies and communities. In addition, all the DASNR units have one or more advisory committees.This past year, the Director brought a new draft set of "drivers" and goals (see Plan Overview) to the council for its review. OAES and OCES use OSU and DASNR media resources to seek input from traditional and new stakeholders. Other strategies may include: attending meetings with commodity groups such as Ok Wheat Growers Assoc., Ok Wheat Commission, Ok Peanut Commission, Ok Hay and Seed Assoc., Ok Greenhouse Growers, Ok Nursery and Landscape Assoc., Texas-Oklahoma Cotton Working Group, Ok Vegetable Assoc., Oklahoma-Texas Watermelon Association, Ok Turfgrass Research Foundation, Ok Wheat Research Foundation, Ok Golf Course Superintendents Assoc., Ok Crop Improvement Assoc., Turfgrass Producers International, Ok Home and Community Education Assoc., Ok Grain and Feed Assoc., Grain Elevators and Processors Society, Ok Grape Growers and Winemakers Assoc., Ok Pecan Growers Assoc., Ok Cattlemans Assoc., Beef Industry Conference Advisory Committee, Ok Beef Industry Council; feedback from grantors; advisory committees and boards, feedback at professional meetings; grower contacts; meeting with food industry HACCP roundtable; attending regional research and extension committees; feedback on journal manuscript submissions, feedback on grant proposals, RFPs for grants; attending scientific society meetings; and direct contacts with producers, growers, processors, manufacturers, community leaders. Seeking stakeholder input will also include targeting agencies, governmental and non-governmental entities such as: Ok Department of Agriculture, Food and Forestry, Ok Council on Economic Education, Ok Bankers Association, Federal Reserve Bank, Noble Foundation, Kerr Center for Sustainable Agriculture, Consumer Credit Counseling Services, Ok Department of Human Development and Family Services, Ok Agricultural Statistical Services.

This past year, a special effort was made to identify the most critical issues facing children,

youth, families and communities in Oklahoma several methods were used. First, FCS and 4-H county educators submitted their annual Program Advisory Committee [PAC] reports. These were analyzed and consistent themes were identified. A survey was conducted with Oklahoma Home and Community Education [OHCE] board members during their fall leadership training where they were asked to identify the five issues that most critically affect families, youth and communities in Oklahoma. A similar survey was conducted with over 1,000 4-H members during their fall District Leadership conferences. In an effort to better serve Oklahoma's military families, comments made by Lt. General Rick Lynch and his wife in a presentation at the Association of Public Land-Grant Universities [APLU] annual meeting were also taken into consideration. Finally, a newspaper scan was conducted to see if the themes being reported across the state were consistent with those identified by the PACs, youth and other stakeholders.

The new DASNR Water Center has been reaching out to all the agencies, commissions, tribes, and groups with an interest or mission in water. In addition it has played a continuing lead role in organizing input for and developing chapters of the new 50-Year water plan for the state. OCES has helped reach thousands of Oklahomans willing to provide input into the planning process.

OCES has been part of two sets of on-going meetings to improve programming for native american tribes and tribal mambers. These meetings include numerous tribal leaders and span programming from youth to natural resources. We expect these meetings to lead to more jointly directed programming and further grass-roots input.

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 Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

The OCES has a well-defined program advisory committee system that provides grass roots input for program planning. Once or twice a year, county extension staff seek input from program advisory committee (PAC) members on program needs related to OCES/OAES strategic program priority areas. Advisory committee members are selected to represent various geographic areas of each county. They are representative of agricultural interests, youth, families, community and government leaders, and the general public. Committee members also represent the ethnic diversity of the county, as well as different socioeconomic groups.

Priority issues identified by county PACs are compiled by District Extension Program Specialists. The District Specialists summarize the issues within each strategic program priority, and make them available to District Directors and the state office. District priority issues are reviewed and compiled at the state office and provided on the OCES website. These needs are given special attention in the development of individual plans of

work. They also provide direction for major extension and research programs.

Another formal means of acquiring stakeholder input comes through the development and revision of the Division of Agriculture and Natural Resources strategic plan. In that process considerable effort is made to acquire input both internal and external to OSU and the Division's research and extension efforts. Drafts of the strategic plan are widely distributed with input coming directly to the VP Agricultural Programs.

Input on research directions from stakeholders is solicited through many ways in addition to the traditional communication with departments. Each department prepares its own strategic plan in concert with that of the Division. Faculty and staff input is actively sought in standing and ad hoc committees, and faculty teams may jointly prepare "white papers" on specific issues of concern. External stakeholder input is also received from many different sources. Information, review, listening and update sessions are held periodically with user groups to identify needs and share results of research. Each of these organizations is composed of members spanning the state's ethnic and socioeconomic groups. The OAES also initiates communication with under-served and/or under-represented citizens including Oklahoma's Native American nations, the African-American community, and other minority groups. Additionally, there is frequent interaction with commodity-based organizations, the Oklahoma Farmers' Union and the Oklahoma Farm Bureau. Other opportunities for face-to-face interactions with our constituents are provided at numerous field days and community programs.

OAES/OCES continue to seek input from agencies and associations that represent the state's businesses and communities, such as the Oklahoma Small Business Bureau. State agricultural representatives in the Oklahoma Department of Agriculture are in frequent communication, as are Oklahoma legislative and administrative groups and Federal agencies.

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 with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Survey of the general public
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Other (Peer reviews, grant proposal reviews)

Brief explanation.

We will continue to collect additional direction and input through the DASNR Iniative Teams' planning and budget request process

IN 2010, we conducted a special planning process aimed at critical issue programming for children, youth, families and communities. In an effort to identify the most critical issues facing children, youth, families and communities in Oklahoma several methods were used. First, Family Consumer Science (FCS) and 4-H Youth county educators submitted their annual Program Advisory Committee [PAC] reports. These were analyzed and consistent themes were identified. A survey was conducted with Oklahoma Home and Community Education [OHCE] board members during their fall leadership training where they were asked to identify the five issues that most critically affect families, youth and communities in Oklahoma. A similar survey was conducted with over 1,000 4-H members during their fall District Leadership conferences. In an effort to better serve Oklahoma's military families, comments made by Lt. General Rick Lynch and his wife in a presentation at the Association of Public Land-Grant Universities [APLU] annual meeting were also taken into consideration. Finally, a newspaper scan was conducted to see if the themes being reported across the state were consistent with those identified by the PACs, youth and other stakeholders.

Related issues were grouped into nine broad issue areas and logic models were developed for each. An in-service training in January 2011 was conducted to formally present the 9 issue areas to the 4-H and FCS county educators. County Educators then presented the logic models to their PAC's in February 2011 and asked them to rank the issues according to the most critical needs of their county. These rankings helped determine which teams the educators joined. The county staff, along with district and state specialists identified various curricula that will be used to address the short, medium and long-term outcomes and implement effective evaluation instruments to measure impacts. These lead to several of the plans shown in the Planned Programs of this POW.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities
- Other (In team planning and budget requests)

Brief explanation.

Stakeholder input is considered in all of the above situations. It is very important in working with our state legislature in securing new recurring and special funding for the OCES and OAES. In addition, it plays a strong role in identifying the faculty and other professional position priorites in the hiring process. In addition to these tactical moves, it also can play a very large role in strategic changes. For example,

stakeholder input was important in the development of a new Natural Resources Department within the Division.Grassroots stakeholder input is the driving force in development of county educator and area specialist individual 5-year plans of work and annual planning efforts. Stakeholder input and the development of it is part of the extension field staff career ladder criteria. Many of our research programs and extension programs work closely with commodity groups and their related research/education foundations to develop a joint set of priorities for applied research and extension projects in the state. Specific listening opportunities and advisory groups often bring about significant programming changes such as a strong emphasis on research in wheat quality and performance or need for education in diet and nutirtion. Last year advisor group input resulted in the filling of three positions in Animal Science to strengthen meat science, animal welfare, and animal systems management. The Oklahoma extension service and agricultural experiment station have 28 active teams working on issues important to the people of Oklahoma, the region and the nation. Food processing and quality research is often strongly influenced by an advisory committee as well as the individual manufactureers and entrepreneurs with whom the Food and Agricultural Product Center works. Federal initiatives and grant opportunities also provider input that helps mold and direct some efforts.

The issues identified as facing children, youth and families were grouped into nine similar broad categories and logic models were developed for each. An in-service training in January 2011 was conducted to formally present the 9 issue areas to the 4-H and FCS county educators. County Educators then presented the logic models to their PAC's in February 2011 and asked them to rank the issues according to the most critical needs of their county. These rankings will help determine which teams the educators will join. The county staff, along with district and state specialists identified various curricula that will be used to address the short, medium and long-term outcomes and implement effective evaluation instruments to measure impacts.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger - Animal Enterprises

2. Brief summary about Planned Program

The Animal Enterprises team will conduct research and educational programming targeted to enhance forage use efficiency, sustain renewable resources, and to improve animal health and beef product quality. In doing so, stakeholders will be supplied with information and decision tools to assist them in increasing enterprise profitability, increasing consumer demand for animal products and sustaining and improving the renewable resources on their operations. This effort will help meet the NIFA goal of boosting U.S. agricultural production and improve global capacity to meet growing food demand. We plan to identify the biological links that exist between animal morbidity, reduced performance, and meat quality as well as nutrition and physiological issues. The interaction of forage use and grazing management and recovery in the cow-calf and stocker segments of the industry will also be a priority. Programs such as Master Cattleman, Beef Quality Assurance, Oklahoma Quality Beef Network, and numerous educational conferences will be conducted to accomplish these goals. Meat goat production has grown markedly in Oklahoma with numerous cultural demographic changes and Extension programs helping producers develop better production practices. We plan to continue to support this growing industry as an alternative for many of Oklahoma's smaller producers and as a potential mitigation for controlling invasive species.

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	20%		15%	
302	Nutrient Utilization in Animals	12%		20%	
303	Genetic Improvement of Animals	5%		10%	
304	Animal Genome	0%		10%	
305	Animal Physiological Processes	5%		10%	
306	Environmental Stress in Animals	6%		10%	
307	Animal Management Systems	30%		10%	
308	Improved Animal Products (Before Harvest)	7%		5%	
311	Animal Diseases	10%		5%	
315	Animal Welfare/Well-Being and Protection	5%		5%	
	Total	100%		100%	

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

1. Situation and priorities

Livestock and forage production represent the largest segment of Oklahoma's rural and agricultural economy. Consequently, Oklahoma's economic wellbeing is directly tied to factors that influence the ability of livestock and forage producers to remain profitable in a sustainable fashion. For example, in the cow/calf sector, recent increases in input prices for items such as fertilizer and feed together with the need to buy hay and feed to replace forage in drought-stricken parts of the state resulted in an estimated increased cost of production of 30 to 40% for 2011 compared to 4 years ago (Doye and Sahs, 2012). Pasture land prices continue to increase as well which may create a barrier to entry for new producers. Land rental prices are expected to increase as land owners realize the increased value of forage in adding weight to cattle when grain prices are high.

Nevertheless, opportunities exist in this new business environment. For example, the value of forage as livestock feed, and the resulting weight gain of livestock while grazing forage has increased dramatically due primarily to the high cost of feed grains (Peel 2011 need reference). This should represent a major opportunity for Oklahoma animal enterprises because the state's agricultural economy is based largely on forage and wheat production (see figure below). Wheat is used on many farms as a dual purpose crop for both grazing and grain.

Results and knowledge developed as part of the OAES/OCES program efforts are directly and/or indirectly applicable to animal production systems within the south central region, the nation and throughout the world. Mechanistic research results will be applicable to work internationally and

presentations by scientists are made at international meetings and through science journals to an international audience. Results of the described research and Extension programs will provide for increases in production efficiencies and conservation of natural resources.

Nevertheless, recent severe drought in the Southern Great Plains has attenuated this opportunity. Pasture and rangeland recovery could require several years and unquestionably, a substantial investment by the Animal Enterprises initiative teams will be required. Major opportunities are apparent. For example, improving the efficiency of forage utilization and developing efficient, sustainable grazing management and recovery practices will be critical to maintaining and improving animal enterprise's contribution to Oklahoma's economy.

Other broad issues representing major challenges and opportunities to livestock and forage production enterprises include animal and plant health and biosecurity, animal well-being, invasive species, domestic policies, maintaining and increasing market share for grazing livestock products, globalization, environmental issues and mitigation, such as sustained drought, intergenerational transfer of assets, and tax issues.

2. Scope of the Program

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

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

1. Assumptions made for the Program

· Relevant fundamental and applied research will be generated and disseminated to stakeholders in a timely fashion
· Appropriated and sponsored funding will increase
· Severe drought will not continue

2. Ultimate goal(s) of this Program

Information is developed that improves decision making and increases efficiency and profitability of Oklahoma, regional, statewide and nationally farms and ranchers is developed and disseminated.

Management skills of cattle and forage managers are improved allowing them to obtain greater efficiency, higher profitability, reduced risks, and improved quality of life.

Evaluate the effects of animal morbidity on feedlot performance, carcass characteristics and meat quality.

Identify the biological links that exist between the BRD complex, reduced animal performance, and meat quality. Identifying these links will ultimately allow us to provide cattle producers with improved management strategies for receiving high-risk calves, and improve meat quality for consumers of beef.

Strong, profitable and efficient cattle and forage enterprises improve the economic viability of rural communities.

Improve meat goat producers' knowledge and practices

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
2013	19.0	0.0	8.0	0.0
2014	20.0	0.0	8.0	0.0
2015	20.0	0.0	9.0	0.0
2016	20.0	0.0	9.0	0.0
2017	20.0	0.0	9.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct fundamental and applied research
- Construct research facilities
- Write extramural grant proposals
- Conduct workshops and other educational meetings and conferences
- Provide in-service training
- Provide one-on-one consultation

· Develop and maintain numerous newsletters, web sites, press releases, Sun Up programs, and other mass media resources

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (Scientific Presentations) ● Other 2 (Research)	● Public Service Announcement ● Newsletters ● eXtension web sites ● Web sites other than eXtension ● Other 1 (Journal Articles)

3. Description of targeted audience

Managers, owners and employees of farms, ranches and agribusinesses, research scientists, extension personnel, beef cattle producers, meat goat producers, consumers, and policy makers.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of educational meetings, conferences, in-service trainings held
- Number of fact sheets, proceedings publications, newsletters and other non-peer reviewed extension publications produced
- Number of Animal Enterprise television ?spots? or segments produced
- Number of web sites maintained

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Total number of producers certified as Master Cattlemen
2	Number of cattle enrolled in value enhancement programs
3	Number of producers participating in beef cattle value enhancement programs
4	Percent of participants gaining knowledge in methods to decrease the incidence and severity of bovine viral diarrhea virus and bovine respiratory disease
5	Percent of producers gaining knowledge in pasture and rangeland management, forage use efficiency and pasture and rangeland recovery
6	Number of goats represented by producers gaining knowledge at Goat Boot Camps and related conferences and meetings

Outcome # 1

1. Outcome Target

Total number of producers certified as Master Cattlemen

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 315 - Animal Welfare/Well-Being and Protection

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Number of cattle enrolled in value enhancement programs

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 315 - Animal Welfare/Well-Being and Protection

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Number of producers participating in beef cattle value enhancement programs

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Percent of participants gaining knowledge in methods to decrease the incidence and severity of bovine viral diarrhea virus and bovine respiratory disease

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Percent of producers gaining knowledge in pasture and rangeland management, forage use efficiency and pasture and rangeland recovery

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 302 - Nutrient Utilization in Animals

- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Number of goats represented by producers gaining knowledge at Goat Boot Camps and related conferences and meetings

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 302 - Nutrient Utilization in Animals
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Changes in the internal and external business environment facing farm and ranch managers

The ability of internal and external agencies to continue funding this research.
Appropriations changes

Public policy changes - A change in emphasis on the importance of animal growth and animal diseases

Competing public priorities - significant change in beef consumption for example

Policy change relating to National Animal ID

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation will be performed by tracking participation in the various programs mentioned above and the economic impact related to their participation (premium price associated with OQBN certified cattle, for example). Additionally, written surveys will be distributed among program participants prior to and immediately following the educational events for the purpose of documenting the percent of participants that gain knowledge in specific areas (such as increase in knowledge of sustainable grazing management practices and methods to reduce bovine respiratory disease).

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Global Food Security and Hunger - Crop Enterprises

2. Brief summary about Planned Program

The overarching goal of the Oklahoma State University Crop Management and Wheat Multiple Uses Teams is to improve the livelihood of agricultural producers in the southern Great Plains through integrated agronomic reasearch, demonstration, and Extension programs. Specific areas of concentration include, but are not limited to, variety development and testing, system-based cropping research, advanced nutrient mangement technologies, integrated crop-livestock systems, and end-use quality of harvested crops. Extension and outreach efforts combine traditional face-to-face efforts and web-based tools and technologies that are intended to make more efficent use of limited resources. Research and outreach to developing countries in areas such as low-cost, sensor-based determination of fertilizer needs in growing plants will help develop food security and sustainability worldwide. All the efforts in this planned program will help meet the NIFA goal of boosting U.S. agricultural production and improve global capacity to meet growing food demand.

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	20%		5%	
133	Pollution Prevention and Mitigation	4%		5%	
201	Plant Genome, Genetics, and Genetic Mechanisms	3%		20%	
204	Plant Product Quality and Utility (Preharvest)	10%		10%	
205	Plant Management Systems	30%		20%	
211	Insects, Mites, and Other Arthropods Affecting Plants	8%		10%	
212	Pathogens and Nematodes Affecting Plants	5%		10%	
213	Weeds Affecting Plants	8%		5%	
215	Biological Control of Pests Affecting Plants	4%		5%	
216	Integrated Pest Management Systems	8%		10%	
	Total	100%		100%	

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

1. Situation and priorities

Continuous monocrop wheat is the dominant cropping system in Oklahoma with over five million acres sown annually. Approximately one half of these acres are also used as a source for winter grazing by the 1.5 million stocker cattle that cycle through Oklahoma farms and raches on an annual basis. This makes the Oklahoma wheat crop not only a critical cash enterprise for rural Oklahoma, but a key component of the US beef cattle industry, as it serves as the necessary buffer between cow-calf operations in the East and feedlot operations in the West. Given the size, scope, and unique nature of wheat production in the southern Great Plains, a dynamic research, Extension, and demonstration program is critical to ensuring long-term success of stakeholders

The resillience of the continuous wheat production system has made it a staple of Oklahoma agriculture, but overelliance on a single production system and a lack of crop diversity have reduced soil health in the region and created weed, insect, and disease problems that must be addressed through systems-based approaches that includes a reduction in tillage and crop rotation.

Priorities

· Supply farmers and ranchers with timely, accurate information on best management practices to increase agronomic performance, econmic viability, and long-term sustainability of cropping systems in the region

· Provide independent verifcation of cultivar performance and end-use quality of harvested grain

· Provide farmers and ranchers with well-adapted wheat cultivars that simultaneously meet agronomic and end-use perfomance standards identified as critical by relevant stakeholders

· Introduce, evaluate, and demonstrate alternative crops and crop management strategies.

· Evaluate and demonstrate methods for increasing the efficiency of system inputs and resources such as nitrogen fertilizer and water.

· Respond to changing demographics, tastes, and preferences by incorporating new technologies into Extension outreach efforts whenever appropriate

· Provide effective, non-classroom educational opportunities for industry professionals, Extension educators, farmers, and ranchers.

2. Scope of the Program

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

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

1. Assumptions made for the Program

· State and federal funding mechanisms will allow maintenance of a critical mass of qualified professionals to address issues and we will be able to recruit qualified team members to fill vacancies

· Sources of funding for applied research in conventional cropping systems will remain steady or increase to reflect increased cost of agronomic research and Extension

· Private investment in wheat breeding and/or the introduction of biotech traits into wheat will not change farmer demand for publicly-released wheat cultivars

· Stakeholders will continue to identify Oklahoma State University Cooperative Extension as their primary source for information regarding variety performance

· Industry partners will continue to support crop diversification efforts by providing the necessary crop input and market outlets to make smaller acreage crops viable

2. Ultimate goal(s) of this Program

· Wheat, canola, soybean, and peanut cultivar performance testing and demonstration

throughout Oklahoma and the south central region of the U.S.A.

· Wheat breeding, variety development, and introgression of new traits into elite germplasm

· Publish a variety of web sites, web-based updates, video presentations, and printed extension materials that address current and emerging issues in Oklahoma and regional agriculture

· Provide effective, non-classroom educational opportunities for industry professionals, Extension educators, farmers, and ranchers.

Conduct research and demonstrations related to weed control and resistance.

Conduct on-farm demonstrations of best management practices

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
2013	18.0	0.0	11.0	0.0
2014	18.0	0.0	11.0	0.0
2015	18.0	0.0	11.0	0.0
2016	18.0	0.0	12.0	0.0
2017	18.0	0.0	12.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Wheat, canola, soybean, and peanut cultivar performance testing and demonstration throughout Oklahoma
- Wheat breeding, variety development, and introgression of new traits into elite germplasm
- Publish a variety of web sites, web-based updates, video presentations, and printed extension materials that address current and emerging issues in Oklahoma agriculture
- Provide effective, non-classroom educational opportunities for industry professionals, Extension educators, farmers, and ranchers.
- Conduct research and demonstrations related to weed control and resistance.
- Conduct on-farm demonstrations of best management practices
- Wheat management newsletter, website
- Test and demonstrate alternative cropping systems and rotations
- Weekly crop updates during production season

- Nitrogen strips and use of handheld lasers/sensors
- Development of imporved low cost methods of site-specific fertilizer application for US and developing countires

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 ● Demonstrations ● Other 1 (twitter)	● Newsletters ● eXtension web sites ● Web sites other than eXtension

3. Description of targeted audience

Wheat growers, dual-purpose wheat producers, millers, bakers, wheat importers, seed growers and dealers, wheat breeders, crop producers, canola, peanut, sunflower and other crop producers and nutraceutical producers.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Field Demonstrations, field days, and conferences
- Regionally adapted wheat cultivars
- Educational materials developed
- Web-based educational materials such as web sites, videos, and social media applications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Percentage of dual-purpose wheat acreage where first hollow stem criterion used for decision making
2	Number of wheat varieties released to address agronomic and end-use quality needs of hard red winter wheat industry
3	Locally-controlled evaluations and agronomic data for oilseed crops
4	Percentage of wheat acres sown to varieties with improved pest resistance, yield potential, and end-use quality.
5	Increase in knowledge and adoption rate of reduced tillage practices and crop rotation - acres effected
6	Number of crop acres where fertilization decisions include sensor-based fertilization information
7	Locally-controlled evaluations and agronomic data for small grains crops

Outcome # 1

1. Outcome Target

Percentage of dual-purpose wheat acreage where first hollow stem criterion used for decision making

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Number of wheat varieties released to address agronomic and end-use quality needs of hard red winter wheat industry

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

Locally-controlled evaluations and agronomic data for oilseed crops

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Percentage of wheat acres sown to varieties with improved pest resistance, yield potential, and end-use quality.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Increase in knowledge and adoption rate of reduced tillage practices and crop rotation - acres effected

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Number of crop acres where fertilization decisions include sensor-based fertilization information

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

Locally-controlled evaluations and agronomic data for small grains crops

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Extreme weather conditions would affect wheat production, cotton production, and the diversity crops and cropping systems. Weather could also affect the progress of breeding programs. Government regulations and policies could change practical applications of systems by either mandating requirements or prohibiting critical inputs. Progress of chemists could affect the rate of adoption of biorefining processes. Changes in countries purchasing Oklahoma wheat and the requirements of millers and bakers will play a role in the rate of progress.High grain prices will have some affect on research and acceptance.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Progress in development of wheat varieties with respect to improvement of resistance to leaf rust, stripe rust, soil-borne mosaic virus, aphids, and tolerance to low-pH, A1-toxic soils will be evaluated on an ongoing basis based on characteristic reproducibility and overall characteristic desirability.Selection has long been performed under a grain-only management system, but resources are being re-channeled toward selection in a dual-purpose environment under the **GRAZE**n**GRAIN©** breeding system. Quality trait testing will be conducted in the Oklahoma Food and Agricultural Products Center to measure progress.

For cropping system and reduced tillage programming, base line data will be obtained from wheat growers on their inputs and rotation systems. Base line data will also be obtained from cotton producers on their inputs. As the programming progresses, growers will be queried as to their inputs at that point in time. At the end of the program comparisons will be made on the base line inputs and the inputs as they were obtained through time. In addition, the number of acres in a diversity cropping system and in cotton will be compared at the end with the beginning acres. In addition, the number of acres in cotton will be compared at the end with the beginning acres.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Plant Biological Technologies

2. Brief summary about Planned Program

Plant microbe interaction research will stress: Molecular, cellular, anatomic pathways of transmission of microbes from plant to plant: population variation in pathogens and vectors, molecular causes of disease symptoms, interactions of pathogens with other organisms and viruses, microbial movement pathways within the plant, and membrane or cell surface phenomena in interorganismal interactions. Plant stress research will emphasize: plant interactions with: insects, pathogens, temperature extremes, water stress (drought and excess), and oxidative stress. As situations change priorities and inputs will have to change as well. Team direction depends on funding sources as well as changing scientific priorities as garnered from stakeholder input. The fundamental overlying emphasis on this program is to better understand how the ubiquitous microorganisms, environmental factors, and other organisms interact with plant life in our environment and in agricultural settings of importance to human kind.

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
123	Management and Sustainability of Forest Resources	5%		5%	
132	Weather and Climate	5%		5%	
201	Plant Genome, Genetics, and Genetic Mechanisms	5%		25%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	13%		13%	
206	Basic Plant Biology	14%		14%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		5%	
212	Pathogens and Nematodes Affecting Plants	53%		33%	
	Total	100%		100%	

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

1. Situation and priorities

Plant losses to environmental stresses are enormous. Estimates of crop losses due to drought run over $1 billion per year in the U.S. Losses to the citrus industry from freeze damage topped $700 million in just three California counties in 1998. Heat stress causes both chronic and acute damage that contributes to average yields being three- to seven-fold lower than record yields. Average crop losses to insects have been estimated at 13%. The need for increased resistance to biotic and abiotic stresses has been recognized as a national research priority. The Plant Stresses: Abiotic and Biotic Team addresses: insects, pathogens, temperature extremes, water stress (drought and excess), and oxidative stress.

Microorganisms affect the growth and development of plant life upon which we all depend in both positive and negative ways. The Plant Microbe Interaction Team covers a wide spectrum of research relating to plant microbe interactions. The fundamental overlying emphasis on this program is to better understand how the ubiquitous microorganisms interact with plant life in our environment and in agricultural settings of importance to human kind.

Priorities
•Identify plant genotypes with superior stress tolerance from existing germplasm and utilize traditional breeding to improve stress tolerance in crop species. •Identify and isolate and identify targets for marker-assisted selection and gene transfer for improved stress tolerance. •Discover physiological and biochemical mechanisms of injury and acclimation in plant stress responses. •Establish and refine capabilities and infrastructure to enable the use of proteomics and metabolomics in plant stress studies including using to study aphid/plant interactions, focusing on both the plant and aphid. •Determine how susceptible and resistant plants respond to aphid feeding to identify resistance factors that could be used in crop protection. •Identify low molecular weight and peptide phytotoxins secreted by plant pathogenic fungi and characterize their contribution to plant disease. • •Study molecular factors involved in the movement of spiroplasmas through insect cellular barriers. •Assess population diversity among natural communities of phytopathogenic mollicutes. •Develop strategies for controlling insect-transmitted plant pathogens on cucurbit yellow vine disease (CYVD) and other plant diseases. •Biological control of soilborne diseases. •Control of anthracnose disease caused by Colletotrichum gloeosporioides on Euonymus fortunei. •Identify genes whose induction is necessary for an effective hypersensitive disease resistance response in cotton. •Clone and sequence the Gossypium hirsutum genes for the second step in gossypol biosynthesis, preparatory to blocking that step via gene silencing. •Enhance resistance to spring dead spot in seeded bermudagrass varieties •Isolate and identify bacteria that promote growth or disease resistance in wheat •Explore the biodiversity of viruses and plant bacterial pathogens found in natural environments. •Characterization of Wheat Leaf Proteome and of aphid feeding induced changes in wheat leaf protein expression

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research

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

1. Assumptions made for the Program

Plant stress injury and mechanisms of acclimation have identifiable bases.
Plants and/or production practices can be modified to reduce losses to stress.
Continued availability of funding, facilities and talented and trained personnel.

2. Ultimate goal(s) of this Program

Increase productivity by reducing crop losses to environmental stress
Increase our understanding of specific plant microbe interactions of significance to agriculture and the environment in which we live
Harness the knowledge and resources of plant microbe interaction for the protection of agricultural or ecologically important plant species
Expand knowledge base
Train students who will increase research capability in the subject areas

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
2013	0.0	0.0	12.0	0.0
2014	0.0	0.0	12.0	0.0
2015	0.0	0.0	12.0	0.0
2016	0.0	0.0	13.0	0.0
2017	0.0	0.0	13.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

•Design and conduct research, including the development of methods and procedures •Write and submit grant proposals to private, state and federal agencies •Generate scientific publications - communicating scientific results to a wide range of scientists •Training of professional scientists - graduate and undergraduate students, technicians and post docs in the scientific discipline •File patents

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Other 1 (professional journals) ● Other 2 (professional meetings)	● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

Scientists and scientific societies
Governmental science organizations
Educational institutions
Applied researchers and extension specialists
Students
Private, federal, state, and industrial funding agencies
Other stakeholders (producers, consumers, educators, public)

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Grant proposals written and submitted
- Peer-reviewed publications including journal articles

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Graduate students graduated

Outcome # 1

1. Outcome Target

Graduate students graduated

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 212 - Pathogens and Nematodes Affecting Plants

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Description

Any natural disasters, economic downturns, policy changes or government changes that negatively affect appropriations or change research directives will adversely affect outcomes. Funding levels are affected by public priorities and governmental priorities which are tied to national and local economic performance to a certain degree as perceived by decision makers.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Through strategic planning process, logic models will continually be updated to reflect changes in inputs. The program will be evaluated annually using the above mentioned benchmarks including outputs, i.e. publications, grant proposals funded, patents awarded and graduate students matriculating.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Commercial and Consumer Horticulture

2. Brief summary about Planned Program

Overall objective is to support the commercial horticulture industry, home and community based gardeners, and youth horticulture projects in Oklahoma and the south central region of the U.S.A. through mission-oriented fundamental and applied research and extension outreach activities. Research goals include identification of adapted cultivars; determine feasibility of horticultural crops in rotation with agronomic crops; develop integrated production and processing systems for high-value alternative horticultural crops; proven varieties and cultivars, and develop sustainable and/or organic production systems for commercial horticultural crops. Support education and technology transfer in these areas and others related to commercial horticulture, with emphasis on supporting eXtension. Support consumer horticulture and home gardeners and the related industry.

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
124	Urban Forestry	7%		10%	
202	Plant Genetic Resources	5%		10%	
204	Plant Product Quality and Utility (Preharvest)	14%		15%	
205	Plant Management Systems	40%		40%	
502	New and Improved Food Products	7%		20%	
901	Program and Project Design, and Statistics	7%		5%	
903	Communication, Education, and Information Delivery	20%		0%	
	Total	100%		100%	

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

1. Situation and priorities

Both commercial and consumer horticulture research and extension are important to the citizens of Oklahoma and the south central region of the U.S. This program plan discusses both horticultural efforts.

The need for science-based, locally-relevant information is greater than ever now that Oklahoma and regional producers are looking to horticultural crops as alternatives to traditional field crops. The ornamental horticultural industry also is experiencing growth as more people approach retirement and disposable incomes provide the time and money to increase demand. Commercial horticulture program priorities are: a) Support for cultivar evaluation; b) Horticultural crops as part of rotation plans with agronomic crops; c) Support for eXtension; d) "Seed to market" production of high-value alternative horticultural crops; and e) Sustainable and/or organic production of commercial horticultural crops.

Gardening continues to be ranked one of the top leisurely activities (three out of four households, an estimated 82 million households, participated in one or more indoor and outdoor lawn and garden activities in 2004). A recent survey by the Garden Writers Association indicates that 4 out 5 households surveyed indicated they had some form of garden or yard. Consumers spent an estimated $36.8 billion on their lawns and gardens (an average of $449 per household) in 2004. Studies also indicate that a great deal of satisfaction and benefits come from gardening including a healthier body and mind and increased property value. Rapid urban growth and population aging coupled with increased interest in the environment and home gardening has prompted an ever-increasing number of garden and landscape inquiries. County offices report that over 50% of the phone calls received are consumer horticulture related.

Consumer horticulture and urban forestry priorities relevant are: water quality and usage in the urban and suburban environment (with particular concern of nutrient loading from urban landscapes), surveying of Oklahoma consumers (gardeners) at the county level, improving consumer horticulture web-based delivery, Master Gardener training, pesticide training and education, and home food production and youth at risk-obesity/school vegetable gardens.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Appropriated funding will remain at present levels, while sponsored funding will increase. Financial support from horticultural industries will increase. Key research and extension personnel will be replaced in

a timely manner. OAES branch stations where program research is conducted will have sufficient personnel and funding through the Field & Research Services Unit to sustain research infrastructure. Publishable results will be obtained from research (Vegetable trial reports MP-164, etc.), and recommendations can be given based on these results. Oklahoma educational TV will continue to broadcast Oklahoma Gardening. eXtension will grow and become a viable outlook for information.

2. Ultimate goal(s) of this Program

Develop and communicate science-based, locally-relevant information to support the commercial horticulture industry in Oklahoma and the region. Improve the economic return to horticultural producers while protecting the environment and ensuring food safety and quality.

Increase, support, and strengthen statewide Master Gardener Program to assist existing and new county participants and increase contacts made through Master Gardener activities and programs.

Provide gardening information/education to the homeowners and gardening enthusiasts in environmentally responsible best management garden, lawn, and landscape practices- including continued adaptation of IPM principles through programming by counties and Master Gardener programs.

Increase awareness of benefits of gardening activities on the health of youth and adults. Increased information on the health related benefits of the consumption of fruits, vegetables and nuts; more school vegetable gardens.

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
2013	12.0	0.0	3.0	0.0
2014	12.0	0.0	3.0	0.0
2015	12.0	0.0	3.0	0.0
2016	12.0	0.0	2.0	0.0
2017	12.0	0.0	2.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

•Conduct research to evaluate cultivars of traditional and nontraditional horticultural crops and ornamental plants. •Conduct research into crop cultural systems, particularly the feasibility of horticultural crops in rotation with agronomic crops. Lead CoP for grape production for eXtension. •Conduct research to develop "seed to market" production systems for high-value alternative horticultural crops like cilantro and herbs. •Conduct research to develop sustainable and/or organic production systems for commercial

horticultural crops. •Provide demonstrations and education and disseminate information to support Oklahoma's commercial horticulture industry, with emphasis on electronic resources. •Survey Oklahoma Consumers (Gardeners) at the county level to assess the needs and wants of the gardening public •Upgrade the web-based delivery •Review and revise annually or as needed Fact sheets and other publications •Educational programs focused on Consumer Best Management Practices (BMP) for the conservation of energy, water resources, water pollution prevention, Integrated Pest Management (IPM), and urban landscape wildlife conservation •Educational programs are conducted based on public interest and County Educator requests •Participate and support eXtension Consumer Horticulture/Master Gardener Community of Practice •Conduct Master Gardener/Junior Master Gardener Training •Conduct pesticide training and education •Provide Education on Backyard Food Production •Assist in Youth at Risk - Obesity/School Gardens

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 ● Demonstrations ● Other 1 (Youth Programs)	● Newsletters ● TV Media Programs ● eXtension web sites ● Web sites other than eXtension

3. Description of targeted audience

Horticultural crop producers, commodity groups, food processors, landscape professionals, input suppliers such as seed and chemical companies, peer scientists, extension specialists and county professionals, horticultural dealers and merchants, greenhouses, Master Gardeners, home owners, communities, and youth.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- New Master Gardeners trained
- Manuscripts submitted for consideration of publication in peer-reviewed journals
- Number of Extension publications completed - fact sheets, newsletters, trial reports, web-based materials
- Number of statewide "Oklahoma Gardening" shows produced

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of horticultural crop producers newly certified as organic
2	Number of volunteer hours provided to community horticulture programs statewide
3	Number of home gardeners experiencing increased awareness and knowledge about environmental issues and IPM principles

Outcome # 1

1. Outcome Target

Number of horticultural crop producers newly certified as organic

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 502 - New and Improved Food Products

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Number of volunteer hours provided to community horticulture programs statewide

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 124 - Urban Forestry
- 205 - Plant Management Systems
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Number of home gardeners experiencing increased awareness and knowledge about environmental issues and IPM principles

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 124 - Urban Forestry
- 205 - Plant Management Systems
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Natural disasters can destroy experiments and, if broad in scale, may lead to economic downturns. Decreases in appropriated funding will adversely affect outcomes.

Detailed, reliable statistics are not available for Oklahoma horticultural crop production. Figures from the Census of Agriculture underreport actual production and are not updated yearly. It will take a public policy change to be able to track changes in horticultural crop acreage and production in Oklahoma. Stakeholders must be willing to accept change.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Number of "hits" to extension websites will be recorded. Web sites analyzed will include Oklahoma Gardening You Tube and Facebook sites, OSU horticulture extension publications web site, and other appropriate departmental web sites.

Conference/Workshop participants (commercial and consumer horticulture) will be surveyed post workshop survey via either hard copy survey or on-line survey in order to determine their intent to adopt recommended management practices and IPM techniques conveyed during workshops. Workshop participants will include those from county sponsored programs and state and departmental sponsored programs.

Testing will be conducted for the Master Gardener trainees in regard to their understanding and adoption of best practices for home landscape and garden. Participants of the annual master gardener continuing education conference will be surveyed to determine the knowledge gained and likelihood of

adoption of improved management practices learned at the conference.

Yearly reports will be collected from Master Gardener Volunteer programs indicating number of new Master Gardener Volunteers trained; total hours volunteered (including); number of contacts made with Oklahoma residents; number of educational activities and programs offered; and number of pounds of produce donated to local food banks and non-profit agencies.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Climate Change - Ecosystem and Environmental Quality and Management

2. Brief summary about Planned Program

1. Develop approaches to integrate conservation into traditional land management; 2. develop approaches to restore degraded ecosystems; 3. improve understanding of weather and climate variability and impact on crop and livestock production systems, ecosystem management, and wildland fire management; 4 provide weather and climate data and decision support tools for clientele; 5. determine impacts and management approaches for invasive species; 6. develop economic alternatives based on natural resources that can be integrated into traditional land management; 7. understand impacts and develop approaches to mitigate land fragmentation; 8. Improve wildlife habitat and management; 9. Understand impact and develop approaches to improve air quality management and policy; 10. Improve efficiency and environmental impact of animal waste management; 11. Understand impact and develop approaches to improve surface water and watershed issues; 12 Develop modeling tools to reduce phosphorus runoff on a watershed and field level; 13. Increase recycling and reuse effort to reduce amount of domestic waste entering landfills; 14. Improve understanding of Life Cycle Analysis as a tool to measure economic impact of environmental decisions.

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
104	Protect Soil from Harmful Effects of Natural Elements	5%		8%	
111	Conservation and Efficient Use of Water	10%		9%	
112	Watershed Protection and Management	8%		10%	
121	Management of Range Resources	9%		13%	
123	Management and Sustainability of Forest Resources	7%		10%	
132	Weather and Climate	10%		5%	
133	Pollution Prevention and Mitigation	7%		5%	
134	Outdoor Recreation	7%		0%	
135	Aquatic and Terrestrial Wildlife	5%		5%	
136	Conservation of Biological Diversity	5%		5%	
141	Air Resource Protection and Management	5%		5%	
205	Plant Management Systems	9%		10%	
403	Waste Disposal, Recycling, and Reuse	4%		5%	
605	Natural Resource and Environmental Economics	9%		10%	
	Total	100%		100%	

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

1. Situation and priorities

Oklahoma contains a vast array of ecosystems due the variability in soil types, climatic conditions, altitude, and historic use. Management of natural resources is significantly affected by ecosystem degradation and loss of services, land use changes and habitat fragmentation, and climate change. These challenges summarize a global phenomenon in which human activities, both directly and indirectly, influence the management of natural resources. This presents considerable issues and opportunities. These include: different management approaches on all natural resources of the area and develop approaches to manage landscapes for multiple uses; invasive species threat to all ecosystems of Oklahoma and the major negative economic impacts on agricultural enterprises; the effects of land use and management decisions on our natural resources and the conservation of natural resource combined with sustainable systems for rural development; the social and ecological importance of managing large-scale processes and patterns across multiple land ownerships; nonpoint source pollution control, riparian management, stream channel management and restoration, water quality and other environmental standards, biocriteria for aquatic systems, and fishery protection and management; confined animal waste

systems; water management and water policy; solid waste management; improved public natural resource education and information; the development of sustainable multiple-use ecosystems; and the restoration and management of native plant communities.

Oklahoma's has highly variable weather. It is a place where dry air from southwestern USA meets moist air from the Gulf of Mexico. It is also known as a transition zone for air temperature with cold air from the north colliding with warm air from the south. The meeting of these weather masses commonly form dry lines that spawn severe weather outbreaks. These large-scale weather conditions place Oklahoma in an ideal location to monitor the impact of weather and climate variability on its wide range of ecosystems and cropping systems.

Oklahoma is unique in having one of the most data rich, large-scale weather networks in the US and worldwide. Weather and climate data in Oklahoma are collected through the Oklahoma Mesonet. This weather monitoring network was designed and implemented jointly by scientists at the University of Oklahoma (OU)and Oklahoma State University (OSU). The Oklahoma Mesonet consists of 120 automated stations across Oklahoma, with at least one Mesonet station in each of Oklahoma's 77 counties. A variety of environmental measurements are collected every 5 minutes from instruments on a 10-meter-tall tower, at ground level and below ground. Observations undergo quality assurance testing and are updated via the Internet every 5 minutes.

Programming priorities include:

Restoration and management of crosstimber and prairie ecosystems for multiple uses.

Reduction of negative effects of invasive species, such as Eastern Redcedar, Sericea lespedeza, and zebra mussel.

Improved understanding and application of government programs for conservation of natural resources (CRP, WHIP, WRP, CSP, etc.).

Promote the appreciation of a landscape perspective in ecosystem management that is dependent on broad scale patterns in a private land state and considers the importance of ecological and social consequences of land management practices.

Conduct reaseach and contine development of weather-based decision support tools for wildland fire management: including wildfire, prescribed fire, and smoke dispersion.

Improve crop and livestock input efficiency and lower production risk through more extensive use of weather and climate data and information in management decisions.

Enhance ecosystem management through a better understanding of weather and climate impacts on the environment, landscape, and organisms.

Create informal and formal educational agrometeorology and agroclimatology curriculum for youth and adults.

Research and extension programming related to water quality and quantity and the interface of terrestrial and aquatic ecosystems, as well as, animal waste, stream erosion, emerging contaminates, and water policy.

Increase the understanding of Life Cycle Analysis as an analytical tool.

Development of anaerobic digestion systems to improve the environmental performance of swine and dairy production.

Extension programming related to handling of agricultural byproduct materials.

Extension programming to aid in delivery of state mandated educational programs for poultry and swine farmers.

Research and extension programming related to monitoring and modeling of air emissions related to cotton ginning.

Increase the understanding of carbon sequestration in agricultural and natural systems and the policy necessary to reduce impact of carbon on climate variability.

Research and Extension programming related to use of compost and improved sedimentation to reduce runoff from construct sites.

Development of low impact development and biologically active retention structures to reduce the effect of urban runoff on water quality.

Increase the amount of glass, plastic, paper, metals recycled, and increase use of composting and vermicomposting to reduce amount of domestic waste entering landfills.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Increased communication among researchers, teachers, and extension workers involved in environmental and waste management efforts will lead to increases in productivity and effectiveness of programs; Conservation can be integrated into traditional management and used to develop new management prescriptions; Stakeholders will be active participants in program development and implementation ; Successful extramural funding will allow our faculty to continue to recruit graduate students and post-doctoral researchers to play critical roles in carrying out individual research projects; Federal and state agencies will continue to fund conservation-related landowner incentive programs, and landowners will continue to enroll in those programs; Fragmentation of native landscapes, especially from energy development, will accelerate. Increasing exurban development will expand areas in which prescribed fire is not practical or untenable, and place an increasing proportion of our land area in danger of wildfire during drought conditions.

2. Ultimate goal(s) of this Program

To be the premier source of cutting-edge information on fisheries, forestry, rangelands, wildlife, weqther and climate, air and water quality, waste management, and fire ecology for students, landowners, agricultural producers, communities, and land managers and to promote the sustainable and ecological management of natural resources and to improve production and economic response to weather and climate.

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
2013	10.0	0.0	14.0	0.0
2014	10.0	0.0	14.0	0.0
2015	10.0	0.0	14.0	0.0
2016	10.0	0.0	13.0	0.0
2017	10.0	0.0	13.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Design and conduct research

Forge collaborative relationships that build on current strengths in research in management.

Partner with state and federal agencies to address pressing needs in conservation.

Produce scientific publications; disseminate information through other print and online media outlets.

Conduct workshops, field days, and other personal information exchanges to promote issues and alternatives in natural resource management.

Submit grant proposals

Produce scientific publications

Develop Mesonet weather-related decision tools including but not limited to OK-FIRE system for wildland fire management, plant disease prediction modeling knowledge and operational weather-based tools, new Cattle Comfort Index (developed by animal scientists in Nebraska) combines heat and cold stress into a single model for multiple livestock species combined with Oklahoma Mesonet data will be made available on a statewide basis in Oklahoma.

Conduct Poultry Waste Management Education

Weather and climate education for the general public and agricultural sector will be conducted through weather reports on TV through OSU SUNUP, online video/audio tutorials, printable information and fact sheets, email newsletters, educational programs, seminars and workshops.

Multi-disciplinary research on grassland fuel modeling will be conducted as part of an awarded Joint Fire Science Program grant

Statewide daily estimates of plant available water in the top 80 centimeters of the soil profile will made available through the Oklahoma Mesonet website.

Educational materials and programs will be developed to inform clientele on how available water in the soil profile impacts cropping and ecosystem decision management to improve risk management.

The Oklahoma Mesonet will introduce a new "Agriculture" website section that will provide statewide and farm local perspectives to risk management and decision support weather-based tools.

Evapotranspiration is being investigated as a broad measure of plant environmental stress. The Oklahoma Mesonet provides a statewide system that can be used to ground truth satellite evapotranspiration modeling. Research at OSU will provide the foundation for modeling plant biomass based on rainfall, soil moisture, and evapotranspiration that can be used in ecosystem and grazing management.

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (Certifications) ● Other 2 (Landowner Associations)	● Newsletters ● Web sites other than eXtension ● Other 1 (LISTSERV and newsgroup) ● Other 2 (Television)

3. Description of targeted audience

Scientists, students, related agencies (Federal, State, private), land owners, farmers, ranchers, communities, consumers, land developers, state legislators, commodity groups, community leaders

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Grant proposals written and submitted
- Manuscripts submitted for consideration of peer-reviewed publication
- Extension conferences, workshops and training sessions
- Research and Extension reports and fact sheets
- Number of web-based weather related decision tools provided through Oklahoma Mesonet to improve crop and livestock production and safety and/or reduce costs
- Weather-based decision support tools made operational and delivered through Oklahoma Mesonet websites for use on computer and mobile devices.

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of poultry producers and poultry litter applicators acquiring initial waste managment certification and number maintaining certification
2	Number of animal waste analyses conducted for land application of beef, dairy or swine waste.
3	Number of animal waste analyses conducted for poultry litter application
4	Number of users accessing website designed to deliver information about water policy, conservation and efficient use
5	Number of downloads of Extension fact sheets and related education materials
6	Number of enrollments in conservation-related land management programs
7	Land area restored in Oklahoma through invasive/encroaching species removal
8	Land area restored in Oklahoma through prescribed fire or other practices
9	Access by users of Oklahoma Mesonet computer and mobile device weather and climate data and tools

Outcome # 1

1. Outcome Target

Number of poultry producers and poultry litter applicators acquiring initial waste managment certification and number maintaining certification

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Number of animal waste analyses conducted for land application of beef, dairy or swine waste.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Number of animal waste analyses conducted for poultry litter application

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Number of users accessing website designed to deliver information about water policy, conservation and efficient use

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Number of downloads of Extension fact sheets and related education materials

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity

- 205 - Plant Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Number of enrollments in conservation-related land management programs

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 133 - Pollution Prevention and Mitigation
- 136 - Conservation of Biological Diversity
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Land area restored in Oklahoma through invasive/encroaching species removal

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 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
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 8

1. Outcome Target

Land area restored in Oklahoma through prescribed fire or other practices

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 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
- 205 - Plant Management Systems
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 9

1. Outcome Target

Access by users of Oklahoma Mesonet computer and mobile device weather and climate data and tools

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 134 - Outdoor Recreation
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Changes in policy and laws, the interest of the public in environmental issues, economic development opportunities, changes in agricultural commodity prices.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Pre- and Post- testing related to changes in attitude and knowledge; the changes in level of funding for research and extension efforts, adoption of BMPs and certification of waste management training, change in practices related to waste management and application of prescribed burning. We will conduct before-and-after written surveys of participants in Extension and outreach programming to demonstrate changes in knowledge. For land management changes, we will contact participants following instruction and demonstration to estimate the percentage of land area actually improved through dissemination of information.

An "Agriculture Weather and Climate" advisory committee will be assembled to provide in-depth evaluation and direction for the agriculture sector. The committee will include crop producers, livestock producers, and industry professionals.

A new advisory committee for "OK-Fire" will be assembled to provide in-depth evaluation and

direction from natural resource managers. The committee will include fire control and prescribed fire professionals and trained volunteers.

User surveys will be used to assess weather and climate information and decision support impact in agricultural production and ecosystem management.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Food Safety - Food Processing, Product Storage, and Food and Product Safety

2. Brief summary about Planned Program

Support and stimulate safe food production and food processing as well as food and product storage and safety with an emphasis on value-added food product production and processing. This support is provided through focused fundamental and applied research activities and extension outreach efforts. Support is primarily targeted toward Oklahoma commercial food product producers and commercial food product processors. Results of research and education programs are directly applicable to food safety needs regionally, nationally and internationally. The scope of commercial activities supported ranges from entrepreneurs and start-up ventures to large, commercial enterprises throughout the south central region of the U.S.

In connection with food safety, research goals include evaluation of methods to prevent food contamination by microbial pathogens during production and/or processing, methods to detect contamination by microbial pathogens if it has occurred, methods to eliminate microbial pathogens from foods, methods to identify and/or control microbial toxins, and methods for detecting and controlling allergens in foods.

In connection with food processing, research goals include new product development, new process technology development, product and process improvement, and the development of best practices designed to enhance food production and food processing profitability and sustainability.

Extension outreach goals are designed to support education and technology transfer to improve food safety and food processing industry viability and profitability via the research initiatives described above. Outreach goals are fulfilled using factsheets, workshops, web-based tools, and direct support in the form of technical assistance projects.

Product storage goals include: Improve the safety of stored food and agricultural products and improve storage and handling of agricultural products. A special effort is continuing in storage facility safety and a growing effort in facility air quality. Product storage team also has projects to improve storage facilities, safety and reduce losses in several former soviet bloc countires and two countires in sub saharan Africa.

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
216	Integrated Pest Management Systems	8%		5%	
401	Structures, Facilities, and General Purpose Farm Supplies	14%		5%	
403	Waste Disposal, Recycling, and Reuse	5%		5%	
501	New and Improved Food Processing Technologies	19%		10%	
502	New and Improved Food Products	8%		10%	
503	Quality Maintenance in Storing and Marketing Food Products	5%		10%	
701	Nutrient Composition of Food	12%		10%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	10%		10%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	14%		25%	
723	Hazards to Human Health and Safety	5%		10%	
	Total	100%		100%	

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

1. Situation and priorities

Food Safety:

In 2011, the U.S. Centers for Disease Control estimated that about 48 million U.S. citizens became ill, around 128,000 were hospitalized, and approximately 3,000 died of foodborne diseases. The total annual cost of all foodborne illnesses has been estimated to be approximately 152 billion dollars. Major pathogen recalls and/or outbreaks in the news in 2011 included: Listeria in cantaloupe, bagged salads, and ready-to-eat dip; Salmonella in cantaloupe and ground poultry; and E. coli O157:H7 in strawberries and ground beef. A significant recall of intact eggs contaminated with Salmonella occurred in 2010, shaking consumer confidence in the food safety system in the U.S. In 2007 and 2009, outbreaks of salmonellosis were linked to peanut butter and peanut products - foods that were previously regarded as extremely low risk. Also in 2007, botulism toxin was detected in cans of commercially-processed chili sauce - the first such case in over 30 years. Major outbreaks and/or recalls linked to E. coli O157:H7 have occurred in products as diverse as bagged spinach, ground beef, and refrigerated cookie dough since 2006.

In addition to foodborne pathogens, undeclared allergens have become a major concern for regulatory agencies. Indeed, in 2011, more class I recalls were instituted for undeclared allergens in foods than for contamination by microbial pathogens.

Clearly the need for research and outreach in the area of food safety is only growing. Improvements in methods to prevent contamination of food with microbial pathogens or undeclared allergens, to detect undeclared allergens or pathogens that may be present in food, and to reduce the numbers of microbial pathogens that may be present in a food or in a production or processing environment will pay huge dividends in health, wellbeing, business profitability, and economic growth.

Food Processing:

The World Bank estimated that value-added agricultural processing added about 146 billion dollars to the gross domestic product of the United States in 2010. Thus, the economic impact and potential of value-added processing of agricultural products is well recognized. This is certainly true for Oklahoma: a 10-year economic impact study conducted by the Robert M. Kerr Food and Agricultural Products Center (FAPC) in 2007 demonstrated that companies assisted by the FAPC created a total of an additional 180 jobs on average per year and saw an average total annual revenue increase of $217 million.

Building on past successes, considerable opportunity remains to grow Oklahoma's value-added food processing industry. New product and new processing technology development have particular potential to create new industry and boost the state's economy in both rural and urban areas. In addition, product and process improvements and the development of best practices designed to enhance food production and food processing profitability and sustainability will make Oklahoma's food processing businesses more competitive. All of this will improve the quality of life for the citizens of Oklahoma and beyond.

Product Storage
Conduct research and outreach on management and protection of durable post harvest agricultural commodities and all value-added food products produced from such commodities in relation to:

Commercial storage management
Quality management in food processing, warehouse storage, and retail outlets
On-farm storage management
Management of multiple grains and oilseeds in small storages
Quality-Oriented Storage and Handling
Bioterrorism prevention and response
Implement organic approaches to pest management

2. Scope of the Program

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

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

1. Assumptions made for the Program

We anticipate that sponsored funding for both research and outreach activities will increase as a percentage of total funding while appropriated funding will remain essentially at present levels. Support from commercial clientele will increase in the form of grants and specific project funding. We also assume that team personnel will be replaced as needed due to retirement or departure. Publishable results, including outreach materials and peer-reviewed articles, will be obtained from fundamental research and in some cases from technical assistance work. Generalizable recommendations stemming from these efforts will be included in outreach activities. Web-based outreach venues, including social media, applications for specialized devices such as smart phones, and eXtension will grow as a means of disseminating information.

2. Ultimate goal(s) of this Program

In connection with food safety, research goals include evaluation of methods to prevent food contamination by microbial pathogens during production and/or processing, methods to detect contamination by microbial pathogens if it has occurred, methods to eliminate microbial pathogens from foods, methods to identify and/or control microbial toxins, and methods for detecting and controlling allergens in foods.

In connection with food processing, research goals include new product development, new process technology development, product and process improvement, and the development of best practices designed to enhance food production and food processing profitability and sustainability.

Extension outreach goals are designed to support education and technology transfer to improve food safety and food processing industry viability and profitability via the research initiatives described above. Outreach goals are fulfilled using factsheets, workshops, web-based tools, and direct support in the form of technical assistance projects.

Product storage goals include: Improve the safety of stored food and agricultural products and improve storage and handling of agricultural 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
2013	1.3	0.0	5.0	0.0
2014	1.3	0.0	5.0	0.0
2015	1.3	0.0	5.0	0.0
2016	1.3	0.0	6.0	0.0
2017	1.3	0.0	6.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Food Safety:

• Conduct research on preventing contamination of foods with pathogenic microorganism during production, processing, storage, distribution, and/or consumer use.
• Conduct research on eliminating or reducing the numbers of potential pathogenic microorganisms in foods during production, processing, storage, distribution, and/or consumer use.
• Conduct research on detecting contamination of foods with pathogenic microorganisms.
• Conduct research on detecting microbial toxins in foods.
• Conduct research on detecting undeclared allergens in foods.
• Provide technical information and assistance to food industry and/or consumers to determine safe food production, food processing, and/or food handling procedures.
• Conduct food safety workshops designed to provide certification in recognized food safety systems such as Hazard Analysis Critical Control Points (HACCP).
• Disseminate food safety recommendations to industry and consumers via popular press, fact sheets, eXtension publications, web-based outreach, workshops, and/or peer-reviewed journal articles.

Food Processing:

• Conduct research on improving or maintaining the quality of processed foods.
• Conduct research on developing profitable new food products and food processing technology.
• Conduct research on maximizing the efficiency and sustainability of food processing operations.
• Conduct research on improving the healthfulness and nutritional value of processed food products.
• Conduct research on evaluating the economic feasibility of food processing activities.
• Provide technical information and assistance related to processing, analyzing the chemical and physical properties, and improving or maintaining the quality of processed food products.
• Provide technical information and assistance related to food product formulationand new food product development.
• Provide technical information and assistance related to selection and evaluation of processing technology
• Provide technical information and assistance related to food process evaluation.
• Provide technical information and assistance related to processed-food business economic planning and product marketing.
• Serve as a resource to help commercial food processors recognize and comply with applicable food product processing and labeling regulations.
• Disseminate recommendations for food processing industry best practices via popular press, fact sheets, eXtension publications, web-based outreach, workshops, and/or peer-reviewed journal articles.

Product Storage

•Conduct research that evaluates agricultural product storage and handling technologies with the aim of improving quality, safety, and costs. Provide technical applications, demonstrations and education for grain and food storage providers and handlers.

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

Extension

Direct Methods	Indirect Methods

● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (Scientific presentations)	● Newsletters ● Web sites other than eXtension ● Other 1 (Journal articles)

3. Description of targeted audience

food processors; handlers, manufacturers, and marketers of grain, feed and food; food safety regulators;

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of conferences and other extension outreach presentations
- External funding obtained
- Workshops, symposia, short courses, and round tables conducted
- Technical assistance projects completed
- Manuscripts submitted for publication in peer-reviewed journals
- Extension publications completed
- Number of air quality monitors tested

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Grain storage, food or pest control entities adopting new process or product
2	Number of food industry personnel newly certified as HAACP trained
3	Number of food industry personnel newly certified as having attended food safety and processing workshops
4	Number of food industry jobs created
5	Number of new food businesses started
6	New or improved food processing, food safety and/or product storage adopted by industry
7	Number of emergency response teams available in Oklahoma

Outcome # 1

1. Outcome Target

Grain storage, food or pest control entities adopting new process or product

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 216 - Integrated Pest Management Systems
- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Number of food industry personnel newly certified as HAACP trained

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 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
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Number of food industry personnel newly certified as having attended food safety and processing workshops

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 216 - Integrated Pest Management Systems
- 502 - New and Improved Food Products
- 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
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Number of food industry jobs created

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Number of new food businesses started

2. Outcome Type : Change in Condition Outcome Measure

3. 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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

New or improved food processing, food safety and/or product storage adopted by industry

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 216 - Integrated Pest Management Systems
- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 403 - Waste Disposal, Recycling, and Reuse
- 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
- 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
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

Number of emergency response teams available in Oklahoma

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Appropriations from government and the industry. Changes in the economy, natural disasters, public policy changes, competing public priorities, competing programmatic challenges, and population changes all have a profound effect on the food industry and each can either promote or inhibit the food industry's willingness or in some cases ability to support progress in this area. Government support provides an unbiased avenue of funding that allows researchers to affect changes in processing that in the long-term benefits the safety, value, and quality of this nations food supply.

Government regulations and public policy changes effect how industry conducts its business and plays a critical role the focus of research efforts.

Economic and regulatory influences seem the strongest external factors on stored product protection. Pesticide and food safety regulations affect how commodities will be managed. Since all the products ultimately come from crops, natural disaster can have a significant impact on the economy of stored products.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Survey instruments will assess the appropriateness and usefulness of workshops, symposia, short courses, and roundtables. Workshop and short course attendees will receive pre- and post-tests to assess program effectiveness as appropriate. FAPC industry Advisory Committee input will be summarized and disseminated among team members. Public access of extension publications and websites will be analyzed. . Funded grant proposals, peer-reviewed publications, extension publications, and intellectual property patents/licenses will be counted annually.

Research projects will be subjected to regular evaluation of results and progress on a frequent and regular basis. Careful records will be kept on all the data collected. Data from experiments will be immediately recorded, then summarized, analyzed and incorporated into manuscripts to ultimately be published. Regular laboratory meetings will be used to share information and make suggestions for changes in methods or approach. When data sets on an entire objective are completed then a manuscript will be prepared. Final draft manuscripts will be submitted to peer-reviewed scientific journals, which will provide the ultimate evaluation for work of this nature.

Along with summarizing of data, sharing within the research group, and ultimate publication for broad dissemination, we anticipate several opportunities to present results of this work at both scientific conferences and at regional or local extension meetings or fumigation training sessions. At all of these venues, public comments and evaluation of our work will be obtained from those in attendance and we will draw conclusions about the impact of our work on others.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

4-H Youth Development

2. Brief summary about Planned Program

Youth in the 21st century face new challenges in preparing for the enduring tasks of work, community and family life. 4-H professionals nationwide organized three national mission mandates to develop strategies that address the challenges facing youth:

1) Science, Engineering, and Technology (SET);
2) Citizenship;
3) Healthy Living (HL).

Oklahoma communities face diverse needs in these initiative areas. Each county 4-H program brings unique resources and priorities to this work. In a cooperative spirit, state staff in collaboration with county 4-H programs develop curriculum, conduct training, and evaluate programming to strengthen educational programs and enhance the outcomes of initiatives. Consensus on outcome indicators across diverse programs could produce several benefits: 1) greater focus in program planning, 2) greater richness in program development, as a variety of strategies are logically linked to a shared outcome; at the same time, 3) greater continuity in curriculum and training as they are aimed toward shared outcomes; 4) opportunities to compare delivery methods for specific audiences; and 5) more clear and powerful evidence for 4-H program impact as all efforts contribute to a single, larger impact statement.

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
608	Community Resource Planning and Development	5%		0%	
806	Youth Development	95%		0%	
	Total	100%		0%	

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

1. Situation and priorities

Citizenship - Since its inception, 4-H has placed emphasis on the importance of young people being engaged, well-informed citizens. By connecting to their communities and leaders, youth understand their role in civic affairs and are able to expand their role in decision-making processes. It's clear that civic engagement provides the foundation that helps youth understand the big picture of life and learn the skill sets that will allow them to become wise leaders for the 21st century.

Healthy Living- A core belief of 4-H is Health, as evidenced by the four H's in the 4-H clover: Head, Heart, Hands, and Health. 4-H is committed to the physical, mental and emotional health of our nation's youth so they may lead healthy and productive lives into and throughout adulthood. 4-H has become a national leader in health-related educational issues including chemical health, mental and emotional health, foods and nutrition, physical health and safety.

Science, Engineering, and Technology (SET) The United States is falling dangerously behind other nations in developing its future workforce of scientists, engineers, and technology experts. To ensure global competitiveness, we must act now to prepare the next generation of science, engineering, and technology leaders. The 4-H Youth Development Program is strategically positioned to strengthen US global competitiveness and leadership. Oklahoma 4-H will join a national movement to address our nation's critical challenge by preparing **young people** to excel in science, technology, engineering, and math.

Priorities:

Support the recruitment, training and retention of a viable volunteer base necessary to support and manage local and county clubs and programming.

Provide a safe and healthy educational environment with caring and qualified adults, resulting in growth of knowledge, attitudes and skills that prepare our youth for successful lives as community leaders and contributing citizens.

Support and growth of 4-H project clubs by training 4-H volunteers and teen leaders.

A web-based project curriculum will be developed for training teens, volunteers and staff in support of Mission Mandates.

Youth will develop an in-depth knowledge of career opportunities through 4-H projects.

Youth will develop a well rounded understanding of mental and emotional health obtained through project work and activities which encourage healthy life style choices - camping, recreation, shooting

sports, fitness, safety, hobbies and creative pursuits through the arts.

Instill a social and civic awareness of community needs and providing adult and youth audiences with the skills for taking a proactive role in their communities through civic engagement, volunteerism and service.

Youth and adults work in partnership to identify and solve/resolve community needs and environmental issues through an organized and executed plan of action.

Use curricula including, Health Rocks, Farm to You, Organwise Guys, Companion Animals, Jr. Master Gardners and Oklahoma Ag in the Classroom program to help youth make healthy life style choices.

Increased collaboration and organization of youth organizations to address youth issues of: substance abuse, teen pregnancy, childhood obesity, nutrition and health, stress management, healthy choices, life skills development and job training by providing young people positive alternatives.

Oklahoma's environmental resources are in need of protection and improved stewardship. Restoration and enhancement of resources requires expanded awareness, knowledge, and appreciation of the environment and a practice of stewardship ethics.

Youth will become good environmental stewards by recognizing how the actions of the individual and/or society affect environmental quality - water, soil, air, entomology, plants, geology, recycling, conservation, etc.

Youth livestock programs will provide youth an opportunity to develop knowledge about animal health, breeding, production, marketing and meat science while being conscientious about product quality assurance, animal welfare/well-being and protection and effects on the environment.

Geospatial technologies such as remote sensing, GPS and Geographical Information Systems have the potential to enhance production agriculture by increasing efficiency and reducing inputs. GPS/GIS is a cutting edge technology which uses satellites to locate precise positions on earth and creates maps. Development and implementation of these technologies will require a professional workforce with skills and knowledge about agriculture, GPS/GIS systems, robotics, and related technology. Youth have the potential to be the scientists and researchers of tomorrow who will research, develop and enhance these future agricultural practices.

Operation: Military Kids will make it a priority to develop the community capacity to reach and support military children affect by deployment in geographically dispersed locations in the state through the development of partnerships between multiple organizations creating a local support network with the capacity to support military children where they are.

2. Scope of the Program

- In-State Extension
- Multistate Extension

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

1. Assumptions made for the Program

Appropriate and sponsored funding will continue at similar levels. Key personnel will be replaced in a timely manner.

Youth will be recognized as a viable resource who can work along side adults to make a significant difference in their community.

2. Ultimate goal(s) of this Program

Well trained extension personnel support the recruitment, training and retention of a volunteer base necessary to sustain and manage local and county clubs and programming.

Youth involved in 4-H project work, project/community clubs and educational programs and activitieswill develop an in-depth knowledge of career opportunities in through project work and educational activities and events.

Youth engaged in the Citizenship, Healthy Living and SET programming will understand how social and physical sciences, technology, and culture all play an integral role in our personal lives, family life and society - school, community, country and world.

Youth, volunteers and educators will become good stewards of their personal and environmental resources by recognizing how the sound practices and actions of both the individual and society affect finances, energy, housing, food, and the environment.

Collaborate with other youth serving organizations and community leaders, sharing existing resources and training opportunities for youth and adult volunteers.

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
2013	63.0	0.0	0.0	0.0
2014	63.0	0.0	0.0	0.0
2015	60.0	0.0	0.0	0.0
2016	60.0	0.0	0.0	0.0
2017	60.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

30 - VMS - Recruit, orient and train adult volunteers to serve as club and project club leaders and to

assume leadership on committees who plan and coordinate local and county activity and events.

30 - CMS - Increase the number of 4-H project clubs or project groups within community clubs.

20 - LCD Impact Team - Recruit and train teams of youth and adults, who work in partnership to identify, organize, conduct and evaluate a service learning project which will benefit the community.

27 - EE Impact Team - Provide training and materials for initiating and maintaining teams of youth and adults committed to sharing and promoting environmental education concepts through service learning.

30 - OMK - Train and recruit educators and volunteers to create public awareness of issues affecting military families.

28 - STEM - Provide training and materials for initiating and maintaining teams of youth and adults committed to sharing and promoting STEM concepts through service learning.

30 - All other - Establish, develop, and maintain new and ongoing youth development programming, events, and support materials.

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Other 1 (Complete action plans)	● Public Service Announcement ● Newsletters ● Web sites other than eXtension ● Other 1 (Social Marketing)

3. Description of targeted audience

Youth, children, parents, teachers, youth and adult volunteers, middle to low income families; race and ethnicity will also be recognized as an identifier of audiences; caretakers, agencies and service providers, schools, policy makers

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Web-delivered curriculum - lessons developed and tested
- Educational trainings offered for volunteers and staff

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Certified participants will manage local programming
2	Caring and qualified adults will prepare youth for successful lives as community leaders and contributing citizens
3	The number of active 4-H project clubs and project groups.
4	Project curriculum in support of Mission Mandates
5	Youth will develop a well rounded understanding of mental and emotional health obtained through project work and activities which encourage healthy life style choices - camping, recreation, shooting sports, fitness, safety, hobbies and creative pursuits through the arts.
6	Youth and adults work in partnership to identify and solve/resolve community needs and environmental issues through an organized and executed plan of action.
7	Youth will learn to make healthy lifestyle choices through the use of curricula and educational materials.
8	Increased number of collaborations with youth organizations
9	Participant teams will Increase knowledge of Oklahoma natural resources and environmental stewardship.
10	Participants in livestock programs will focus on acceptable animal husbandry practices, demonstrating knowledge about animal health, breeding, production, marketing and meat science while being conscientious about product quality assurance, animal welfare/well-being and protection and effects on the environment.
11	Participants will increase knowledge and awareness of STEM technologies and career opportunities.
12	Participants will increase knowledge and awareness of plants and soil systems.
13	Increase knowledge and awareness of entomology.
14	Companion animal programs will focus on animal welfare and human-animal interaction.
15	Military families receiving support through 4-H partnerships will increase their use of local support networks

Outcome # 1

1. Outcome Target

Certified participants will manage local programming

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Caring and qualified adults will prepare youth for successful lives as community leaders and contributing citizens

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

The number of active 4-H project clubs and project groups.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Project curriculum in support of Mission Mandates

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Youth will develop a well rounded understanding of mental and emotional health obtained through project work and activities which encourage healthy life style choices - camping, recreation, shooting sports, fitness, safety, hobbies and creative pursuits through the arts.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Youth and adults work in partnership to identify and solve/resolve community needs and environmental issues through an organized and executed plan of action.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Youth will learn to make healthy lifestyle choices through the use of curricula and educational materials.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

Increased number of collaborations with youth organizations

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

Participant teams will Increase knowledge of Oklahoma natural resources and environmental stewardship.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 10

1. Outcome Target

Participants in livestock programs will focus on acceptable animal husbandry practices, demonstrating knowledge about animal health, breeding, production, marketing and meat science while being conscientious about product quality assurance, animal welfare/well-being and protection and effects on the environment.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 11

1. Outcome Target

Participants will increase knowledge and awareness of STEM technologies and career opportunities.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 12

1. Outcome Target

Participants will increase knowledge and awareness of plants and soil systems.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 13

1. Outcome Target

Increase knowledge and awareness of entomology.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 14

1. Outcome Target

Companion animal programs will focus on animal welfare and human-animal interaction.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 15

1. Outcome Target

Military families receiving support through 4-H partnerships will increase their use of local support networks

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Description

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Geospatial programming will be tracking participation in lesson usage and 4-h club development, throughout the program. At the end of the program cycle we will assess the number of teens participating in the program and their career interest in geospatial fields.

Environmental education programming will be tracking the number of water-wells tested and the test results. It will also be collecting activity reports from educators indicating the status and success of their county program. At the end of the program cycle it will conduct focus groups with teens to determine the impact of the program on the teen participants.

The community leadership programming will pre-and post with evaluation tools to determining the effectiveness of Youth-Adult Partnership and Youth in Governance. In addition, progress during training and community service project will be through written Action Plan and information observation. Finally, a national evaluation tool will be adapted for long-term evaluation.

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Turfgrass Development and Management

2. Brief summary about Planned Program

Improve varieties, management and applications of turfgrasses including positive impacts on the economy, the environment and society.

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
111	Conservation and Efficient Use of Water	12%		10%	
201	Plant Genome, Genetics, and Genetic Mechanisms	1%		5%	
202	Plant Genetic Resources	4%		10%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		10%	
204	Plant Product Quality and Utility (Preharvest)	6%		5%	
205	Plant Management Systems	49%		15%	
206	Basic Plant Biology	1%		5%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		10%	
212	Pathogens and Nematodes Affecting Plants	10%		10%	
216	Integrated Pest Management Systems	12%		20%	
	Total	100%		100%	

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

1. Situation and priorities

Turfgrass beautifies and stabilizes an estimated 30 million acres of land in the United States. Turfgrasses are the largest intensively managed plant system in the U.S. Growth in turfgrass production, sales, installation and maintenance is tied directly to urbanization, installation of roadside rights-of-way and recreation. Turfgrasses developed and dominated in ecosystems governed by fire and continuous grazing. To maximize the performance and benefits provided by turfgrasses, humans have replaced fire and animal grazing in urban settings with herbicides and mowing. Uncertainty of turf performance has been reduced with additions of fertilizer and irrigation water. Ever increasing turfgrass visual and functional performance is expected. Meanwhile, pests continue to co-evolve to feed on turfgrass and abiotic environmental stresses continue to provide limitations in turf ecosystems. Turfgrass managers are expected to maintain turfgrass in a manner that provides the ultimate in visual and functional benefits to human-kind in a cost-effective manner with little to no negative environmental impact. Our team will continue to identify and develop improved turfgrasses as well as necessary responsible management practices that will aid turfgrass managers in meeting their goals.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Appropriated and sponsored funding will continue at similar levels with consumer price-indexed increases. Fee-based educational programming will continue. Fee-based consultation will be explored when the end-user seeks in-depth, time-intensive consultation services that should be offered for purchase by industry cooperators. Laboratories, field facilities and associated equipment will need to be replaced as needed. Key research and extension personnel will be replaced in a timely manner. Research and demonstration land holdings will increase proportional to the number of species/varieties and products that both the turf industry and our program are generating and the amount of products and management techniques that the service industry is requesting that we test. We will generate improved bermudagrass cultivars, identify superior species/cultivars offered by private industry, and develop improved BMPs and IPM practices. We will demonstrate and convey this information to thousands of citizens and industry practitioners. Rational decision making based on the combination of science, perception and sound public policy will be made by the turf industry, government and the public at large. Resultant adoption of integrated turfgrass management strategies will occur and turfgrass performance can be maintained or improved with reduced potential negative environmental impacts.

2. Ultimate goal(s) of this Program

New turf germplasm/varieties will be generated by our program. These products will have improved abiotic and biotic stress resistance/tolerance. Research will identify the elite performing varieties from both our program and from industry. Research will identify new or refined integrated management practices.

Educational materials will be developed featuring improved varieties and how to properly maintain them. Intense and effective educational programming will be conducted to help integrate this information into existing management programs. Reduce water usage for sustainable maintenance of turf grasses. Rational decision making based on the combination of science, perception and sound public policy will be made by the turf industry and the public at large. Resultant adoption of integrated turfgrass management strategies will occur and turfgrass performance can be maintained or improved with reduced potential negative environmental impacts.

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
2013	1.5	0.0	2.0	0.0
2014	1.5	0.0	2.0	0.0
2015	1.5	0.0	2.0	0.0
2016	1.5	0.0	2.0	0.0
2017	1.5	0.0	3.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

New turf germplasm/varieties will be generated by our program. These products will have improved abiotic and biotic stress resistance/tolerance.

Research will identify the elite performing species and varieties from both our program and from industry. Research will identify new or refined integrated management practices and comprehensive management systems. Educational materials will be developed featuring improved varieties and how to properly maintain them. Intense and effective educational programming will be conducted to help integrate this information into existing management programs. Research and extension activities will be conducted to improved efficiency of water application and to reduce runoff.

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 ● Demonstrations	● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

Audiences include governmental, private industry and multiple end-user areas. Research audiences: basic and applied plant science/turf science researchers, including those from the CSSA, and ASHS. Funding agency audiences: USGA, GCSAA, USDA, OTRF and many private corporations. New cultivars developed as well as products such as trade articles, fact sheets, and educational programming will be provided to the target audiences characterized as the turfgrass production sector (sod and seed producers), service sector (landscape/lawncare and pest control operators) and turf managers (which include the golf course, parks & grounds, right of way managers and home consumers).

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of peer-reviewed journal articles manuscripts submitted
- Number of final stage experimental bermudagrasses sent to national testing phase in the NTEP bermudagrass trial once every 5 years
- Number of fine turf program and roadside vegetation management workshops conducted and trade presentations presented each year.
- Number of new bermudagrasses developed by our program that are commercially released to the trade for production.
- Number of new licensees recruited for production of improved bermudagrass released from our program.
- Number of cultivar evaluation trials; weed control trials; management factor trials; and physiological, morphological or other investigations conducted on turfgrass.
- Number of scientific abstracts, posters or oral presentations presented to scientific audiences.
- Number of turfgrass managers trained in recognition and selection of improved varieties and implementation of integrated turfgrass management systems

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of sod/seed producers growing OSU turf bermudagrasses
2	Number of out-of-state sod/seed producers growing OSU turf bermudagrasses
3	Number of sod/seed producers growing Oklahoma proven turf bermudagrasses
4	Percentage of professionally managed properties using improved turfgrasses
5	Percentage of professional fine turf managers continuing adoption of BMPs and IPM
6	Percentage of ODOT roadside vegetation managers continuing adoption of BMPs and IPM

Outcome # 1

1. Outcome Target

Number of sod/seed producers growing OSU turf bermudagrasses

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Number of out-of-state sod/seed producers growing OSU turf bermudagrasses

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

Number of sod/seed producers growing Oklahoma proven turf bermudagrasses

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Percentage of professionally managed properties using improved turfgrasses

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Percentage of professional fine turf managers continuing adoption of BMPs and IPM

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Percentage of ODOT roadside vegetation managers continuing adoption of BMPs and IPM

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Natural disasters, funding by governmental, NGO's and private industry partners as well as changing public/governmental policy are projected to contribute to the greatest amount of uncertainty in achieving program goals.

Drought in 2011 had a significant impact and may continue into 2012. Slow economy has hurt the turf production industry significantly.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Yearly survey of 40+ Oklahoma sod producers will continue to be conducted for the Oklahoma Turfgrass Sod Source Directory. Survey will confirm availability of new and older varieties in the trade.

Phone survey of sod producers identified as producing new, improved turfgrass varieties allows for a later survey each year of the number of properties to which the improved variety was sold in about

70% of sod producer cases. There will be some producers that will refuse to divulge numbers.

Direct consultation with each member of the Oklahoma seed production industry allows the surveyor direct knowledge of adoption of new seeded grassing going into seed production in the state.

Phone survey of seed producers identified as producing new, improved turfgrass varieties allows for a later survey each year of the number of properties to which the improved variety was sold in about 95% of seed producer cases. Cooperation in the seed production industry is higher than in the sod production industry.

Oklahoma Golf course industry is surveyed every 7 to 10 years by US Mail for adoption of new varieties and acreage of improved varieties utilized.

Conference/Workshop participants will be surveyed post workshop survey via either hard copy survey or on-line survey in order to determine their intent to adopt improved varieties and IPM techniques conveyed during workshops. Workshop participants will include those from spring dead spot management workshops, Campus IPM workshops, turfgrass field days, area turf & landscape workshops and the Oklahoma/Arkansas Turfgrass Management Short course.

Approximately 2% of all turf management consultation clients from the previous year are surveyed each year informally by phone to determine the clients' success in problems solving, need for further information and customer satisfaction with the recommendations that were provided by the turfgrass specialist.

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Community Resource and Economic Development

2. Brief summary about Planned Program

Rural Oklahoma faces many challenges including a need to diversity and enhance the local economies and continue to provide a viable quality of life. The planned program will focus on local economic development, infrastructure and community services, local government, and leadership development. All of these focus areas are needed if rural Oklahoma is to prosper.

The Initiative Team has a strong history of cooperative efforts. The "healthy communities" workgroup includes many team members. We have organized and delivered in-service training programs and developed training materials that cut across program lines and geographic boundaries. We anticipate these cooperative efforts will continue.

There are several sub-categories or areas of specialization within the team. These areas include:

- Economic Development;
- Infrastructure and Community Services;
- Local Government;
- Leadership Development;
- Manufacturing Assistance;
- Entrepreneurship.

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%		100%	
	Total	100%		100%	

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

1. Situation and priorities

Rural Oklahoma is diverse. Some counties have severe declining population. Other rural counties are experiencing growth and urban sprawl. Priorities will focus on providing educational programs and applied research results that assist rural leaders in dealing with specific local issues.The program will focus on efforts in economic development, infrastructure and community services, local government, leadership development, manufacturing assistance, and entrepreneurship.

2. Scope of the Program

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

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

1. Assumptions made for the Program

1. There is a need for research and technical assistance in rural Oklahoma;
2. OSU has capabilities to respond;
3. Funding and staffing will be at least constant and perhaps increase.

2. Ultimate goal(s) of this Program

1. Assist in efforts to diversify the local economy in rural areas of Oklahoma.
2. Improve well being of community residents and aid in enhancing quality of life.

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
2013	9.0	0.0	1.0	0.0
2014	9.0	0.0	1.0	0.0
2015	9.0	0.0	1.0	0.0
2016	9.0	0.0	1.0	0.0
2017	9.0	0.0	1.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Strategic planning training and strategic planning for communiites, infrastructure planning, community service plans, medical facilities and services planning, training of county elected officials, engineering and manufacturing consulting, community economic development studies, community leadership and agricultural leadership development, and entreprenuership training and development.

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention	● Newsletters ● eXtension web sites ● Web sites other than eXtension

3. Description of targeted audience

The target audience includes community leaders (volunteer and elected), agricultural leadership participants and alums, and business owners/prospective owners, hospitals, schools, chambers of commerce, entrepreneurs, other agencies

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of community services plans completed
- Number of education modules completed
- Number of county officer training courses conducted
- Number of manufacturing firms receiving applications engineering assistance

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number improving business skills
2	Number of manufacturing jobs created or retained
3	Number of communities where capacity was increased
4	Number of participants that plan to open/expand a business
5	Number of communities that build plans for growth and/or improvement
6	Number of leadership class graduates actively participating in community or industry

Outcome # 1

1. Outcome Target

Number improving business skills

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Number of manufacturing jobs created or retained

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Number of communities where capacity was increased

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Number of participants that plan to open/expand a business

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Number of communities that build plans for growth and/or improvement

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Number of leadership class graduates actively participating in community or industry

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Resources and priorities are impacted by unexpected events. A down turn in the economy may mean fewer resources are available to do this work. Some events are beyond our control.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Programs will be evaluated after delivery. Most will have immediate post-evaluation. Selected programs will have medium term and long term post-evaluations.

Some case studies will be conducted to enhance evaluation and feedback.

In all cases, outcomes are expected to lead to economic or societal impacts. In some cases, there will be economic outcomes such as jobs created or retained, or increased levels of income for rural families. These will be quantified using surveys and best-available data when assumptions must be made. In other cases, social impacts will relate to enhanced quality of life. These evaluation studies are intended to try to capture this information.

Each program that is part of the Community Resource and Economic Development team will report at least some state defined outputs and outcomes on an annual basis. Programs that have demonstrated long-term viability and have dependable participant contact information can be expected to perform medium or long term evaluations at various points during the 2013 - 2017 timeframe. For example, the e-commerce program (as part of the general economic development sub-specialty) has been going strong since 2008 and is likely to perform a 5-year evaluation in 2013. Similarly, the local government and manufacturing assistance programs have strong historical performances and are constantly in touch with prior participants, allowing for long-term program evaluation at some point during the new 5-year plan.

The Applications Engineering program works an on-going evaluation and impact measurement model which will continue in the future as the program continues.

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Global Food Security and Hunger - Integrated Pest Management

2. Brief summary about Planned Program

The IPM team will (1) re-examine stakeholder needs relative to pest management, (2) develop education and research programs to address pest management issues, (3) deliver findings and IPM recommendations to stakeholders through appropriate delivery systems, and (4) evaluate short and long-term impact of IPM recommendations. Efforts are directed at the environmnetal and economic use of IPM techniques and strategies to sustain a food and fiber system that will help meet the NIFA goal of boosting U.S. agricultural production and improve global capacity to meet growing food demand.

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
133	Pollution Prevention and Mitigation	8%		10%	
202	Plant Genetic Resources	3%		5%	
205	Plant Management Systems	10%		10%	
211	Insects, Mites, and Other Arthropods Affecting Plants	11%		20%	
212	Pathogens and Nematodes Affecting Plants	5%		20%	
213	Weeds Affecting Plants	11%		5%	
215	Biological Control of Pests Affecting Plants	5%		5%	
216	Integrated Pest Management Systems	43%		20%	
601	Economics of Agricultural Production and Farm Management	3%		5%	
901	Program and Project Design, and Statistics	1%		0%	
	Total	100%		100%	

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

1. Situation and priorities

Oklahoma's economy is often portrayed as "agriculture and oil", and the description of Oklahoma's agriculture economy is condensed to "cattle and wheat". There is some truth to that description because Oklahoma is the nation's second largest producer of natural gas and fifth largest producer of crude oil. Oklahoma's agriculture economy is the nation's 27th largest, worth $6.1 billion and Oklahoma is the nation's fifth largest producer of cattle and wheat. However, Oklahoma also has vibrant pork, poultry and dairy industries, and few small grains and row crops are "not" grown in Oklahoma. Greenhouse/nursery/turf products rank second behind wheat, with hay, corn, soybean, cotton, grain sorghum, peanuts, pecan, rye and watermelons following (NASS 2009). The activities generated by the IPM Team and IPM Oklahoma! provide program support for IPM in alfalfa, corn, cotton, peanut, rangeland/pasture, sorghum small grains and soybean and has consistently supported a strong stored grains IPM program. Pest complexes in these crops constantly change and require unrelenting efforts at developing and refining IPM programs. Opportunities exist to develop new, innovative IPM programs that support Oklahoma's livestock industries. Invasive weeds infest significant areas of Oklahoma's 26 million acres of rangeland and pastures. Our agriculture industries face challenges from regulated invasive pests, such as Japanese beetle, musk thistle and red imported fire ant. Resident and emerging pest problems affect net profitability of agricultural enterprises and the quality of life in agricultural and non-agricultural systems.

Consumers demand a safe supply of food & fiber that is produced in an environmentally responsible way. The nature and availability of conventional pesticide tools continues to change, making it essential that IPM programs are effective, safe and sustainable. Stakeholders rely on OSU's IPM team to: assesses their pest management needs; prioritize those needs into a coherent research and extension plan of action; conduct relevant research directed at those priorities, deliver products that result from that research through extension education and outreach programs, assess the products for both safety and sustainability, and evaluate the impact of short and long-term management recommendations.

The IPM team, in conjunction with IPM Oklahoma! have developed the following priorities: address previously identified pest management Research and Extension Needs for Oklahoma's "Minor Crops" (Franke et al. 2009 a-f) and Turf Industries; develop management approaches for insect and diseases of winter wheat and winter canola; address, develop and expand pest management needs for agronomic crops (cotton, sorghum, corn, peanut, sunflower), horticultural (pecans, grapes, ornamentals), livestock and urban pest management ecosystems; develop management approaches for problem weeds, including herbicide resistant weeds; address potential invasive pests problems, and evaluate impact and adoption of IPM systems.

2. Scope of the Program

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

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

1. Assumptions made for the Program

The attainment of these objectives rely on the following assumptions: appropriated and sponsored support for the core group of research and extension faculty will need to be increased or maintained at similar levels. Personnel will need to be maintained at a viable level to meet the priorities. Continually changing IPM funding procedures have potentially threatened the level and quality of deliverable efforts.

2. Ultimate goal(s) of this Program

The IPM team will address identified stakeholder priorities for management of pests by developing research, extension, and evaluation programs that ensure the safety and viability of pest management approaches, while increasing net profitability and improving the quality of life in agricultural and non-agricultural 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
2013	4.0	0.0	6.0	0.0
2014	4.0	0.0	5.0	0.0
2015	4.0	0.0	5.0	0.0
2016	4.0	0.0	5.0	0.0
2017	4.0	0.0	6.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Fulfill the specific Inputs and Activities outlined in the "Oklahoma State University Coordination Program for IPM Oklahoma!" (as made to USDA-NIFA "Extension Integrated Pest Management Coordination and Support Program (EIPM-CS)") , including the identification of new program priorities for future funding.
- Provide information on IPM upon request to stakeholder groups, and attend stakeholder sponsored meetings as invited.
- Conduct targeted research on pest status, suppression and IPM approaches for crop, animal, and urban systems in Oklahoma.
- Develop and deliver extension IPM programs to stakeholders, in the form of workshops, field demonstrations and meetings
- Develop pesticide applicator education and pesticide information through printed media, fact sheets and current reports.

- Assess impact of educational activities on stakeholder IPM

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (Research)	● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

Agricultural Producers, Agricultural Groups, Commercial Growers, Retailers, Agricultural Professionals (private, commercial and non-commercial), and landowners, nurseries, individual stakeholders, storers and handlers of grain

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Stakeholder assessment
- Pesticide applicator education schools and workshops
- County-based variety field tours of canola and wheat for growers
- Research demonstrations will be conducted on confined poultry farms demonstrating IPM strategies for managing litter beetles.
- Extension publications will be created or revised
- News releases on the subject of IPM in schools, horticulture crops, livestock, and agronomic crops
- A summarized annual report will be developed for distribution to involved stakeholders demonstrating the impact of IPM programs to Oklahoma citizens.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Increased use of pest management approaches for targeted cropping system acres
2	Number of trained certified pesticide applicators
3	Poultry producers will be informed on the utility of alternative IPM strategies for managing litter beetles.
4	Increase in percent of growers with knowledge and adoption of iWheat program for winter wheat.
5	Home gardeners will gain knowledge about IPM practices for their home gardens.
6	People will gain knowledge about IPM programs by visiting the IPM Oklahoma! booth at various meetings, including the Oklahoma Ag Expo and the Oklahoma School Plant Managers Association.

Outcome # 1

1. Outcome Target

Increased use of pest management approaches for targeted cropping system acres

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Number of trained certified pesticide applicators

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems
- 901 - Program and Project Design, and Statistics

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Poultry producers will be informed on the utility of alternative IPM strategies for managing litter beetles.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Increase in percent of growers with knowledge and adoption of iWheat program for winter wheat.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Home gardeners will gain knowledge about IPM practices for their home gardens.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

People will gain knowledge about IPM programs by visiting the IPM Oklahoma! booth at various meetings, including the Oklahoma Ag Expo and the Oklahoma School Plant Managers Association.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes

- Public Policy changes
- Government Regulations
- Populations changes (immigration, new cultural groupings, etc.)

Description

Any factors that affect production systems and IPM (research and extension) will affect outcomes.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

At least 3 programs will be evaluated using a newly developed evaluation tool designed to measure short, medium and long-term outcomes through tools made available through the Southern Region IPM Center. Other IPM members will assess stakeholder priorities and effectiveness of IPM programs by using on-site survey methodologies and/or mail surveys to address larger populations.

V(A). Planned Program (Summary)

Program # 11

1. Name of the Planned Program

Food Safety - Agricultural Biosecurity

2. Brief summary about Planned Program

The OSU DASNR Agricultural Biosecurity Team consists of faculty appointed to, or affiliated with, the OSU National Institute for Microbial Forensics and Agricultural Biosecurity, other OSU faculty members on the Stillwater campus and at the OSU Center for Health Sciences in Tulsa, collaborators, and several OCES County Educators. The Institute is designed as a framework within which communication among Team members is facilitated and initiatives related to research, teaching and outreach are supported.

Efforts focus on targeted research projects, graduate education (including the development of multi-disciplinary coursework), and outreach consisting of linkages with sponsor agencies and stakeholders, and training for extension agents, plant disease diagnosticians, and others.

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
211	Insects, Mites, and Other Arthropods Affecting Plants	20%		5%	
212	Pathogens and Nematodes Affecting Plants	12%		50%	
213	Weeds Affecting Plants	15%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	31%		35%	
903	Communication, Education, and Information Delivery	22%		10%	
	Total	100%		100%	

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

1. Situation and priorities

Through history, threats of biological weapons and bioterrorism have been directed against agricultural targets including plant and animal resources. If strategically deployed, such agents could cause significant economic losses through commodity losses, trade restrictions, embargoes, and economic detriment to the rural communities whose infrastructure is dependent upon the agricultural infrastructure. It is a priority for OSU to respond to state and national needs related to the prevention of, preparation for, and responses to events of deliberate introduction of a biological agent with the intent to harm U.S. agricultural resources, or to emerging issues related to human pathogen contamination of plant based foods.

Short term priorities of the Agricultural Biosecurity Team

1. Continue a strong, cooperative, multi-institutional and multi-disciplinary initiative in agriculturally- and food safety related microbial forensics.

a. Oklahoma cooperators include OSU (Stillwater, Tulsa, CHS, OAES, OCES), the Oklahoma Bureau of Investigation, the Oklahoma Working Group on Agricultural Biosecurity, OU and possibly other entities.
b. National cooperators include the USDA (APHIS, ARS, National Plant Diagnostic Network, National Plant Disease Recovery System), the National Bioforensic Analysis Center, the FBI, the Department of Defense and others.
c. International cooperators include crop and food biosecurity researchers in the United Kingdom, France, Germany, Italy, Hungary, Turkey and Israel.

2. Maintain OSU's national and international reputation as a credible and relevant research provider in the area of agricultural microbial forensics and produce safety.

a. Conduct research in support of the emerging discipline of microbial forensics, as related to plant-based agricultural systems, including:
i. Develop technologies for disease diagnostics and pathogen detection and strain discrimination
ii. Validate plant pathology related technologies for forensic applications
iii. Adapt and validate technologies, developed originally for human pathogen forensics, for use with plant pathogens
iv. Evaluate the nature and extent of plant pathogen phylogeny and evolution, and the impacts of these processes on the application and interpretation of microbial forensic technologies and investigations
v. Characterize background microbial communities in natural and agricultural habitats
vi. Develop bioinformatics tools and models in support of microbial forensic and biosecurity initiatives

b. Conduct research in support of critical new national needs in the area of human enteric pathogen contamination of fresh produce
a. Investigate the nature, genetic determinants and specificity of plant-human pathogen interactions
b. Evaluate the risk and nature of insect dissemination of human pathogens to produce in the production field or at other points in the food distribution system
c. Identify and evaluate new approaches for prevention and mediation of contamination
d. Identify and evaluate new approaches for pathogen/contamination traceback
a. Apply amplified fragment length profile (AFLP) analysis to genetic typing of food borne Salmonella strains and compare with the "gold standard" of pulsed field gel electrophoresis (PFGE). OSU CHS Forensic Sciences Department in collaboration with the Oklahoma State Dept. of Health

e. Investigate the sociological impacts of threats to food safety and security (preparedness for and sociological/psychological impacts of manmade and natural incidents).
a. Oklahoma has strong agricultural commodity groups and a strong agricultural economic base. Threats to food safety and security focused on the agricultural industry in Oklahoma would have devastating effects on the industry. Preparation for and response during a time of crisis is critical to minimizing the effects of a disastrous event. Using the appropriate communication methods is vital to mitigating threats. In addition, understanding the sociological and psychological impacts of disastrous events that affect agriculture can help in preparation for responding to such events. (Cartmell and Naile, PIs).

3. **Offer or co-sponsor graduate coursework as well as short workshop/training courses on microbial forensics and food safety issues**. These activities will prepare state educators, diagnosticians, researchers, extension agents, students and postdocs, producers and first detectors/responders to recognize and respond appropriately to intentional, targeted challenges to our agricultural enterprise.
a. The School of Forensic Sciences has a course in Forensic Microbiology in our course listings. This course will be modified for future offerings to incorporate greater detail on current methods for genetic analysis of pathological microbes.

4. Link the activites of the OSU Homeland Security Team with those of other OSU Homeland Security initiatives:
a. **OSU Center for Veterinary Health Sciences (CVHS) -** Drs. Jerry Malayer, Tamara Gull and Bill Barrow
b. **OSU University Multispectral Laboratory (UML, Ponca City) -** Several researchers
c. **OSU Fire and Emergency Management -**Dr. Michael Larranaga
The CVHS and the UML have been involved in biodefense initiatives pertinent to biological agents and emerging infectious diseases, with programs supported by NIH/NIAID, DOD and other agencies. NIMFFAB has collaborated with both the OSU Fire & Emergency Management program and the CVHS on a DHS funded STEM grant for student support and educational programs. Technological platforms and related expertise have been established, and linkage of these biodefense programs to the priorities of the DASNR Agricultural Biosecurity Team are a priority. Through this multi-college collaboration, the biodefense-related research and training program at OSU can be expanded and strengthened.

<u>Longer term/associated objectives of the Agricultural Biosecurity Team</u>

1. Continue to conduct research and provide outputs to our stakeholders in the areas of plant pathogen forensics and produce safety/security.
2. Expand educational opportunities in microbial forensics and produce safety at OSU
3. Continue to offer an undergraduate course on global issues in agricultural biosecurity at OSU
4. Develop and offer a course in microbial contamination of fresh produce, to be

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research

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

1. Assumptions made for the Program

1. Agricultural biosecurity and food safety and security issues will remain an important component of state and national intiatives in the near term.
2. Significant new research, educational and extension initiatives will be needed to respond to agricultural biosecurity- and food safety-related needs of Oklahoma and the U.S.
3. Funding opportunities are likely to continue for such efforts, although funding levels for biosecurity agencies have dropped in the face of national budget constraints particularly at the national level.

2. Ultimate goal(s) of this Program

To bring the overall Oklahoma agricultural enterprise to an optimal state of biosecurity prevention and preparedness and to serve as a significant contributor to the National agricultural biosecurity system, particularly in the emerging discipline of plant pathogen forensics.

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
2013	0.7	0.0	2.0	0.0
2014	0.7	0.0	2.0	0.0
2015	0.7	0.0	3.0	0.0
2016	0.7	0.0	3.0	0.0
2017	0.7	0.0	3.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

1. Maintain and expand, as appropriate, the OSU **National Institute for Microbial Forensics & Food and Agricultural Biosecurity**, a multi-disciplinary unit to support and address issues of crop and food safety and biosecurity, and their impacts.
2. Conduct **scientific research** targeted specifically towards plant pathogen forensics, produce safety, sociological impacts of terrorism and other areas of agricultural biosecurity
3. ***Continue to offer targeted coursework** for students seeking M.S. or Ph.D. degrees in established programs such as Plant Pathology, Biochemistry, Plant Sciences or Forensic Sciences, who seek plant pathogen forensics. Consider establishing**an academic "track"** leading to a certificate or Minor in this area.
4. Participate on/in local and national grant panels, advisory boards, review committees, expert bodies and other activities, as appropriate, to maintain visibility of OSU and NIMFFAB in the national biosecurity, homeland security, microbial forensics, and food safety communities.

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● Demonstrations ● Other 1 (Graduate Training)	● Web sites other than eXtension ● Other 1 (State initiatives) ● Other 2 (Federal initiatives)

3. Description of targeted audience

Key members of National and Oklahoma homeland security community (DHS, FBI, CIA, etc)
Key members of National and Oklahoma agricultural leaders and representatives
Oklahoma extension personnel
Master gardeners
Oklahoma producers and crop consultants
OSU students and faculty
Professional/scientific societies
Key industries
The public

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of OSU faculty, students and staff affiliated with, or collaborating with NIMFFAB.
- Number of outside-OSU researchers, agencies and entities sponsoring, collaborating with or benefiting from NIMFFAB activities.
- Number of grant/contract proposals submitted in agricultural microbial forensics and biosecurity, and food safety.
- Number of grants/contracts awarded in those areas.
- Number of journal articles submitted with emphasis on agricultural microbial forensics and biosecurity.
- Number of students taking classes or seminars developed as part of the OSU Agricultural Biosecurity initiative.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of invitations to agricultural biosecurity team members for participation in initiatives, programs, presentations, and consultations related to agricultural biosecurity and microbial forensics
2	Number of team-associated individuals who a.Performed a project related internship b.Were hired into a professional position in the biosecurity or food safety field c.Served on agricultural biosecurity or food safety review committees or panels
3	Graduate students who will populate laboratories whose testing is related to the protection of human, animal, and plant health from infection by pathogenic organisms.
4	Number of students enrolled in courses that contain a significant portion of material on agro-terrorism, bio-terrorism, or food safety.

Outcome # 1

1. Outcome Target

Number of invitations to agricultural biosecurity team members for participation in initiatives, programs, presentations, and consultations related to agricultural biosecurity and microbial forensics

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 212 - Pathogens and Nematodes Affecting Plants
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Number of team-associated individuals who
a.Performed a project related internship
b.Were hired into a professional position in the biosecurity or food safety field
c.Served on agricultural biosecurity or food safety review committees or panels

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 212 - Pathogens and Nematodes Affecting Plants
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

Graduate students who will populate laboratories whose testing is related to the protection of human, animal, and plant health from infection by pathogenic organisms.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Number of students enrolled in courses that contain a significant portion of material on agro-terrorism, bio-terrorism, or food safety.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

National initiatives in agricultural biosecurity are likely to increase if there are new terrorist or biological attacks on or within the U.S. Funding for such initiatives will rise or fall depending on financial demands caused by national disasters, the economy (gas prices, war in Iraq, etc), as well as on appropriations changes. Changes in the Federal government, and in public policy, will affect the nature and strength of security programs. International cooperation in the area of agricultural biosecurity is likely to increase, as cross-border cooperation is necessary for effective management of pathogens that ignore borders.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

1. Annual email questionnaire, to be completed by
a. Team members, to document their activities and products and to measure their satisfaction.
b. Graduate and undergraduate students in Ag Biosecurity classes, research or activities, evaluating program quality and satisfaction.
2. Survey employers and terminal degree mentors on the preparedness of our graduates for a career in forensic microbiology related fields.

V(A). Planned Program (Summary)

Program # 12

1. Name of the Planned Program

Global Food Security and Hunger - Farm and Agribusiness Systems Economics

2. Brief summary about Planned Program

This program is a broad spectrum of farm management, economics, marketing, policy and business management programming applied to the agricultural sector of Oklahoma, south central region and global issues. It includes farm-level decision making, product handling, transprotation, processing, manufacture and retail. These efforts are directed at a sustainable production and marketing system to help meet the NIFA goal of boosting U.S. agricultural production and improve global capacity to meet growing food demand.

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	40%		60%	
602	Business Management, Finance, and Taxation	20%		10%	
603	Market Economics	15%		10%	
607	Consumer Economics	10%		10%	
610	Domestic Policy Analysis	15%		10%	
	Total	100%		100%	

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

1. Situation and priorities

Production agriculture and agribusiness firms are a vital part of Oklahoma's rural economy. These firms face difficulties because of the internal and external changes faced by managers including commodity prices, fuel, fertilizer and input prices, domestic policies, globalization, environmental issues and regulations, labor issues and regulations, intergenerational transfer, tax issues, rural-urban fringe pressures, transportation issues, bio-security and information technology. The team's priorities include:

Improved understanding of the economic systems involving Oklahoma farms and agribusinesses

Development of enterprise budgets, decision aids and other tools to improve and enable improved decision making and improve efficiency and profitability.

Development of educational programs to improve and enable improved decision making and improve efficiency and profitability.

Collect, summarize, and disseminate agricultural information required for agricultural decision making

Help farm and agribusiness managers to identify and use technology to manage and effectively use information.

Conduct research and develop, maintain, and deliver educational programs and materials to assist producers and agribusiness mangers in identifying and managing risks

Assist new and existing agribusiness firms in identifying market opportunities and developing new products and marketing systems.

Prepare and educate producers for decisions relating to government programs and policy changes

Better understand consumer preferences and choices and relate these to improved product development and production and marketing systems

2. Scope of the Program

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

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

1. Assumptions made for the Program

Oklahoma State University will continue to develop relevant research-based information that can be provided to farm and agribusiness decision makers.

Oklahoma State University and its county, state and national partners will provide adequate resources to support this vital team effort.

2. Ultimate goal(s) of this Program

Information is developed that improves decision making and increases efficiency and profitability of Oklahoma farms and ranchers is developed and disseminated

Through the efforts of the Farm and Agribusiness Management Team the management skills of Oklahoma farm and agribusiness managers are improved allowing them to obtain better efficiency, higher profitability and reduced risks.

A strong, profitable and efficient production agriculture and agribusiness sector improves the economic viability of rural Oklahoma 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
2013	6.0	0.0	4.0	0.0
2014	6.0	0.0	4.0	0.0
2015	7.0	0.0	4.0	0.0
2016	7.0	0.0	4.0	0.0
2017	7.0	0.0	5.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Develop and communicate research based information that farm and agribusiness managers can use to improve decisions.

Develop decision aids developed that assist farm and agribusiness managers in improved decisions.

Conduct educational programs that improve the management skills of farm and agribusiness managers.

Farm and agribusiness managers are able to better understand economic consequences and make more informed decisions.

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (Research) ● Other 2 (Social Media)	● Public Service Announcement ● Newsletters ● eXtension web sites ● Web sites other than eXtension

3. Description of targeted audience

Managers, owners, and employees of farms and agribusinesses; policy makers; agency leadership

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of board members of farmer-owned cooperatives receiving credentialed director training for board goverence
- Number of software decision analysis aids developed
- Number of manuscripts submitted to refereed journals
- Number of farm income tax managment schools conducted
- Number of participatory experiential learning workshops conducted
- Number of extension fact sheets, current reports, department staff papers, newsletter articles and other reports developed.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of tax preparers using information from OCES tax schools
2	Number of credentialed board members serving on agricultural cooperative boards (cumulative)
3	Number of beef producers applying some level of financial management decision skills learned through Master Cattleman certification
4	Number of producers and agribusiness managers using OSU developed decision aids
5	Number of producers gaining an improved understanding of risk management through participatory experiential learning experiences

Outcome # 1

1. Outcome Target

Number of tax preparers using information from OCES tax schools

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Number of credentialed board members serving on agricultural cooperative boards (cumulative)

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Number of beef producers applying some level of financial management decision skills learned through Master Cattleman certification

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Number of producers and agribusiness managers using OSU developed decision aids

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Number of producers gaining an improved understanding of risk management through participatory experiential learning experiences

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Participant evaluations conducted at the conclusion of various educational programs will be used to determine the team's effectiveness. Post surveys will determine application of new knowledge and skills. Changes in business performance will be reviewed at least on a case basis. Downloads of educational material and decision aids will be monitored and usage will be estimated.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Participant evaluations conducted at the conclusion of various educational programs will be used to determine the team's effectiveness. Post surveys will determine application of new knowledge and skills. Changes in business performance will be reviewed at least on a case basis. Downloads of educational material and decision aids will be monitored and usage will be estimated.

V(A). Planned Program (Summary)

Program # 13

1. Name of the Planned Program

Sustainable Energy - Bio-Based Products Development

2. Brief summary about Planned Program

A holistic, integrated approach will be used in evaluating the sustainability of developing and converting selected feedstocks into bioenergy and biobased products. Fundamental research in feedstock development will focus on understanding the molecular basis of biomass production and stress tolerance in selected plants. Additionally, a wide range of crops (existing and potentially-viable) and residues will be evaluated at multiple locations for research activities and extension demonstrations. All aspects of supply logistics for selected feedstocks; i.e. harvesting, packaging, pre-processing, distribution, and storage; will be studied to determine the most economical methods of delivering to the biorefinery. Selected feedstocks will be used in developing and/or improving conversion efficiencies utilizing biological, thermochemical, and other pathwaysfor product proof-of-concept prior to commercialization. This effort closely reflects the NIFA goal of energy independence by through science to develop biomass used for biofuels, design optimum forest products and crops for bioenergy production, and produce value-added bio-based industrial products. A life cycle assessment (LCA) will be employed to evaluate system performance and sustainability.

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
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

The world's economy has become increasingly dependent on fossil fuels. Today, fuels and many chemicals are derived from non-renewable resources. The U.S. has vast resources of biomass feedstocks which could potentially be converted into transportation fuels, chemicals, and power. This will not only reduce our dependence on foreign oil, but also provide job opportunities and new revenue for rural communities.

Development of a viable bioindustry is contingent on sustainable, dependable, and economical feedstock supply systems. Potential feedstocks include seed and/or vegetative parts (including harvesting/processing residues) of plants grown in Oklahoma for food, feed, or livestock herbage. Oklahoma offers an abundance of opportunity for the growth of a variety of crops that can be converted into biofuels. In addition to biofuels, many other valuable products could be produced from Oklahoma's crops and agricultural residues. With the increasing energy cost and concerns of environmental quality, biopesticides and biofertilizers will be investigated.

Information is needed on species adaptability for selected systems as influenced by: climatic and edaphic differences across the state; cultural requirements; economic variables of production, harvesting, packaging, pre-processing, and storage; conversion technology requirements; and environmental and safety throughout the holistic system. Significant variation in establishment success and biomass production potential of perennial grasses (switchgrass, Indian grass, and big bluestem) and annual crops (high biomass and sweet sorghum) has been observed. Enhancing crop genetics for biofuels production welcomes a tremendous opportunity to exploit the new tools of genomics and accelerate the pace of development of high biomass yielding varieties. The use of biomarkers for identifying economically useful genotypes will accelerate the pace of plant breeding in two ways. First, new varieties can be developed that specifically address issues related to local environmental factors such as marginal soils, drought, heat, and diseases. Secondly, this will lead to the engineering of biofuel crops that are amenable for conversion technologies, e.g. modifying cell wall composition to enhance conversion efficiency.

Logistics is a critical issue and can make or break a sustainable bioenergy and/or biobased products system. The holistic and integrated logistics research and extension program will include harvesting, packaging, storage, transportation, and pre-processing. Each of these logistics topic areas are highly dependent on the other logistic topic areas and the type of material being harvested and the biorefinery or biobased products industry material specifications. Currently one of the major logistics issues is the lack of industry material specifications. This issue has forced the logistics research to be extremely broad. The primary opportunity created by a lack of industry specifications is that it allows the research team to explore concepts outside the traditional hay and forage methodologies. For example, if a feedstock is packaged at a relatively high moisture content to decrease the time allowed for field dry-down, how does this type of non-traditional material affect the holistic system? Some of the affects are obvious while others are not because of the complexity of the system. The logistics program will produce results that can be utilized by researchers, feedstock producers, pre-processors, equipment manufacturers, transport companies and biorefineries.

In biofuels production, the major challenge is overcoming the difficulty in converting lignocellulosic materials, such as grasses and agricultural residues, into alcohol and hydrocarbon fuels. Two main approaches in addressing this challenge are: hydrolysis of polysaccharides into sugars that are fermented to ethanol and advance biofuels by microorganisms; and gasification of biomass to synthesis gas consisting primarily of carbon monoxide, carbon dioxide, and hydrogen which can be fermented by certain microorganisms to ethanol. Biological production of hydrocarbons can be achieved using genetically engineered microorganisms, in which their metabolic pathways are designed to flow the sugar or synthesis gas into hydrocarbons. Research will focus on strain and process development to increase productivity, toxicity resistance, and process robustness using biological and/or chemical routes to make hydrocarbon fuels and bioproducts. In addition, research may focus on hybrid thermochemical/biochemical processes such as production of and upgrading pyrolysis oil for next generation hydrocarbon biorefineries. Research may also focus on extracting valuable components from biomass, such as nutraceuticals, and valuable uses of waste products from biofuels production would be beneficial to establishing "biorefineries".

Life Cycle Assessment and Life Cycle Inventory analyses will be performed on selected processes. Energy and materials streams both in and out of soil preparation, feedstock growth,

harvesting, transportation, conversion and end-use processes will be tracked. The sustainability metrics of various bioproducts and processes will be documented. Analysisof potential bioprocesses for both economic feasibility and environmental impact is necessary to assess their commercial viability and to identify potential areas of improvement.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research

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

1. Assumptions made for the Program

· Maintaining an adequate level of funding
· Maintaining existing and hiring of new faculty and support personnel
· Maintaining sufficient research facilities and equipment
· Availability of land for large-scale field trials and on-farm demonstrations.
· Maintaining existing and developing new collaborations with external scientists and engineers

2. Ultimate goal(s) of this Program

To answer the critical questions and issues that must be addressed prior to industry taking the results of this research to commercialization.

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
2013	2.0	0.0	4.0	0.0
2014	2.0	0.0	4.0	0.0
2015	2.0	0.0	4.0	0.0
2016	2.0	0.0	4.0	0.0
2017	3.0	0.0	4.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

· Developing partnerships with universities, industry, and federal laboratories.

· Developing project proposals
· Preparing and presenting technical papers
· Submitting papers for journal articles
· Developing licenses and patents
· Taking new and/or improved products to pre-commercialization
· Developing educational materials
Disseminate research findings through meetings and workshops

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (Research) ● Other 2 (Symposia and conferences)	● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

Other scientists, industry, agricultural producers, commercial developers

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Technical papers and presentations
- New processes or products developed
- Technology demonstrations conducted
- Educational Publications
- Extension programs developed

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Release and commercialization of new feedstocks varieties
2	Best management practices identified for sustainable feedstock production
3	Fundamental knowledge of engineering or science gained in developing biobased products
4	Number of students graduated (masters and doctoral)
5	New processes or products developed
6	Products/processes taken to pre-commercialization

Outcome # 1

1. Outcome Target

Release and commercialization of new feedstocks varieties

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Best management practices identified for sustainable feedstock production

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Fundamental knowledge of engineering or science gained in developing biobased products

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Number of students graduated (masters and doctoral)

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

New processes or products developed

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Research

Outcome # 6

1. Outcome Target

Products/processes taken to pre-commercialization

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Appropriations changes

Description

Significant support has been received through Special Grant via Federal Initiative process.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Progress will be evaluated annually by the Initiative Team (self-assessment) primarily through increases in defined outputs and outcomes. Assessments will also be made on improvements in biomass production and conversion, e.g. increases in biomass productivity; decreases in inputs for enhanced biomass production; increases in storage of soil carbon; decreases in greenhouse gases; and increases in process sustainability.

V(A). Planned Program (Summary)

Program # 14

1. Name of the Planned Program

Childhood Obesity - Hunger / Health / Risky Behaviors / Resilience Issue Teams

2. Brief summary about Planned Program

This program focuses on concerns from advisory committees and agencies across the state and includes issues related to: poor food, food safety, nutrition and physical activity choices, and youth engaged in high risk behaviors.

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
134	Outdoor Recreation	12%		0%	
703	Nutrition Education and Behavior	20%		0%	
724	Healthy Lifestyle	24%		0%	
802	Human Development and Family Well-Being	22%		0%	
806	Youth Development	22%		0%	
	Total	100%		0%	

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

1. Situation and priorities

Oklahoma ranks as the 5th most obese state in the nation, with 14% of Oklahoma youth considered obese. This ranking reflects the state's high density of fast food establishments, low fruit and vegetable consumption (only 15% of Oklahoma youth ate fruits and vegetables five times or more each day) and low levels of physical activity, 29% of Oklahoma high school students reported watching three or more hours of television every day.

In Oklahoma every year on average: 6,000 youth under age 19 drop out of high school; 24,000 arrests involve children or adolescents; 2,300 babies are born to school-age teens; and more teens engage in smoking, alcohol use, sexual activity, violence and weapon carrying than the national average.

4-H is committed to the physical, mental and emotional health of our nation's youth so they may lead healthy and productive lives into and throughout adulthood.

Priorities:
Maintain or improve health through healthy food and physical activity choices
Reduce likelihood to engage in high-risk behaviors which lead to negative life outcomes
Youth will learn to make healthy lifestyle choices through the use of curricula and educational materials
Resilience in children, youth, and adults

2. Scope of the Program

- In-State Extension
- Multistate Extension

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

1. Assumptions made for the Program

• Program will experience "customer acceptance" --schools, after school programs, community youth groups will allow the program to be taught
• Quality programming efficiently uses resources, is research-based, policy-relevant, and effective in bringing about desired change
• Approaches must be multi-faceted, fit local needs, and integrated in family, school, and community contexts
• Both universal and targeted approaches are necessary, valuing efforts to engage diverse audiences
• Programming will have a positive economic and social impact
•These focus issues are long-term challenges to the citizens of Oklahoma
• Appropriate and sponsored funding will continue at similar levels. Key personnel will be replaced in a timely manner.
• Youth will be recognized as a viable resource who can work alongside adults to make a significant difference in their community.

2. Ultimate goal(s) of this Program

Oklahoma citizens (particularly children and youth) will have decreased risk factors associated with obesity and being overweight

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
2013	35.0	0.0	0.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2014	35.0	0.0	0.0	0.0
2015	35.0	0.0	0.0	0.0
2016	33.0	0.0	0.0	0.0
2017	33.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Establish advisory board of FCS educators, 4-H youth &relevant stakeholders & partners
- Collaboratively conduct 4-H projects and activities
- Conduct research that addresses chronic issues in Oklahoma
- Evaluate programs to determine effectiveness and impacts
- Leverage resources via grant writing and development activities
- Student internships and service learning
- Mentoring program
- Community service projects

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (mentoring) ● Other 2 (student internships)	● Public Service Announcement ● Newsletters ● TV Media Programs ● eXtension web sites ● Web sites other than eXtension

3. Description of targeted audience

Youth, children; parents; teachers; adult volunteers; middle to low income families; race and ethnicity will also be recognized as an identifier of audiences; caretakers, agencies & service providers, schools, policy makers.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of OSU Fact s published
- Number of other publications including but not limited to Bulletins, Technical Manuals, Reports as well as PowerPoint presentation and Spreadsheets, etc. distributed for use by others
- Number of in-service training sessions
- Number of certification Training sessions
- Number of other training sessions, workshops, etc. conducted
- Number of presentations at Extension organized meetings
- Number of presentations at other meetings and events (professional metings, invitations to speak to community groups, etc.)
- Number of workshops, conferences, etc. organized
- Number of posters or displays
- Number of other demonstrations, displays, exhibits, and models
- Number of newsletters
- Number of website hits
- Number of radio and television presentations
- Number of newspaper, and magazine articles written
- Average number of phone calls and/or email requests responded to on a weekly basis
- Number of websites

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Percentage increase in consumption of fruits
2	Percentage increase in the consumption of vegetables
3	Percentage increase in the consumption of whole grains
4	Percentage increase in the consumption of dairy foods
5	Percentage decrease in consumption of foods high in fat, sugar and salt
6	Percentage decrease in the consumption of sugar-sweetened beverages
7	Percentage increase in physical activity
8	Percentage decrease of time in front of television, coumputers, etc.
9	Percentage increase of meals prepared at home
10	Percentage increase in safe food handling practices
11	Percentage increase in positive parenting skills
12	Percentage increase in youth positive peer involvement
13	Percentage increase in parenting competence
14	Percentage increase in child competent behaviors
15	Percentage increase in access to affordable, healthy foods such as community gardens and farmers' markets
16	Percnetage increase in opportunities for physical activity
17	Percentage increase in deliberative forums on issues related to high risk behaviors to develop solutions that encourage broad community support
18	Percentage increase in task forces to promote positive activities for youth and increase personal awareness and involvement

Outcome # 1

1. Outcome Target

Percentage increase in consumption of fruits

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Percentage increase in the consumption of vegetables

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Percentage increase in the consumption of whole grains

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Percentage increase in the consumption of dairy foods

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Percentage decrease in consumption of foods high in fat, sugar and salt

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Percentage decrease in the consumption of sugar-sweetened beverages

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Percentage increase in physical activity

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

Percentage decrease of time in front of television, coumputers, etc.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

Percentage increase of meals prepared at home

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 10

1. Outcome Target

Percentage increase in safe food handling practices

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 11

1. Outcome Target

Percentage increase in positive parenting skills

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 12

1. Outcome Target

Percentage increase in youth positive peer involvement

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 13

1. Outcome Target

Percentage increase in parenting competence

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 14

1. Outcome Target

Percentage increase in child competent behaviors

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 15

1. Outcome Target

Percentage increase in access to affordable, healthy foods such as community gardens and farmers' markets

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 16

1. Outcome Target

Percnetage increase in opportunities for physical activity

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 17

1. Outcome Target

Percentage increase in deliberative forums on issues related to high risk behaviors to develop solutions that encourage broad community support

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 18

1. Outcome Target

Percentage increase in task forces to promote positive activities for youth and increase personal awareness and involvement

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation
- 724 - Healthy Lifestyle
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Public Policy changes

Description

Changes in economy may affect participants' consumption of fruits and vegetables in addition to

diary and whole grain products

Public policy changes in schools, such as school wellness policies, may affect participants' healthy food choices and participation in physical activity

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

For the Issue Teams included in this Planned Program, evaluation will be performed by distributing written surveys to all program participants. The surveys will be done post program and retrospectively measure behaviors pre-program and intent to change behaviors. The surveys will ask questions focused primarily on the State Defined Outcomes (see above). We will evaluate percentage change in behavior as stated in the State Defined Outcomes. Follow up surveys will be conducted to measure actual percentage change in behavior as stated in the State defined Outcomes. The results of the surveys will be used to improve curricula and education activities and demonstrate the impact of Oklahoma Cooperative Extension on the lives of Oklahomans.

V(A). Planned Program (Summary)

Program # 15

1. Name of the Planned Program

Structure and Function of Macromolecules

2. Brief summary about Planned Program

Basic scientific inquiry aimed at the identification of macromolecules and macromolecular interactions, and characterization of structural and functional features of these molecules and their interactions that modulate growth, development, health and pathophysiological processes in plant and animal systems. Development of an understanding of critical biological and physiological processes and interactions at a molecular level leading to new insights that can be exploited for the improvement of plant and animal health.

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	0%		5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		5%	
206	Basic Plant Biology	0%		20%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		5%	
212	Pathogens and Nematodes Affecting Plants	0%		5%	
304	Animal Genome	0%		5%	
305	Animal Physiological Processes	0%		45%	
311	Animal Diseases	0%		5%	
312	External Parasites and Pests of Animals	0%		5%	
	Total	0%		100%	

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

1. Situation and priorities

-In the post-genomic era, the ability to predict protein structure, function and interactions from genomic data holds huge potential for making advances in public health and agriculture.
-Macromolecules govern plant and animal physiology and pathophysiology, hence an understanding of their structure-function relationships can be used to attack or improve agriculturally relevant physiological processes.
-Sophisticated instrumentation and highly trained staff are needed to carry out the experiments that will generate a knowledge base, which would make such predictions feasible.
-Interactions between faculty and staff with a common interest in structural biology, and a breadth of expertise are required to fully exploit the current knowledge base to solve current and future problems.
-Methods for solving and predicting the structure of complex oligo/polysaccharides are woefully inadequate.
-The polysaccharides present in plant cell walls represent a large source of fermentable sugars: a biomass that represents a renewable energy source that there is currently no economic way to exploit.

Priorities will be to:

A. Carry out basic research into the interactions that control the structure and function of macromolecules occurring in plant and animal systems.
B. Build, foster and maintain a cohesive critical mass of research faculty with a diverse set of expertise that focus on the study of structural biology.
C. Obtain funding to acquire and maintain state of the art equipment to enhance the research capabilities relating to macromolecular structure/ function/ interactions on the OSU campus.
D. Acquire and maintain support for "Core" facilities that are critical to the research mission of DASNR and Oklahoma State University: particularly to develop intellectual property that is patentable or that can be licensed.
E. Long-term goals are to grow knowledge, and to use this knowledge to contribute to the enhancement of the State's public health and agricultural productivity.
collaborations and research productivity.
f. Long-term goals are to grow knowledge, and to use this knowledge to contribute to the enhancement of the State's agricultural
productivity.

2. Scope of the Program

- In-State Research
- Multistate Research

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

1. Assumptions made for the Program

-New and improved technologies will continue to be developed that will accelerate solving macromolecular structures, and interaction networks, and funding will be available for the acquistion of these new technologies.
- Patentable or licensable discoveries or technologies will be generated by researchers.
-Appropriated and sponsored funding will continue at a similar or enhanced level.
-Funding levels will allow the addition of key faculty, and vacated positions to be replaced in a timely fashion.

-Funding levels will allow key technical and "core" facility personnel to be added and/or replaced in a timely manner.

-Faculty and staff with necessary skills can be recruited.

2. Ultimate goal(s) of this Program

-To make fundamental scientific discoveries that will enhance our understanding of molecular mechanisms involved in the regulation of macromolecular interactions, and determination of macromolecular structures, and the relationships of macromolecular structure to function that can be exploited for the improvement of plant and animal health.
-To assemble a critical mass of researchers in structural biology who will work together to generate a continuous stream of extramural funding and allow the establishment of a "Structural Biology" Center at OSU.

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
2013	0.0	0.0	8.0	0.0
2014	0.0	0.0	8.0	0.0
2015	0.0	0.0	9.0	0.0
2016	0.0	0.0	9.0	0.0
2017	0.0	0.0	9.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

-Basic research will be conducted that will make fundamental discoveries which will enhance our understanding of molecular mechanisms involved in the regulation of physiological processes in plant and animal systems.

- New faculty and staff will be recruited to build, foster and maintain a cohesive critical mass of research faculty with a diverse set of expertise that focuses on the study of structural biology.

-Grant proposals will be written to acquire and maintain state of the art equipment to enhance the research capabilities relating to protein structure/ function/ interactions on the OSU campus.

- Funds will be solicited from national, state and university sources to acquire, and maintain support for "Core" facilities that are critical to the research mission of DASNR and Oklahoma State University.

- Design and conduct basic research to fill critical gaps in scientific knowledge that will address needs, issues and problems that ultimately can be translated into an improvement in plant and animal health.

- Develop new research methods and procedures.

- Train undergraduate and graduate students, and postdoctoral associates.

- Publish scientific articles.

- Write and submit grant proposals.

- Attend and present scientific findings at professional conferences.

- File patents for protection of intellectual property and negotiate licensing agreements for technology transfer.

- Interact with other researchers both on and off the OSU campus.

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

Extension

Direct Methods	Indirect Methods
● Workshop ● Group Discussion ● Demonstrations	● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

- Departments and department heads
- OSU administrators
- Other faculty and other scientific researchers in DASNR, at OSU & the scientific community
- Students and post-docs
- Federal, state, and private funding agencies
- Scientific journal editors, readers & the scientific community
- Candidates for open faculty and staff positions.
- Patent officers
- Agricultural, environmental, life, and human science industries
- General public and elected officials

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of graduate students graduated and post doctoral scientists moving on to full employment.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Research development knowledge taken to patent or license stage.

Outcome # 1

1. Outcome Target

Research development knowledge taken to patent or license stage.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 304 - Animal Genome
- 305 - Animal Physiological Processes

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

1. We will evaluate percentage increases in number of manuscripts published as stated in Outcome #1.
2. We will evaluate percentage increases in number of licensing agreements negotiated for transfer patented technology to industry as stated in Outcome #2.
3. We will evaluate percentage increases in numbers of graduate students graduated and postdoctoral associates mentored with training in structural biology and placed/ hired into appropriate professional level positions as stated in Outcome #3.
4. We will evaluate percentage increases in numbers of new extramural grants funded as stated in Outcome #4.

5. We will evaluate percentage increases in numbers of instrumentation proposals funded and new instruments obtained as stated in Outcome #5.

6. We will evaluate percentage increases in numbers of invitations that faculty members received to present research findings at universities and colleges, and to national and international meetings as stated in Outcome #6.

V(A). Planned Program (Summary)

Program # 16

1. Name of the Planned Program

Sustainable Energy - Environmental Family and Youth Issues

2. Brief summary about Planned Program

This program focuses on concerns from advisory committees and agencies across the state and include issues related to environmental degradation.

3. Program existence : New (One year or less)

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
403	Waste Disposal, Recycling, and Reuse	50%		0%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	50%		0%	
	Total	100%		0%	

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

1. Situation and priorities

Oklahoma ranks 12thin the nation in total energy consumption per capita. It is estimated that the ingredients for the average American meal travel over 1,500 miles before arriving at the table; rising fuel prices will ensure rising food prices.

Priorities:
Prevent/decrease the degradation of the environment

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Extension

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

1. Assumptions made for the Program

Program will experience "customer acceptance" --schools, after school programs, community youth groups will allow the program to be taught.

•Quality programming efficiently uses resources, is research-based, policy-relevant, and effective in bringing about desired change.

•Approaches must be multi-faceted, fit local needs, and integrated in family, school, and community contexts.

•Both universal and targeted approaches are necessary, valuing efforts to engage diverse audiences.

•Programming will have a positive economic and social impact.

•These focus issues are long-term challenges to the citizens of Oklahoma.

• Appropriate and sponsored funding will continue at similar levels. Key personnel will be replaced in a timely manner.

• Youth will be recognized as a viable resource who can work alongside adults to make a significant difference in their community.

2. Ultimate goal(s) of this Program

Prevent/decrease the degradation of the environment

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
2013	2.5	0.0	0.0	0.0
2014	2.5	0.0	0.0	0.0
2015	2.5	0.0	0.0	0.0
2016	2.5	0.0	0.0	0.0
2017	2.5	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct research on effectiveness of programs
- Develop relevant partnerships
- Seek grant funding
- 4-H projects and activities

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

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● TV Media Programs
● One-on-One Intervention	● eXtension web sites
● Demonstrations	● Web sites other than eXtension

3. Description of targeted audience

Homeowners, youth, adults, families, community leaders

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of OSU Fact s published
- Number of other publications including but not limited to Bulletins, Technical Manuals, Reports as well as PowerPoint presentation and Spreadsheets, etc. distributed for use by others
- Number of in-service training sessions
- Number of certification Training sessions
- Number of other training sessions, workshops, etc. conducted
- Number of presentations at Extension organized meetings
- Number of presentations at other meetings and events (professional metings, invitations to speak to community groups, etc.)
- Number of workshops, conferences, etc. organized
- Number of posters or displays
- Number of other demonstrations, displays, exhibits, and models
- Number of newsletters
- Number of website hits
- Number of radio and television presentations
- Number of newspaper, and magazine articles written
- Average number of phone calls and/or email requests responded to on a weekly basis
- Number of websites

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Percentage increase in composting, donation of goods for others to use, repurpose, and recycle
2	Percentage increase in energy efficiency
3	Percentage decrease in food and packaging waste and use of disposable products
4	Percentage increase in maintenance, conservation, and protection of natural resources (air, land, water)
5	Percentage increase in communities that establish or continue collection points/times for recycling or resuse of consumer and agriculture goods

Outcome # 1

1. Outcome Target

Percentage increase in composting, donation of goods for others to use, repurpose, and recycle

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Percentage increase in energy efficiency

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Percentage decrease in food and packaging waste and use of disposable products

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Percentage increase in maintenance, conservation, and protection of natural resources (air, land, water)

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 403 - Waste Disposal, Recycling, and Reuse
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Percentage increase in communities that establish or continue collection points/times for recycling or resuse of consumer and agriculture goods

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

- Government Regulations
- Competing Public priorities

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

For the Issue Teams included in this Planned Program, evaluation will be performed by distributing written surveys to all program participants. The surveys will be done post program and retrospectively measure behaviors pre-program and intent to change behaviors. The surveys will ask questions focused primarily on the State Defined Outcomes (see above). We will evaluate percentage change in behavior as stated in the State Defined Outcomes. Follow up surveys will be conducted to measure actual percentage change in behavior as stated in the State defined Outcomes. The results of the surveys will be used to improve curricula and education activities and demonstrate the impact of Oklahoma Cooperative Extension on the lives of Oklahomans.

V(A). Planned Program (Summary)

Program # 17

1. Name of the Planned Program

Climate Change - Family and Youth Environmental and Safety Issues

2. Brief summary about Planned Program

This program focuses on concerns from advisory committees and agencies across the state and include issues related to environmental degradation and the prevention of injury and trauma.

3. Program existence : New (One year or less)

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
102	Soil, Plant, Water, Nutrient Relationships	12%		0%	
111	Conservation and Efficient Use of Water	13%		0%	
121	Management of Range Resources	12%		0%	
133	Pollution Prevention and Mitigation	13%		0%	
134	Outdoor Recreation	12%		0%	
141	Air Resource Protection and Management	13%		0%	
723	Hazards to Human Health and Safety	13%		0%	
805	Community Institutions, Health, and Social Services	12%		0%	
	Total	100%		0%	

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

1. Situation and priorities

In Oklahoma, over 600 bodies of water are impaired by pollutants and over 100 Public Water Supply systems draw water from impaired lakes and streams.

Just over 50% of Oklahoma households have access to recycling programs.

Oklahoma is vulnerable to many natural disasters each year such as tornadoes, ice storms, floods and wildfires. These disasters can cause significant financial loss by destroying homes and businesses.

Priorities:
Prevent/decrease the degradation of the environment
Reduce risks that could harm health, well-being, and safety in homes, homesteads and communities

2. Scope of the Program

- In-State Extension

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

1. Assumptions made for the Program

• Program will experience "customer acceptance" --schools, after school programs, community youth groups will allow the program to be taught.
• Quality programming efficiently uses resources, is research-based, policy-relevant, and effective in bringing about desired change.
• Approaches must be multi-faceted, fit local needs, and integrated in family, school, and community contexts.
• Both universal and targeted approaches are necessary, valuing efforts to engage diverse audiences.
• Programming will have a positive economic and social impact.
•These focus issues are long-term challenges to the citizens of Oklahoma.
• Appropriate and sponsored funding will continue at similar levels. Key personnel will be replaced in a timely manner.
• Youth will be recognized as a viable resource who can work alongside adults to make a significant difference in their community.

2. Ultimate goal(s) of this Program

Prevent/decrease the degradation of the environment
Reduce risks that could harm health, well-being, and safety in homes, homesteads 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
2013	5.5	0.0	0.0	0.0
2014	5.5	0.0	0.0	0.0
2015	5.5	0.0	0.0	0.0
2016	5.5	0.0	0.0	0.0
2017	5.5	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct research that addresses chronic issues in Oklahoma
- Evaluate programs to determine effectiveness and impacts
- Leverage resources via grant writing and development activities
- Develop relevant partnerships
- 4-H projects and activities

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

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● TV Media Programs
● One-on-One Intervention	● eXtension web sites
● Demonstrations	● Web sites other than eXtension
● Other 1 (research)	
● Other 2 (Projects)	

3. Description of targeted audience

Youth, homeowners, families, children, teachers, communities, community leaders

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of OSU Fact s published
- Number of other publications including but not limited to Bulletins, Technical Manuals, Reports as well as PowerPoint presentation and Spreadsheets, etc. distributed for use by others
- Number of in-service training sessions
- Number of certification Training sessions
- Number of other training sessions, workshops, etc. conducted
- Number of presentations at Extension organized meetings
- Number of presentations at other meetings and events (professional metings, invitations to speak to community groups, etc.)
- Number of workshops, conferences, etc. organized
- Number of posters or displays
- Number of other demonstrations, displays, exhibits, and models
- Number of newsletters
- Number of website hits
- Number of radio and television presentations
- Number of newspaper, and magazine articles written
- Average number of phone calls and/or email requests responded to on a weekly basis
- Number of websites

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Percentage increase in selection and home preservation of home, locally and regionally produced foods
2	Percentage increase in composting, donation of goods for others to use, repurpose, and recycle
3	Percnetage decrease in food and packaging waste and use of disposable products
4	Percentage increase in maintenance, conservation, and protection of natural resources (air, land, water)
5	Percentage increase in preparation for emergencies
6	Percentage increase in communities that establish or continue collection points/times for recycling/reuse of consumer and agriculture goods
7	Percentage increase in communities that inaugurate a county beautification campaign

Outcome # 1

1. Outcome Target

Percentage increase in selection and home preservation of home, locally and regionally produced foods

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Percentage increase in composting, donation of goods for others to use, repurpose, and recycle

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Percnetage decrease in food and packaging waste and use of disposable products

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Percentage increase in maintenance, conservation, and protection of natural resources (air, land, water)

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 141 - Air Resource Protection and Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Percentage increase in preparation for emergencies

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Percentage increase in communities that establish or continue collection points/times for recycling/reuse of consumer and agriculture goods

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Percentage increase in communities that inaugurate a county beautification campaign

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

For the Issue Teams included in this Planned Program, evaluation will be performed by distributing written surveys to all program participants. The surveys will be done post program and retrospectively measure behaviors pre-program and intent to change behaviors. The surveys will ask questions focused primarily on the State Defined Outcomes (see above). We will evaluate percentage change in behavior as stated in the State Defined Outcomes. Follow up surveys will be conducted to measure actual percentage change in behavior as stated in the State defined Outcomes. The results of the surveys will be used to improve curricula and education activities and demonstrate the impact of Oklahoma Cooperative Extension on the lives of Oklahomans.

V(A). Planned Program (Summary)

Program # 18

1. Name of the Planned Program

Food Safety - Hunger, Health and Safety

2. Brief summary about Planned Program

This program focuses on concerns from advisory committees and agencies across the state and includes issues related to: food safety, and the prevalence of injury and trauma.

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
134	Outdoor Recreation	23%		0%	
315	Animal Welfare/Well-Being and Protection	5%		0%	
703	Nutrition Education and Behavior	28%		0%	
723	Hazards to Human Health and Safety	5%		0%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	23%		0%	
805	Community Institutions, Health, and Social Services	16%		0%	
	Total	100%		0%	

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

1. Situation and priorities

Total annual health-related costs of food borne illness in Oklahoma were estimated at $1.7 million by the Produce Safety Project at Georgetown University in 2010.

In Oklahoma, falls, fires/burns, and poisonings account for the majority of unintentional home injury deaths among all age groups. Among all age groups, older adults are most likely to die due to home injury. Over 13% of Oklahoma's population is age 65 years and older, and of those, 31.3% live alone.

It is estimated that between 15 and 30 percent of American farm operators and farm workers have physical disabilities, many of them sustained on the farm.

Priorities:
Maintain or improve health through safe food choices
Reduce risks that could harm health, well-being, and safety in homes, homesteads and communities

2. Scope of the Program

- In-State Extension
- Multistate Extension

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

1. Assumptions made for the Program

Program will experience "customer acceptance" --schools, after school programs, community youth groups will allow the program to be taught.

• Quality programming efficiently uses resources, is research-based, policy-relevant, and effective in bringing about desired change.

• Approaches must be multi-faceted, fit local needs, and integrated in family, school, and community contexts.

• Both universal and targeted approaches are necessary, valuing efforts to engage diverse audiences.

• Programming will have a positive economic and social impact.

•These focus issues are long-term challenges to the citizens of Oklahoma.

• Appropriate and sponsored funding will continue at similar levels. Key personnel will be replaced in a timely manner.

• Youth will be recognized as a viable resource who can work alongside adults to make a significant difference in their community.

2. Ultimate goal(s) of this Program

Improve food safety for families, youth and communities and reduce the prevalence of injury and trauma.

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
2013	20.0	0.0	0.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2014	20.0	0.0	0.0	0.0
2015	20.0	0.0	0.0	0.0
2016	20.0	0.0	0.0	0.0
2017	20.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Establish appropriate partnerships
- Collaboratively conduct 4-H projects and activities.
- Evaluate programs to determine effectiveness and impacts.
- Conduct research that addresses chronic issues in Oklahoma.
- Leverage resources via grant writing and development activities
- Student internships and service learning

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

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● TV Media Programs
● One-on-One Intervention	● eXtension web sites
● Demonstrations	● Web sites other than eXtension
● Other 1 (Projects)	

3. Description of targeted audience

Families, youth, restruant employees, food handlers, children, communities, community leaders

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of OSU Fact s published
- Number of other publications including but not limited to Bulletins, Technical Manuals, Reports as well as PowerPoint presentation and Spreadsheets, etc. distributed for use by others
- Number of in-service training sessions
- Number of certification Training sessions
- Number of other training sessions, workshops, etc. conducted
- Number of presentations at Extension organized meetings
- Number of presentations at other meetings and events (professional metings, invitations to speak to community groups, etc.)
- Number of workshops, conferences, etc. organized
- Number of posters or displays
- Number of other demonstrations, displays, exhibits, and models
- Number of newsletters
- Number of website hits
- Number of radio and television presentations
- Number of newspaper, and magazine articles written
- Average number of phone calls and/or email requests responded to on a weekly basis
- Number of websites

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Percentage increase in meals prepared at home
2	Percentage increase in food cooking skills
3	Percentage increase in safe food handling practices
4	Percentage increase in safe and effective food preservation practices
5	Percentage increase in the number of safety audits completed to identify potential hazards in the home/homestead
6	Percentage increase in practice of safety and injury/secondary injury prevention
7	Percentage increase in use of assistive technology as necessary
8	Percentage increase in use of available assistance by persons with injury/disability

Outcome # 1

1. Outcome Target

Percentage increase in meals prepared at home

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Percentage increase in food cooking skills

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Percentage increase in safe food handling practices

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Percentage increase in safe and effective food preservation practices

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Percentage increase in the number of safety audits completed to identify potential hazards in the home/homestead

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Percentage increase in practice of safety and injury/secondary injury prevention

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Percentage increase in use of assistive technology as necessary

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

Percentage increase in use of available assistance by persons with injury/disability

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Programmatic Challenges

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

For the Issue Teams included in this Planned Program, evaluation will be performed by distributing written surveys to all program participants. The surveys will be done post program and retrospectively measure behaviors pre-program and intent to change behaviors. The surveys will ask questions focused primarily on the State Defined Outcomes (see above). We will evaluate percentage change in behavior as stated in the State Defined Outcomes. Follow up surveys will be conducted to measure actual percentage change in behavior as stated in the State defined Outcomes. The results of the surveys will be used to improve curricula and education activities and demonstrate the impact of Oklahoma Cooperative Extension on the lives of Oklahomans.

V(A). Planned Program (Summary)

Program # 19

1. Name of the Planned Program

Global Food Security and Hunger - Families and Youth

2. Brief summary about Planned Program

These programs focus on concerns from advisory committees and agencies across the state and include issues related to: inadequate food supply and/or food management, high-risk negative financial practices and lack of financial planning, unemployed Oklahoma veterans and civilians, family breakdown, the lack of resilience and skills to ensure success in family life, school, and society, and the need for a citizenry with current knowledge about the agriculture industry.

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
604	Marketing and Distribution Practices	3%		0%	
607	Consumer Economics	8%		0%	
608	Community Resource Planning and Development	3%		0%	
703	Nutrition Education and Behavior	13%		0%	
704	Nutrition and Hunger in the Population	5%		0%	
724	Healthy Lifestyle	22%		0%	
801	Individual and Family Resource Management	13%		0%	
802	Human Development and Family Well-Being	24%		0%	
805	Community Institutions, Health, and Social Services	4%		0%	
806	Youth Development	5%		0%	
	Total	100%		0%	

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

1. Situation and priorities

According to a recent USDA report, for the 3 year period of 2006-2009 an average of 15.2% of Oklahoma's population was classified as food insecure. Food Banks in Oklahoma serve 354,800 people annually, while serving an additional 72,000 Oklahomans each week through non-emergency food programs. Roughly 23% of Oklahoma's adult population receives benefits from the Supplemental Nutrition Assistance Program. Food insecurity and hunger are on the rise across Oklahoma, especially in families with children; 1 in 5 Oklahoma children are at risk of being hungry.

Oklahoma ranks 33rd in the nation in residents' ability to build wealth and fend off poverty. One in four Oklahoma households are "asset poor", with little or no financial cushion in case of unemployment or other emergency. The state ranks 40thin unbanked households and 44thin consumers with subprime credit.

The average net worth of Oklahomans is $43,325, far below the national average of $70,600. The state ranks 41stin average annual pay. Oklahomans earn almost $14,000 per year less than the national average.

Oklahoma ranks 46th in residents in low-wage jobs. Unemployed Oklahomans may have more than a bad economy working against them; irresponsible use of social media such as Facebook, YouTube, and Twitter can eliminate a job applicant from consideration for employment. A lack of business etiquette can cost not only job applicants but also employers, who can lose profits due to a decrease in business and eventual increase in employee turnover.

Oklahoma ranks among the top 5 in all states for number of divorces. Oklahomans marry an average of 2.5 years younger than the national median age at first marriage, and those marrying under the age of 20 are the most likely to have gotten a divorce. Oklahoma families with children and headed by single mothers are 4.5 times more likely to be in poverty than families headed by married couples.

During times of adversity, the ability to effectively respond to life's challenges is critical. Financial struggles to make ends meet, job loss, and family separation or divorce are just a few of the events that can negatively impact all Oklahomans from infants to adults. Unemployment and income loss can reduce educational achievement by threatening early childhood nutrition; reducing families' abilities to provide a supportive learning environment and by forcing a delay or abandonment of post secondary plans. Someone with only a high school degree is over three times more likely to be poor than a college graduate, and those who did not graduate from high school are seven times more likely to be poor than college graduates.

In order to sustain Oklahoma agriculture industry, one of the state's largest industries, a workforce skilled in current practices is necessary.

Priorities:
Decrease number of Oklahomans experiencing hunger
Increase financial readiness for life events
Increase personal and community readiness for employment and economic opportunities
Reduce risk of separation or divorce and strengthen relationships
Resilience in children, youth, and adults
Oklahoma youth excel in agri-science and develop critical life skills

2. Scope of the Program

- In-State Extension

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

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

1. Assumptions made for the Program

• Program will experience "customer acceptance" --schools, after school programs, community youth groups will allow the program to be taught.
• Quality programming efficiently uses resources, is research-based, policy-relevant, and effective in bringing about desired change.
• Approaches must be multi-faceted, fit local needs, and integrated in family, school, and community contexts.
• Both universal and targeted approaches are necessary, valuing efforts to engage diverse audiences.
• Programming will have a positive economic and social impact.
•These focus issues are long-term challenges to the citizens of Oklahoma.
• Appropriate and sponsored funding will continue at similar levels. Key personnel will be replaced in a timely manner.
• Youth will be recognized as a viable resource who can work alongside adults to make a significant difference in their community.

2. Ultimate goal(s) of this Program

Decrease number of Oklahomans experiencing hunger
Increase financial readiness for life events
Increase personal and community readiness for employment and economic opportunities
Reduce risk of separation or divorce and strengthen relationships
Resilience in children, youth, and adults
Oklahoma youth excel in agri-science and develop critical life skills

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
2013	35.0	0.0	0.0	0.0
2014	35.0	0.0	0.0	0.0
2015	35.0	0.0	0.0	0.0
2016	35.0	0.0	0.0	0.0
2017	35.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct research that addresses chronic issues in Oklahoma
- Leverage resources via grant writing and development activities
- Student internships and service learning
- Establish appropriate partnerships with other youth serving agencies and commodity groups
- Develop, test and use evaluation tools to determine effectiveness and impacts
- Collaboratively conduct 4-H agri-science based projects and activities
- Establish community and school gardens

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

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● TV Media Programs
● One-on-One Intervention	● eXtension web sites
● Demonstrations	● Web sites other than eXtension
● Other 1 (research)	● Other 1 (train volunteers)
● Other 2 (projects)	

3. Description of targeted audience

Families, communities, youth, children, parents, community leaders, teachers, job seakers, businesses

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of OSU Fact s published
- Number of other publications including but not limited to Bulletins, Technical Manuals, Reports as well as PowerPoint presentation and Spreadsheets, etc. distributed for use by others
- Number of in-service training sessions
- Number of certification Training sessions
- Number of other training sessions, workshops, etc. conducted
- Number of presentations at Extension organized meetings
- Number of presentations at other meetings and events (professional metings, invitations to speak to community groups, etc.)
- Number of workshops, conferences, etc. organized
- Number of posters or displays
- Number of other demonstrations, displays, exhibits, and models
- Number of newsletters
- Number of website hits
- Number of radio and television presentations
- Number of newspaper, and magazine articles written
- Average number of phone calls and/or email requests responded to on a weekly basis
- Number of websites

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Percentage increase in money saving meal planning or food shopping practices
2	Percentage increase in food money management practices
3	Percentage increase growing, producing, hunting, or fishing for some food
4	Percentage decrease in likelihood of using high-risk negative financial practices such as overusing credit, failing to save money or planning for the future
5	Percentage decrease in the risk of default on loans, credit card debt, unpaid bills, mortgage foreclosure, and identity theft
6	Percentage increase in financial planning practices across the life cycle and skills to manage financial risk
7	Percentage increase in readiness for employment opportunities
8	Percentage increase in readiness for life changes
9	Percentage increase in life skills for personal competence
10	Percentage increase in ability to manage personal and family finances
11	Percentage increase in utilization by parents, volunteers, and primary caregivers of best practices that enhance the well-being and life skill development of children and youth
12	Percentage increase in use of creativity and lifelong learning by youth and adults to become resilient in their personal and family life
13	Percentage increase in life skills such as critical thinking, problem solving, nurturing relationships, social skills, responsible citizenship, self-discipline, stress management, and self-esteem
14	Percentage increase in youth giving back to their community through entrepreneurial/service learning projects
15	Percentage increase in the environmental and agricultural literacy of Oklahomans
16	Percentage increase in youth knowledge of plant and animal science concepts
17	Percentage increase in ethical decisions of youth related to animal care and well being
18	Percentage increase in life skills such as setting goals, keeping records, and ethical decision making through project work
19	Percentage increase in partnership of agencies and organizations interested in reducing hunger
20	Percentage increase in action to develop and sustain assets that support employment and economic opportunities
21	Percentage increase in use of creativity and innovation to address social problems

Outcome # 1

1. Outcome Target

Percentage increase in money saving meal planning or food shopping practices

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 704 - Nutrition and Hunger in the Population
- 801 - Individual and Family Resource Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Percentage increase in food money management practices

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 801 - Individual and Family Resource Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Percentage increase growing, producing, hunting, or fishing for some food

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 801 - Individual and Family Resource Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Percentage decrease in likelihood of using high-risk negative financial practices such as overusing credit, failing to save money or planning for the future

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 801 - Individual and Family Resource Management
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Percentage decrease in the risk of default on loans, credit card debt, unpaid bills, mortgage foreclosure, and identity theft

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 801 - Individual and Family Resource Management
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Percentage increase in financial planning practices across the life cycle and skills to manage financial risk

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 801 - Individual and Family Resource Management
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Percentage increase in readiness for employment opportunities

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

Percentage increase in readiness for life changes

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle

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

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

Percentage increase in life skills for personal competence

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 10

1. Outcome Target

Percentage increase in ability to manage personal and family finances

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 801 - Individual and Family Resource Management
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 11

1. Outcome Target

Percentage increase in utilization by parents, volunteers, and primary caregivers of best practices that enhance the well-being and life skill development of children and youth

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 12

1. Outcome Target

Percentage increase in use of creativity and lifelong learning by youth and adults to become resilient in their personal and family life

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 604 - Marketing and Distribution Practices
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 13

1. Outcome Target

Percentage increase in life skills such as critical thinking, problem solving, nurturing relationships, social skills, responsible citizenship, self-discipline, stress management, and self-esteem

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 604 - Marketing and Distribution Practices
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 14

1. Outcome Target

Percentage increase in youth giving back to their community through entrepreneurial/service learning projects

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 15

1. Outcome Target

Percentage increase in the environmental and agricultural literacy of Oklahomans

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 16

1. Outcome Target

Percentage increase in youth knowledge of plant and animal science concepts

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 17

1. Outcome Target

Percentage increase in ethical decisions of youth related to animal care and well being

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 18

1. Outcome Target

Percentage increase in life skills such as setting goals, keeping records, and ethical decision making through project work

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 19

1. Outcome Target

Percentage increase in partnership of agencies and organizations interested in reducing hunger

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 20

1. Outcome Target

Percentage increase in action to develop and sustain assets that support employment and economic opportunities

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 604 - Marketing and Distribution Practices
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 21

1. Outcome Target

Percentage increase in use of creativity and innovation to address social problems

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities

Description

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V(K). Planned Program - Planned Evaluation Studies

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