

# 2009 University of Nebraska Combined Research and Extension Plan of Work

**Status: Accepted**  
**Date Accepted: 05/29/08**

## I. Plan Overview

### 1. Brief Summary about Plan Of Work

Since 1988, the University of Nebraska--Lincoln Institute of Agriculture and Natural Resources (IANR) has followed a carefully developed and regularly revised strategic plan that sets the Institute's direction based upon clientele needs and concerns. The 2000-2008 Strategic Plan reflects the changes in Nebraska's agriculture, agribusiness, natural resources and human resources occurring at a pace unthinkable only a few years ago. The plan provides the direction for IANR action plans that focus on the priority needs of Nebraskans related to food, agriculture, natural resources, environment, agribusiness, human resources and communities. As needs change, IANR will reassess and update the strategic plan's priorities to meet those needs. To determine current priority programs and operational needs, IANR solicited input at 25 listening sessions held at 19 statewide sites. More than 700 stakeholders, students, faculty and staff contributed their views. They provided vital input to this updated 2000-2008 IANR Strategic Plan. The plan is reassessed annually to help re-focus efforts on the highest priority areas. As a point of information plans are underway to update the 2008-2015 strategic plan. Based upon the Institute's history and mission, IANR has three high-priority, overarching objectives: student programs, extended education and program balance. With these objectives at its core, the strategic plan's program themes include:

- A quality environment and effective natural resource management;
- Sustainable and economically viable food and biomass systems;
- Viable communities and appropriate quality of life for individuals and families.

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

Year	Extension		Research	
	1862	1890	1862	1890
2009	212.0	0.0	136.0	0.0
2010	212.0	0.0	136.0	0.0
2011	212.0	0.0	136.0	0.0
2012	212.0	0.0	136.0	0.0
2013	212.0	0.0	136.0	0.0

## II. Merit Review Process

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

- Internal University Panel
- External Non-University Panel
- Combined External and Internal University Panel
- Combined External and Internal University External Non-University Panel

### 2. Brief Explanation

The planned programs included in this program of work reflect major focus areas identified in the IANR Strategic Plan. These focus areas reflect our citizens' concerns and needs as voiced by stakeholders, faculty and administrators. Various levels in the university have reviewed, approved and supported this plan. The extension teams and work groups within each action plan will update their plans annually using stakeholder input and evaluation results from delivered programs. Also, every faculty member with a research appointment in the Agricultural Research Division (ARD) must have a current approved peer-reviewed project that defines his or her area of research investigation. The peer review process is consistent with the Hatch Act requirements as

amended for agricultural experiment station projects and is required for all projects, whether classified as Hatch, State, or Multi-state. After internal departmental review, a peer review panel meets with the principal investigators (PIs), unit administrators, and ARD representative. Following review and acceptable revision, if necessary, the project outline is forwarded to USDA-CSREES for inclusion in the CRIS database. Another review process, which combines merit and peer review, is the annual review by state commodity check-off boards of more than 100 research and extension funding proposals from extension and ARD faculty. Proposals selected for funding address the most significant problems currently facing the producer members of these boards and clearly communicate the research's relevance to user needs. This review process provides additional valuable input to the extension and ARD planning efforts. Department and Research/Extension Center comprehensive six-year reviews provide another information source to ensure program quality and relevance. Teams comprised of three to six external panel members and approximately two internal panel members from other departments conduct these reviews, which ensure that the programs provided focus on Nebraskans' most pressing needs.

### **III. Evaluation of Multis & Joint Activities**

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

Input from more than 80 entities involved in an action team plan review and the more than 700 people participating in IANR listening sessions confirm that we are addressing the critical issues that affect Nebraskans. A continuous listening process for planning efforts ensures that the plan of work is reviewed and updated regularly. The accuracy of the action plans is verified using the following methods:

- Teams meet face to face at least twice annually.
- Many action teams use monthly phone conference calls to stay on track.
- Action team leaders talk with subject-matter department administrators annually to ensure that the action team's goals are congruent with university department research and extension goals.
- Action teams meet with their stakeholders.
- Action teams refine programs to be delivered to ensure that content goals support needs identified by stakeholders and demographic trends.
- ARD faculty currently participating in multi-state projects receive research funding through the multi-state research component of the federal formula funds. These projects are selected and approved by regional director associations because they are high priority needs identified for multi-state activity.

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

Below are program examples initiated by stakeholder input that address the needs of under-served and under-represented populations.

- University of Nebraska–Lincoln Extension has built a strong partnership with Little Priest Tribal College and Nebraska Indian Community College. Through this partnership, Hispanic teens have become more involved in outside activities and interact with other youth and adults outside their schools. Program leaders say teens are more motivated and more interested in learning about activities.
- The Expanded Food and Nutrition Program and the Food Stamp Nutrition Education Program annually teach over 5,885 families and 14,944 youth from low resource (many of the from under represented populations) individuals and families how to make nutritionally sound food choices, use their food dollars wisely, and cook meals for their families that adhere to food safety principles.
- A Dawson County Extension assistant worked with Hispanic youth as a target effort to increase Hispanic youth participation. The group goals included developing leadership skills, providing activities in which Hispanic teens would participate and helping to become more involved in the community.
- Four colleges and universities (including UNL Extension) and seven public school districts joined forces to increase the number of minority, bilingual and English-as-a-Second-Language (ESL) endorsed teachers in northeast Nebraska using collaboration and a distance-delivered undergraduate degree program.
- ARD research programs related to human nutrition and healthy lifestyles were highlighted under the federal goals and key themes. The research results feed science-based information directly into UNL Extension programs that target under-served and under-represented populations. For example, nutritional sciences research includes a project on evaluating the nutritional characteristics of American bison meat. This complements the growth, production and use of American bison as a healthful meat source and the raising of bison herds on Nebraska's Native American reservations. Another research project on assessing managerial and work force development in food service management is providing information useful for effective training of low income and minority populations working in food service.

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

We believe that planned programs address the expected outcomes. Plan of work goals identified include output and outcome indicators as well as proposed impacts that will be used as planning tools. The action teams will collect impact data based upon the indicators identified. Some teams are collecting these data through their web sites. The teams are increasing their ability to use technology and teaching tools through learning web sites that are available around the clock; e.g., <http://lancaster.unl.edu/food> and <http://beef.unl.edu>. They are also using Polycoms, web conferencing through Breeze and phone conferencing as teaching media.

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

Documentation of program impacts reinforce UNL Extension and Agricultural Research program effectiveness. We have included several impact reports with this document to substantiate the difference that extension and research programs are making. The increasing number of multi-action team, multi-department and multi-state educational programs being delivered in multiple sites using multiple media reflect increased efficiencies. The aggressive efforts of faculty to use electronic media to deliver educational programs helps achieve this efficiency but, more important, allows program clientele to participate in programming on their own time and at their own location. An output of the newly focused education concept is in the increase in relationships with departments and colleges external to traditional extension partners; e.g., College of Architecture, College of Fine and Performing Arts, Admissions, Journalism and Computer Science.

## IV. Stakeholder Input

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

- Targeted invitation to non-traditional stakeholder individuals
- 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 selected individuals from general public
- Survey of the general public
- Targeted invitation to traditional stakeholder individuals
- Survey of traditional stakeholder individuals

#### Brief explanation.

The University of Nebraska-Lincoln (UNL) Extension and Agricultural Research Division routinely collaborate to plan and develop programs. These divisions of the Institute of Agriculture and Natural Resources (IANR) have worked together to develop an IANR integrated strategic plan for more than 10 years. Listening sessions across the state have provided significant input to the strategic planning process. Some of the listening sessions have been targeted to specific traditional and non-traditional stakeholder groups while others have been open to general stakeholder input. The listening sessions are always conducted in a way to foster input from all participants. Extension action teams are asked to seek program input from a minimum of five key stakeholders annually (determined to represent a significant population or organization or to be a key leader). This input has been invited by some teams in a formal manner with invitations to specific individuals while other teams have used surveys of program participants. In each case the participants are encouraged to provide input for program planning and evaluation. Most of the UNL academic departments and research and extension centers have advisory committees that represent stakeholder groups. These advisory groups are encouraged to provide input to both extension and research programs. The committees are selected to be representative of the stakeholders served by the unit. During January - May, 2006 County Extension Board members in a program called "County Conversations" asked Nebraskans a series of questions about Nebraska extension programs. Since these were one-on-one conversations it was easy for participants to respond. As part of the development of our 4-H strategic plan a Web site provided an opportunity for stakeholders in all 93 counties to provide input. The availability of the Web site was publicized in a variety of ways. Focus groups targeting specific audiences helped to encourage participation in the information gathering process.

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

#### 1. Method to identify individuals and groups

- Use External Focus Groups
- Use Advisory Committees

**Brief explanation.**

We use several methods to identify individuals and groups who provide input to our research and extension programs. Extension action teams are responsible for identifying stakeholders familiar with the subject matter and related issues impacting state residents. Unit advisory group participants are identified by administrators and faculty to represent the stakeholders with an interest in the specific unit's research and extension program. The participants typically represent commodity groups, the green industry, and related industrial entities. For IANR listening sessions host extension educators are asked to identify key community stakeholders. In addition, for some sessions general invitations to the public are made to achieve a broader range of input. Some listening sessions target specific groups and leaders of the targeted group are asked to suggest participants. Since the 4-H program targets youth the stratified focus group process used in strategic plan development specifically included youth specific focus groups. Specific efforts were made to include a diverse population in the focus groups by including low income families and youth and adults of color.

**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 individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of traditional Stakeholder individuals
- Meeting specifically with non-traditional individuals
- Meeting with traditional Stakeholder groups

**Brief explanation**

The IANR listening sessions are face-to-face meetings with traditional and non-traditional stakeholder individuals. Both Extension and the Agricultural Research Division often have representatives present at the sessions to help receive input from the stakeholders. Our institution considers itself fortunate that faculty (specialists, educators and researchers) engage in one-on-one relationships with many of the federal, state and local agencies in the state, commodity organizations, related industries, educational organizations, and a variety of non-profit organizations. This engagement provides significant stakeholder feedback. Extension action teams have used a variety of methods to obtain input including face-to-face meetings, telephone surveys, asking for review of action plans with a written survey response, and surveys of program participants during specific program activities. The action teams seek to answer the following questions: Are the action plan's educational goals the highest priorities? Does the action plan represent work that is complementary, but not duplicate, work of other organizations? Are there potential collaborators for these action plans? Are you, as a stakeholder, aware of potential grant/contract funding sources? Are there educational goals of the action plan that should be eliminated or handed off to other entities? Meetings with leaders within minority population audiences are held to help identify needs and programs to serve audiences such as Latino and Native American populations. The Extension Board County Conversations were one-on-one interviews. Board members interviewed 1,025 individuals in 73 counties. The questions that the Board members asked were: When you think about UNL Extension what are some of the things you value most? When you think of the benefits that UNL Extension brings to the community what comes to mind? What are key programs that we deliver better than anyone else? What are current and/or emerging needs that UNL Extension can address? What new audiences should we be considering? The Nebraska Rural Poll is sent to approximately 7,000 rural Nebraska residents with between 2,500 and 3,000 responses each year over the last 11 years. The poll asks for responses to a variety of rural issues. UNL requires that each administrative unit conduct a program review every five years. In most cases the units conduct some type of stakeholder input process such as surveys, one-on-one interviews, and focus group sessions to gather input for planning future research and education programs. Input from stakeholders for development of our 4-H strategic plan was obtained via an interactive web site and stratified focus groups. Input was received from approximately 2,000 individuals representing 89 of our 93 counties with 1,500 responses on the web site and 500 participants in focus groups. Approximately 1,400 youth provided feedback.

**3. A statement of how the input will be considered**

- In the Action Plans
- In the Budget Process
- In the Staff Hiring Process
- To Identify Emerging Issues
- Redirect Research Programs
- Redirect Extension Programs
- To Set Priorities

**Brief explanation.**

UNL Extension and Agricultural Research Division believe that stakeholder input is essential to developing and delivering on target research and educational programs. The IANR listening sessions continue to help identify priority issues for consideration as we consider research and education programs. The listening session engagement provides access to information about trends and issues that impact Nebraskans. The most significant priorities identified from the 2004, 2005, and 2006 listening sessions are rural economic development, community vitality and water quality and quantity. The listening session feedback is provided to departments and extension actions teams. The County Conversation summaries have been shared with all extension faculty and academic department administrators. Extension action teams will use this information as they develop program plans. The engagement with minority audience stakeholders is used to help plan and deliver programs that promotes cross cultural understanding and has especially been used to involve teens in local decision making and career planning. Input from the Nebraska 4-H information gathering process was used to develop a Nebraska 4-H strategic plan. Stakeholders identified four target areas for youth development which were used as the basis for the plan. The strategic plan focus is now Science, Engineering and Technology; Life Skills; Healthy Lifestyles; and Career Education. Through stakeholder involvement: research and education programs target the highest priority needs; research results are made available to a broader range of stakeholders; extension education programs are better marketed across the state; program co-sponsorships become more likely as others learn about programs; collaborating entities become program participants; and collaborating entities become sources of matching funding for research and education programs.

**V. Planned Program Table of Content**

S. NO.	PROGRAM NAME
1	Sustainable and Economically Viable Food and Biomass Systems
2	A quality Environment and Effective Natural Resource Management
3	Viable Communities and Appropriate Quality of Life for Individuals and Families

## V(A). Planned Program (Summary)

### Program #1

#### 1. Name of the Planned Program

Sustainable and Economically Viable Food and Biomass Systems

#### 2. Brief summary about Planned Program

Agriculture remains Nebraska's largest, most important industry. In 2005, the Nebraska Policy Institute reported that Nebraska agribusinesses provided nearly 31% of the state's total employment. IANR's research, education, extension and service programs have played an integral role in enhancing the competitiveness, increasing the profitability and improving the sustainability of the state's agriculture and agribusiness. As the industry evolves, IANR's research and education programs to bolster traditional agriculture while providing resources for alternative enterprises will be critical to sustained growth. IANR must continue to address the entire food production, processing, marketing, and consumption cycle, integrating producers' and consumers' concerns to provide a safer and more sustainable food production system. IANR will maintain strong programs in production, major livestock species marketing and processing, traditional field crops and specialty crops such as dry edible beans and turf. The institute will place even greater emphasis on agriculture's role in developing bio-renewable energy through the development and integration of resource-efficient crop and livestock production systems. Finally, it will focus special attention on economically viable, environmentally compatible, integrated approaches for commodity production, protection and processing. Because this planned program covers more than 20 knowledge areas, each knowledge area listed may represent additional areas as indicated below:

201, 203, 205 (202, 204), 206, 216 (214), 211, 212, 213, 215, 302, 307, 301 (303, 304, 306, 308), 305, 315 (311, 312, 313, 314), 402 (401, 404), 501 (502, 503, 504), 511 (512), 601 (602, 603, 604), 606 (609, 610, 611), 901 (902, 903)

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

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

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

6. Expending other than formula funds or state-matching funds : No

## V(B). Program Knowledge Area(s)

### 1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	4%		4%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	4%		4%	
205	Plant Management Systems	11%		11%	
206	Basic Plant Biology	6%		6%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		5%	
212	Pathogens and Nematodes Affecting Plants	4%		4%	
213	Weeds Affecting Plants	4%		4%	
215	Biological Control of Pests Affecting Plants	2%		2%	
216	Integrated Pest Management Systems	5%		5%	
301	Reproductive Performance of Animals	8%		8%	
302	Nutrient Utilization in Animals	5%		5%	
305	Animal Physiological Processes	2%		2%	
307	Animal Management Systems	4%		4%	
315	Animal Welfare/Well-Being and Protection	11%		11%	
402	Engineering Systems and Equipment	6%		6%	

501	New and Improved Food Processing Technologies	5%		5%	
511	New and Improved Non-Food Products and Processes	3%		3%	
601	Economics of Agricultural Production and Farm Management	8%		8%	
606	International Trade and Development	2%		2%	
901	Program and Project Design, and Statistics	1%		1%	
	<b>Total</b>	100%		100%	

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

**1. Situation and priorities**

Nebraska's long-term economic growth and citizen well-being depend upon economically viable and sustainable food and biomass systems. To remain viable, our IANR research, extension and education programs must focus on the development and improvement of resource-efficient, environmentally compatible, and economically viable food and biomass production systems with a greater focus on value-added production. To assure we reach our goals, we must address high energy costs through a focus on development of more energy-efficient production systems and incorporation/expansion of bio-energy as an integral production systems component. Nebraska is already a major crop and livestock producing state and is uniquely positioned to become a major producer of bio-energy, particularly ethanol and soy diesel. Ethanol production from feed grain is a major and growing industry. Other potential growth areas include ethanol production from biomass and soy diesel from soybeans. To adequately support these growth areas, we must increasingly focus on expanding our research and extension programs in energy-efficient irrigated agriculture, use agricultural products for biofuel production and develop economic and environmentally compatible ways to use grain/biomass byproducts. We already have programs investigating feeding wet and dry distillers grain to livestock, and we will place even greater emphasis on these efforts in the future. We will also continue to develop water-efficient crop cultivars and integrated crop management decision tools to help producers develop systems approaches to crop and livestock production that reduce energy inputs and use natural resources such as water efficiently. Value-added products, services and technologies will remain a major goal of our state programs. While ethanol will continue to be a growth industry in the state, we will also continue and expand our research and extension value-added efforts in food processing; textiles, clothing and design; and biomedical/bioagricultural technology. These newer focus areas promise to support strong economic growth for both rural and urban communities.

**2. Scope of the Program**

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

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

**1. Assumptions made for the Program**

- We will ensure alignment between research and extension efforts throughout this program of work.
- We will retain current faculty positions.
- We see the continued major role of agriculture in the state.

•We will have financial support from state, university and federal programs that adequately support base programs. Thus, IANR can continue to provide broad-based programs with the flexibility to respond quickly to emerging issues and address long-term citizen needs.

•Entrepreneurism and value-added products associated with agricultural production will be major contributors to rural and urban economic viability and state economic growth.

**2. Ultimate goal(s) of this Program**

- Nebraska farmers, ranchers and agribusinesses will have effective, productive management systems.
- Nebraska farmers and ranchers will have sustainable crop and livestock production systems.
- Nebraska agricultural commodities and products will have viable domestic and global markets.
- Nebraska’s ag-based industries will have available an appropriate array of products and food technologies.

**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
2009	78.0	0.0	86.0	0.0
2010	78.0	0.0	86.0	0.0
2011	78.0	0.0	86.0	0.0
2012	78.0	0.0	86.0	0.0
2013	78.0	0.0	86.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

- Conduct research and extension programs to develop/deliver new and improved crop and livestock integrated management programs.
- Conduct research and extension programs to develop/deliver new and improved information to help producers create sustainable crop and livestock production programs.
- Conduct research and extension programs to develop/deliver new and improved information to identify new and emerging markets and marketing strategies for agricultural products and agribusiness.
- Conduct research and extension programs to develop/deliver information on new or improved food products and technologies and emerging efficiencies of production to Nebraska’s ag-based industries.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> <li>● Group Discussion</li> <li>● Education Class</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Newsletters</li> <li>● TV Media Programs</li> </ul>

**3. Description of targeted audience**

Targeted audiences will include a broad range of small and large agricultural producers and processors. Nebraska-based processors, especially start-up companies, will receive high priority. Specific groups that will use the research and education programs include:

- Crop and livestock producers



and sustainable food and biomass systems.

**2009 :445**                      **2010 :445**                      **2011 : 445**                      **2012 :445**                      **2013 :350**

- Number of Agricultural Research Division projects related to economically viable and sustainable food and biomass systems.

**2009 :190**                      **2010 :190**                      **2011 : 190**                      **2012 :190**                      **2013 :190**

- Number of new extension publications and other education resources related to economically viable and sustainable food and biomass systems.

**2009 :35**                      **2010 :35**                      **2011 : 35**                      **2012 :35**                      **2013 :35**

- Number of new or improved plant and animal genetic materials or resources related to economically viable and sustainable food and biomass systems.

**2009 :25**                      **2010 :25**                      **2011 : 25**                      **2012 :25**                      **2013 :20**

- Number of new products and decision tools developed and made available to clientele related to economically viable and sustainable food and biomass systems.

**2009 :10**                      **2010 :10**                      **2011 : 10**                      **2012 :10**                      **2013 :10**

**V(I). State Defined Outcome**

O. No	Outcome Name
1	Nebraska farmers will increase profitability through adoption of research and extension information provided by IANR programs (measured by value placed on the information by clientele).
2	Nebraska ranchers and feeders will increase profitability through adoption of research and extension information provided by IANR programs (measured by value placed on the information by clientele).
3	Nebraska farmers and ranchers will have sustainable food and biomass systems through adoption of best management practices (measured by percent of clientele adopting best management practices).
4	Nebraska will have access to a highly trained and educated workforce for economically viable and sustainable food and biomass systems (indirectly measured by number of undergraduate and graduate students receiving degrees).
5	Nebraska farmers and ranchers will rely on IANR research and extension programs to assure an economically viable and sustainable food and biomass system (measured by percent of state acreage and livestock represented at education programs).

**Outcome #1**

**1. Outcome Target**

Nebraska farmers will increase profitability through adoption of research and extension information provided by IANR programs (measured by value placed on the information by clientele).

**2. Outcome Type :** Change in Condition Outcome Measure

**2009 :**133400000      **2010 :** 133400000      **2011 :** 133400000      **2012 :**133400000      **2013 :** 100000000

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 402 - Engineering Systems and Equipment
- 601 - Economics of Agricultural Production and Farm Management
- 606 - International Trade and Development
- 901 - Program and Project Design, and Statistics

**Outcome #2**

**1. Outcome Target**

Nebraska ranchers and feeders will increase profitability through adoption of research and extension information provided by IANR programs (measured by value placed on the information by clientele).

**2. Outcome Type :** Change in Condition Outcome Measure

**2009 :**81262000      **2010 :** 81262000      **2011 :** 81262000      **2012 :**81262000      **2013 :** 45262000

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 216 - Integrated Pest Management Systems
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 307 - Animal Management Systems

- 315 - Animal Welfare/Well-Being and Protection
- 402 - Engineering Systems and Equipment
- 601 - Economics of Agricultural Production and Farm Management
- 606 - International Trade and Development
- 901 - Program and Project Design, and Statistics

**Outcome #3**

**1. Outcome Target**

Nebraska farmers and ranchers will have sustainable food and biomass systems through adoption of best management practices (measured by percent of clientele adopting best management practices).

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :70                      2010 : 70                      2011 : 70                      2012 :70                      2013 : 70**

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 307 - Animal Management Systems
- 315 - Animal Welfare/Well-Being and Protection
- 402 - Engineering Systems and Equipment
- 501 - New and Improved Food Processing Technologies
- 511 - New and Improved Non-Food Products and Processes
- 601 - Economics of Agricultural Production and Farm Management
- 606 - International Trade and Development
- 901 - Program and Project Design, and Statistics

**Outcome #4****1. Outcome Target**

Nebraska will have access to a highly trained and educated workforce for economically viable and sustainable food and biomass systems (indirectly measured by number of undergraduate and graduate students receiving degrees).

**2. Outcome Type :** Change in Knowledge Outcome Measure

2009 :100

2010 : 100

2011 : 100

2012 :100

2013 : 100

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 307 - Animal Management Systems
- 315 - Animal Welfare/Well-Being and Protection
- 402 - Engineering Systems and Equipment
- 501 - New and Improved Food Processing Technologies
- 511 - New and Improved Non-Food Products and Processes
- 601 - Economics of Agricultural Production and Farm Management
- 606 - International Trade and Development
- 901 - Program and Project Design, and Statistics

**Outcome #5****1. Outcome Target**

Nebraska farmers and ranchers will rely on IANR research and extension programs to assure an economically viable and sustainable food and biomass system (measured by percent of state acreage and livestock represented at education programs).

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2009 :**64

**2010 :** 64

**2011 :** 64

**2012 :**64

**2013 :** 64

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. 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
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 307 - Animal Management Systems
- 601 - Economics of Agricultural Production and Farm Management

**V(J). Planned Program (External Factors)**

**1. External Factors which may affect Outcomes**

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

**Description**

- Downturn in the state economy could impact outcomes.
- Natural, disease or human-driven catastrophes would impact outcomes.
- Complete refocus of University of Nebraska program priorities would affect outcomes.

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

**1. Evaluation Studies Planned**

- After Only (post program)
- Before-After (before and after program)
- During (during program)

**Description**

We will conduct evaluations through the life of this program of work through multiple listening sessions each year; through the formal and informal evaluations completed in conjunction with workshops, field days, continuing education workshops and peer reviews of planned research and extension programs; and from external peer panels during six-year reviews of unit and issue-based reviews of teaching, research and extension programs.

**2. Data Collection Methods**

- Structured
- On-Site
- Observation
- Journals
- Sampling

**Description**

{NO DATA ENTERED}

**V(A). Planned Program (Summary)**

**Program #2**

**1. Name of the Planned Program**

A quality Environment and Effective Natural Resource Management

**2. Brief summary about Planned Program**

Abundant natural resources allow agricultural production that fuels a majority of Nebraska's economic activity. And agriculture's economic strength relies heavily on responsible surface and ground water management that provides irrigation in more than 50 percent of crop production. Nebraska's land and water resources also support a myriad of biological resources. Wildlife habitat provides for hunting, fishing and other outdoor recreation. Stewardship of Nebraska's natural resources, therefore, is vital for a sustainable economic future and high quality of life.

IANR's natural resource-related research and extension programs will focus on:

- Development and implementation of technologies to manage Nebraska's water resources.
- Development and implementation of technologies to manage livestock waste.
- Development and implementation of technologies to manage soil and range resources.
- Protection of natural resources to ensure adequate inventories to meet resource managers' needs.
- Development and implementation of technology to mitigate environmental change.
- Protection of Nebraska's forestry, aquatic and natural resources for future use and enjoyment.

IANR will provide its extension programming through the following entities: Natural Resources and Environment, Integrated Crop Management, Integrated Animal Systems Management and Community and Residential Environment action team work groups. The institute will also continue to conduct important research, much of which will be interdisciplinary.

**3. Program existence :** Mature (More than five years)

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

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

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)**

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	2%		2%	
102	Soil, Plant, Water, Nutrient Relationships	23%		23%	
111	Conservation and Efficient Use of Water	11%		11%	
112	Watershed Protection and Management	12%		12%	
121	Management of Range Resources	10%		10%	
122	Management and Control of Forest and Range Fires	1%		1%	
123	Management and Sustainability of Forest Resources	1%		1%	
124	Urban Forestry	1%		1%	
125	Agroforestry	1%		1%	
131	Alternative Uses of Land	1%		1%	
132	Weather and Climate	9%		9%	
133	Pollution Prevention and Mitigation	12%		12%	
134	Outdoor Recreation	1%		1%	
135	Aquatic and Terrestrial Wildlife	7%		7%	
141	Air Resource Protection and Management	1%		1%	

403	Waste Disposal, Recycling, and Reuse	3%		3%	
405	Drainage and Irrigation Systems and Facilities	2%		2%	
605	Natural Resource and Environmental Economics	2%		2%	
<b>Total</b>		100%		100%	

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

**1. Situation and priorities**

Nebraskans expect continued improved natural resource management. With more than eight million acres of irrigated land in Nebraska, irrigation management education will play a critical role in conserving limited water supplies and protecting water quality.

A sustained drought, increased competition for finite water resources, depletion of ground water aquifers, reallocations of surface water supplies through interstate water compacts and implementation of new Nebraska legislative bill (LB 962) threaten profitable agricultural production in Nebraska and endanger rural communities' economic stability.

At the same time, recreational and environmental interests are questioning the water management policies resulting from these factors. Farmers, ranchers, Natural Resources District personnel, resource managers, policy makers and agricultural lenders are uncertain about the viability of water management policies, the long-term consequences of resource use alternatives and the optimal mechanisms and management strategies to achieve outcomes envisioned by planning processes. All these stakeholders need research-based scientific information and decision-support systems to make effective decisions and manage limited water supplies most efficiently and profitably.

To provide appropriate and scientifically accurate information to all stakeholders, scientists must measure components of the water balance in existing cropping systems and new cropping systems that may provide economic sustainability and water conservation. They must then integrate the resulting data into effective strategies to manage existing water resources, quantify management trade-offs and formulate effective water conservation practices. Ultimately, success requires that scientists take research results and transform and deliver them to stakeholders and policy makers in understandable and usable formats.

The approximately 50 percent of Nebraska's land area that is pasture and rangeland provides the basic support for the extensive livestock industry. We must manage these grasslands to support the livestock industry and to provide wildlife habitat and other environmental benefits. Effective livestock manure management is also critical to sustain the livestock industry and protect the environment.

**2. Scope of the Program**

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

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

**1. Assumptions made for the Program**

- Water and other natural resources are critical to Nebraska's well-being.
- New policies and regulations will require producers to make changes in their water management and other production practices.
- University of Nebraska–Lincoln has faculty resources to address research and extension program needs related to environmental protection and natural resource management.
- Producers and policy makers will need improved water management tools and basic knowledge to address Nebraska's critical water issues.

- Producers will adopt new practices if those practices demonstrate effectiveness and positive economic impact.

**2. Ultimate goal(s) of this Program**

- Nebraskan’s will have the appropriate technologies to manage and protect limited water supplies.
- Nebraska livestock producers will have and adopt the appropriate practices to manage livestock manure in ways that protects the environment and are economically feasible.
- Nebraska’s soil and range resources will be managed to enhance the quality of the resource and sustain crop and livestock production.
- Inventories of Nebraska’s natural resources will effectively serve the needs of resource managers and policy makers.
- Nebraskans will be able to adapt to and manage environmental change and assure the appropriate protection of forestry, aquatic, wildlife and other natural resources.

**V(E). Planned Program (Inputs)**

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

Year	Extension		Research	
	1862	1890	1862	1890
2009	44.0	0.0	35.0	0.0
2010	44.0	0.0	35.0	0.0
2011	44.0	0.0	35.0	0.0
2012	44.0	0.0	35.0	0.0
2013	44.0	0.0	35.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

IANR will conduct research and deliver extension education programs that will enable Nebraska agricultural water users to use water in ways that maximize efficiency and profitability, protect water quality and meet regulatory requirements. Key elements of this effort include:

- Development of an improved understanding of basic plant, water, soil and climate relationships.
- Evaluation of alternative water delivery systems including sprinkler irrigation technologies and sub-surface drip irrigation systems.
- Evaluation of alternative irrigation water management strategies for all irrigation system types and particularly for situations where deficit irrigation is necessary.
- Development of adapted crop varieties, using either conventional breeding programs or genetic modification, that are more drought tolerant, perform well in deficit irrigation situations or require less evapotranspiration for profitable production.
- Evaluate alternative crops that require less applied irrigation water or are adapted to non-irrigated production, that will fit into Nebraska cropping systems and for which a market exists.
- Evaluate opportunities for shifting from irrigated to non-irrigated production or other enterprises that will maintain producer and community economic viability and sustainability.
- Develop decision-making support systems that enable producers, policy makers, financial institutions and others to make critical decisions regarding crop production and water resources use.
- Enhance research and extension education programs that will increase the scientific knowledge base and public understanding of the occurrence, movement and quality of ground water; factors that impact the quantity and quality of surface water; the interrelationships between ground water and surface water; and the ecology of Nebraska’s ground water and surface water systems.
- Develop research and extension education programs that analyze the water resource and economic impacts of existing or proposed public policies.
- Enhance research and extension education programs that enable Nebraskans to protect ground water and surface water quality and respond to regulatory requirements.
- Enhance research and extension education programs that will enable communities and individuals to better understand and

use appropriate technologies to protect the quality of drinking water supplies and to remove contaminants when drinking water standards are exceeded.

•Research-based information will be provided for individuals, groups and decision makers that will enable informed decisions relative to use of limited water supplies and protection of water quality.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● One-on-One Intervention</li> <li>● Group Discussion</li> <li>● Demonstrations</li> <li>● Workshop</li> <li>● Education Class</li> </ul>	<ul style="list-style-type: none"> <li>● TV Media Programs</li> <li>● Web sites</li> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

Nebraska farmers and ranchers, along with landowners, are the primary target audience for this work. In addition, target audiences will include land managers, bankers, agricultural consultants and agribusiness professionals who provide products and services to farmers and ranchers. The program's research and education efforts will provide valuable information for state and local policy makers (especially Natural Resource District Boards of Directors) as their make decisions regarding natural resources issues. The program will provide agency staff with the knowledge they need to carry out the agency responsibilities and mandates.

**V(G). Planned Program (Outputs)**

**1. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	10000	20000	8000	20000
2010	10000	20000	8000	20000
2011	10000	20000	8000	20000
2012	10000	20000	8000	20000
2013	10000	20000	8000	20000

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

**Expected Patent Applications**

2009 : 1                      2010 : 1                      2011 : 1                      2012 : 1                      2013 : 1

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	35	15	0
2010	35	15	0
2011	35	15	0
2012	35	15	0
2013	35	15	0

**V(H). State Defined Outputs**

**1. Output Target**

- Scholarly publications and outputs related to water management and water quality.

**2009 :50                      2010 :50                      2011 : 50                      2012 :50                      2013 :50**

- Number of water management and water quality education workshops/presentations, continuing education programs, web-based curricula and field days/tours.

**2009 :150                      2010 :150                      2011 : 150                      2012 :150                      2013 :150**

- Number of Agricultural Research Division projects that include water management and water quality as a key component.

**2009 :50                      2010 :50                      2011 : 50                      2012 :50                      2013 :50**

- Number of new extension publications and other education resources developed.

**2009 :20                      2010 :20                      2011 : 20                      2012 :20                      2013 :20**

- Number of scholarly publications and outputs addressing environmental and natural resources issues other than water management and water quality.

**2009 :30                      2010 :30                      2011 : 30                      2012 :30                      2013 :30**

- Number of Agricultural Research Division projects that address environment and natural resource issues other than water management and quality.

**2009 :30                      2010 :30                      2011 : 30                      2012 :30                      2013 :30**

- Number of education workshops/presentations, continuing education programs, web-based curricula and field days/tours that address environment and natural resource issues other than water management and quality.

**2009 :40                      2010 :40                      2011 : 40                      2012 :40                      2013 :40**

**V(I). State Defined Outcome**

O. No	Outcome Name
1	Irrigators will gain new knowledge and awareness of water conservation practices, crop water use rates, limited irrigation, irrigation scheduling and new irrigation technologies.
2	Nebraska farmers, ranchers, businesses and home owners will adopt new practices that will improve water management and protect water quality. This will be measured as the percentage of education program participants who indicate that they have adopted or plan to adopt new practices.
3	Livestock producers will continue to gain knowledge and awareness of appropriate practices to manage livestock manure.
4	Livestock producers will develop comprehensive nutrient management plans (CNMPs) and use best management practices for livestock manure handling and storage.
5	Nebraska farmers will increase their knowledge and awareness of how integrated pest management and pesticide best management practices can help protect water quality.
6	Nebraskans will gain increased awareness and knowledge of natural resources including wildlife, forest resources and rangeland and the relationship between natural resources stewardship, sustainability, economic viability and the environment.
7	Consumptive water use by irrigated crops will be reduced. The outcome measure will be the percent reduction of estimated consumptive water use when the current year is compared to the estimated consumptive water use in calendar year 2006. The consumptive water use will be estimated using the irrigation water pumped in Natural Resources Districts that require the use of water measurement devices.
8	Nebraska will not exceed its allocation of water in the Republican River as allowed by the interstate compact with Kansas and Colorado. Nebraska's allocation is 49% of the average annual water supply. The output measure will be the percent of the Republican River average annual water supply used by Nebraska.

**Outcome #1**

**1. Outcome Target**

Irrigators will gain new knowledge and awareness of water conservation practices, crop water use rates, limited irrigation, irrigation scheduling and new irrigation technologies.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2009 :2000                      2010 : 2000                      2011 : 2000                      2012 :2000                      2013 : 2000**

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 405 - Drainage and Irrigation Systems and Facilities

**Outcome #2**

**1. Outcome Target**

Nebraska farmers, ranchers, businesses and home owners will adopt new practices that will improve water management and protect water quality. This will be measured as the percentage of education program participants who indicate that they have adopted or plan to adopt new practices.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :70                      2010 : 70                      2011 : 70                      2012 :70                      2013 : 70**

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 403 - Waste Disposal, Recycling, and Reuse
- 405 - Drainage and Irrigation Systems and Facilities
- 605 - Natural Resource and Environmental Economics

**Outcome #3**

**1. Outcome Target**

Livestock producers will continue to gain knowledge and awareness of appropriate practices to manage livestock manure.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2009 :**450                      **2010 :** 500                      **2011 :** 500                      **2012 :**500                      **2013 :** 500

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse
- 405 - Drainage and Irrigation Systems and Facilities
- 605 - Natural Resource and Environmental Economics

**Outcome #4**

**1. Outcome Target**

Livestock producers will develop comprehensive nutrient management plans (CNMPs) and use best management practices for livestock manure handling and storage.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :**300                      **2010 :** 300                      **2011 :** 300                      **2012 :**300                      **2013 :** 300

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse
- 405 - Drainage and Irrigation Systems and Facilities
- 605 - Natural Resource and Environmental Economics

**Outcome #5**

**1. Outcome Target**

Nebraska farmers will increase their knowledge and awareness of how integrated pest management and pesticide best management practices can help protect water quality.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2009 :2000                      2010 : 2000                      2011 : 2000                      2012 :2000                      2013 : 2000**

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 125 - Agroforestry
- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation
- 605 - Natural Resource and Environmental Economics

**Outcome #6**

**1. Outcome Target**

Nebraskans will gain increased awareness and knowledge of natural resources including wildlife, forest resources and rangeland and the relationship between natural resources stewardship, sustainability, economic viability and the environment.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2009 :5000                      2010 : 6000                      2011 : 6000                      2012 :6000                      2013 : 6000**

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 125 - Agroforestry
- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation
- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 141 - Air Resource Protection and Management
- 403 - Waste Disposal, Recycling, and Reuse
- 405 - Drainage and Irrigation Systems and Facilities

**Outcome #7**

**1. Outcome Target**

Consumptive water use by irrigated crops will be reduced. The outcome measure will be the percent reduction of estimated consumptive water use when the current year is compared to the estimated consumptive water use in calendar year 2006. The consumptive water use will be estimated using the irrigation water pumped in Natural Resources Districts that require the use of water measurement devices.

**2. Outcome Type :** Change in Condition Outcome Measure

**2009 :5**                      **2010 : 5**                      **2011 : 10**                      **2012 :10**                      **2013 : 10**

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 405 - Drainage and Irrigation Systems and Facilities
- 605 - Natural Resource and Environmental Economics

**Outcome #8**

**1. Outcome Target**

Nebraska will not exceed its allocation of water in the Republican River as allowed by the interstate compact with Kansas and Colorado. Nebraska's allocation is 49% of the average annual water supply. The output measure will be the percent of the Republican River average annual water supply used by Nebraska.

**2. Outcome Type :** Change in Condition Outcome Measure

**2009 :49**                      **2010 : 49**                      **2011 : 49**                      **2012 :49**                      **2013 : 49**

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

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

**V(J). Planned Program (External Factors)**

**1. External Factors which may affect Outcomes**

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

#### **Description**

The following factors may significantly affect program outcomes:

- Weather conditions such as prolonged drought.
- Economic constraints that can threaten potential investment in new water management technology and management.
- Restrictions on water use that can impact irrigated agriculture.
- Implementation of new legislation and development of regulations by Natural Resource Districts.
- Competition for limited water supplies among agriculture, wildlife, recreation and municipalities.
- Conflicts between ground water and surface water users.

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

#### **1. Evaluation Studies Planned**

- During (during program)

#### **Description**

We will use program participant surveys as the primary evaluation method. We will administer a mix of surveys at program completion and use follow-up surveys to determine actions taken. We will use Information from state and federal agencies to estimate the adoption of practices to address natural resource issues. Information from the Nebraska Department of Natural Resources will be used to determine the compliance with the Republican River Interstate Compact. Data from Natural Resource Districts will provide information relative to irrigation water use for making estimates of irrigated crop water consumptive use with comparisons made to the base year of calendar year 2006.

#### **2. Data Collection Methods**

- Other (Agency data)
- Observation
- On-Site
- Mail
- Sampling

#### **Description**

Most program activity will involve some type of survey of program participants. Some selected programs will have more formal, in-depth surveys after the sequence of program activities to determine practice changes and adoption of new technology. Faculty will collect some data by observing practices within selected geographic regions over a period of time. Data from the Nebraska Department of Natural Resources and Natural Resources Districts will be obtained directly from the individual agencies.

**V(A). Planned Program (Summary)**

**Program #3**

**1. Name of the Planned Program**

Viable Communities and Appropriate Quality of Life for Individuals and Families

**2. Brief summary about Planned Program**

Strong people, strong families and strong communities lead to a more stable society. Multiple issues impact Nebraska's communities, families, youth and children. Economically, some communities take a strong and proactive approach to economic, community and family-related issues while others struggle to remain viable.

IANR's community, and appropriate individual and family-related research and extension programs, will focus on:

- Development and implementation of technologies to help assure a safe, pathogen-free food supply to guard public health.
- Development and implementation of technologies to help assure Nebraskans have knowledge to make effective choices about their health, wellness and food choices.
- Development and implementation of technologies to help families contribute to community viability and maintain a sustainable lifestyle to provide safe and secure future for their children.
- Development and implementation of technologies to help assure Nebraska's community members have the knowledge to be effective leaders.
- Development and implementation of technologies to help assure Nebraska's communities have access to the economic development tools they need.

**3. Program existence :** Mature (More than five years)

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

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

**6. Expending other than formula funds or state-matching funds :** No

**V(B). Program Knowledge Area(s)**

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
607	Consumer Economics	1%		1%	
608	Community Resource Planning and Development	4%		4%	
701	Nutrient Composition of Food	12%		12%	
702	Requirements and Function of Nutrients and Other Food Component	12%		12%	
703	Nutrition Education and Behavior	10%		10%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Pa	14%		14%	
721	Insects and Other Pests Affecting Humans	1%		1%	
722	Zoonotic Diseases and Parasites Affecting Humans	2%		2%	
723	Hazards to Human Health and Safety	6%		6%	
724	Healthy Lifestyle	1%		1%	
801	Individual and Family Resource Management	4%		4%	
802	Human Development and Family Well-Being	14%		14%	
803	Sociological and Technological Change Affecting Individuals, Familie	4%		4%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Res	4%		4%	
805	Community Institutions, Health, and Social Services	1%		1%	

806	Youth Development	10%		10%	
	<b>Total</b>	100%		100%	

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

**1. Situation and priorities**

Three key items guide this plan:

- Agriculture and related food processing are Nebraska's main industry. It is essential that agricultural related industry maintain the public trust.
- Nebraska ranks near the bottom of the states in health/wellness of children. It is critical for the next generation that health, physical activity and related increases in medical costs be addressed.
- Nebraska's 550 small towns and cities must have leadership and economic tools to survive. Some small communities are disappearing because of resources lost. To maintain the communities we have as vital places for people to live and work educational intervention is essential.

**2. Scope of the Program**

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

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

**1. Assumptions made for the Program**

- Land grant universities can develop and deliver educational programs to help individuals, families and communities make more informed decisions: knowledge change leads to behavior change and behavior change leads to condition change.
- Education increases human capital.
- Out-migration of young, educated residents will accelerate community decline.
- Medical costs will increase if healthy eating and activity behaviors are not addressed.
- Youth can positively affect their communities.
- Strong family units enhance community potential and economies.

**2. Ultimate goal(s) of this Program**

- Food and food processing establishments will use safe food handling practices that safeguard public health.
- Nebraskans will have more healthful eating and activity behaviors that may reduce health care costs.
- Community leaders will be confident in their decision making roles and help communities retain vitality.
- Youth will become informed decision makers and active community members who contribute to economic and family vitality.
- Communities will use available tools to strengthen their economic base; i.e., mentoring of entrepreneurs.
- Families will increase financial assets by reducing debts.

**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
2009	90.0	0.0	15.0	0.0
2010	90.0	0.0	15.0	0.0
2011	90.0	0.0	15.0	0.0
2012	90.0	0.0	15.0	0.0
2013	90.0	0.0	15.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

•The institute will conduct research and deliver extension education programs that will enable Nebraskans to strengthen their families and communities. Output efforts will help reduce food-borne illness, increase healthy eating and active behaviors, increase number of self-confident community leaders and increase the number of communities with access to tools to aid economic development, i.e. entrepreneurship.

•Increasingly, learners lead time-pressed lives and want to access educational information at their convenience. While face-to-face teaching remains an ongoing focus of our efforts, many learners may choose to access educational information online through Internet sites, module learning and ask-an-expert. Therefore, we will employ a blend of teaching strategies to accomplish our educational goals and research of reaching individuals who want just-in-time research-based information and in depth behavior changing educational experiences.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Group Discussion</li> <li>● Demonstrations</li> <li>● Workshop</li> <li>● Education Class</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● TV Media Programs</li> <li>● Other 1 (Podcasting)</li> <li>● Newsletters</li> <li>● Public Service Announcement</li> </ul>

**3. Description of targeted audience**

Our targeted audiences include: 1. Food processing and retail establishment owners and staff 2. Children, youth and families 3. Youth and adults in community leadership roles 4. Entrepreneurs 5. Local and state decision makers

**V(G). Planned Program (Outputs)**

**1. Standard output measures**

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2009	10000	20000	50000	20000
2010	10000	20000	50000	20000
2011	10000	20000	50000	20000
2012	10000	20000	50000	20000
2013	10000	20000	50000	20000

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

**Expected Patent Applications**

**2009 :0                      2010 :0                      2011 :0                      2012 :0                      2013 :0**

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2009	10	10	0
2010	10	10	0
2011	10	10	0
2012	10	10	0
2013	10	10	0

**V(H). State Defined Outputs**

**1. Output Target**

- 1) Number of scholarly publications and outputs related to viable communities and appropriate quality of life for individuals and families projects accepted.

**2009 :20                      2010 :20                      2011 :20                      2012 :20                      2013 :20**

- 2) Number of extension in-depth community, family and Individual topic-related educational workshops.

**2009 :100                      2010 :100                      2011 :100                      2012 :100                      2013 :100**

- 3) Number of extension community, family and individual program-related curricula, publications and other educational resources developed.

**2009 :10                      2010 :12                      2011 :15                      2012 :15                      2013 :15**

- 4) Number of Agricultural Research Division projects that focus on community and appropriate quality of life for individuals and families issues.

**2009 :20                      2010 :20                      2011 :20                      2012 :20                      2013 :20**

**V(I). State Defined Outcome**

O. No	Outcome Name
1	Nebraska's will gain knowledge to make effective choices about their health, wellness and diet. The long-term goal of reducing obesity and increasing physical activity of children is essential. Individuals will increase knowledge of food selection and preparation with reduced fat and/or calories, USDA serving sizes and importance of adequate time spent in physical activity each day and increased understanding of the relationships between diet and physical activity to improve personal health. Individuals will select, prepare and eat recommended amount of fruits, vegetables, low-fat proteins and dairy and whole grains. In addition, individuals will better balance their intake of calories with their energy expenditures.
2	Nebraska's communities will have access to the tools they need to retain current residents and businesses and create opportunities for new residents and businesses. Community leaders and business owners will understand the importance of strategic planning, support business development techniques and information technology to support community's development. Businesses within communities will work to be more profitable, entrepreneurs will be supported by the communities and informational technology will be used effectively to support community growth. Communities will have planned for the future, new entrepreneurial businesses will have been created, and informational technology will be used to create partnerships between the community's public and private sectors.
3	Nebraska's youth will be informed decision makers and remain active members of their communities as they reach adulthood. This will be measured by surveys, interviews and case studies to document evidence of the benefits (impact) to a community for involving youth in the decision making process. Nebraska will have evidence of the roles and responsibilities that youth are assuming at the community level such as being included on community agendas, leading community decisions and helping establish community policies. Community members will have an increased understanding of how youth can engage with adults in a community decision making process to solve problems impacting their communities. Youth and adults will report improved decision making and problem solving skills. The number of youth engaged as partners in community civic activities will increase.
4	Food handlers will practice safe food handling procedures to reduce food-borne illness outbreaks. This will be measured by comparing annual Nebraska statistics from Nebraska Health and Human Services (NHHS) for reduced incidents of food-borne illness because of safe food handling, decreased medical costs due to food-borne illness outbreaks and decreased days lost from work. Food handlers (food service workers, food processors and livestock producers) will increase their knowledge of safe food handling practices measured by increased knowledge about adequate food handling and preparation and animal management practices. Food handlers will implement safe food handling practices for the reduction of food borne illnesses because of strategies learned through ServSafe, HAACP and Quality Assurance.
5	Families will contribute to community viability and maintain sustainable lifestyle to provide a safe and secure future for their children. Long-term: Families will increase financial assets by decreasing debts. Intermediate: Individuals and families will (1) establish long-term financial goals to guide decision making, (2) will decrease spending, and (3) will practice saving regularly. Short-term: Individuals and families will (1) evaluate spending patterns, (2) identify income and expenses, (3) make and implement a budget, and (4) develop and implement a savings plan.

**Outcome #1**

**1. Outcome Target**

Nebraska's will gain knowledge to make effective choices about their health, wellness and diet. The long-term goal of reducing obesity and increasing physical activity of children is essential. Individuals will increase knowledge of food selection and preparation with reduced fat and/or calories, USDA serving sizes and importance of adequate time spent in physical activity each day and increased understanding of the relationships between diet and physical activity to improve personal health. Individuals will select, prepare and eat recommended amount of fruits, vegetables, low-fat proteins and dairy and whole grains. In addition, individuals will better balance their intake of calories with their energy expenditures.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2009 :500                      2010 : 500                      2011 : 500                      2012 :500                      2013 : 500**

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being

**Outcome #2**

**1. Outcome Target**

Nebraska's communities will have access to the tools they need to retain current residents and businesses and create opportunities for new residents and businesses. Community leaders and business owners will understand the importance of strategic planning, support business development techniques and information technology to support community's development. Businesses within communities will work to be more profitable, entrepreneurs will be supported by the communities and informational technology will be used effectively to support community growth. Communities will have planned for the future, new entrepreneurial businesses will have been created, and informational technology will be used to create partnerships between the community's public and private sectors.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :15                      2010 : 15                      2011 : 15                      2012 :15                      2013 : 15**

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 801 - Individual and Family Resource Management
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 805 - Community Institutions, Health, and Social Services

**Outcome #3**

**1. Outcome Target**

Nebraska's youth will be informed decision makers and remain active members of their communities as they reach adulthood. This will be measured by surveys, interviews and case studies to document evidence of the benefits (impact) to a community for involving youth in the decision making process. Nebraska will have evidence of the roles and responsibilities that youth are assuming at the community level such as being included on community agendas, leading community decisions and helping establish community policies. Community members will have an increased understanding of how youth can engage with adults in a community decision making process to solve problems impacting their communities. Youth and adults will report improved decision making and problem solving skills. The number of youth engaged as partners in community civic activities will increase.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :**100                      **2010 :** 100                      **2011 :** 100                      **2012 :**100                      **2013 :** 100

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

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

**Outcome #4**

**1. Outcome Target**

Food handlers will practice safe food handling procedures to reduce food-borne illness outbreaks. This will be measured by comparing annual Nebraska statistics from Nebraska Health and Human Services (NHHS) for reduced incidents of food-borne illness because of safe food handling, decreased medical costs due to food-borne illness outbreaks and decreased days lost from work. Food handlers (food service workers, food processors and livestock producers) will increase their knowledge of safe food handling practices measured by increased knowledge about adequate food handling and preparation and animal management practices. Food handlers will implement safe food handling practices for the reduction of food borne illnesses because of strategies learned through ServSafe, HACCP and Quality Assurance.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :**2000                      **2010 :** 2000                      **2011 :** 2000                      **2012 :**2000                      **2013 :** 2000

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins
- 721 - Insects and Other Pests Affecting Humans
- 722 - Zoonotic Diseases and Parasites Affecting Humans
- 723 - Hazards to Human Health and Safety
- 805 - Community Institutions, Health, and Social Services

**Outcome #5**

**1. Outcome Target**

Families will contribute to community viability and maintain sustainable lifestyle to provide a safe and secure future for their children. Long-term: Families will increase financial assets by decreasing debts. Intermediate: Individuals and families will (1) establish long-term financial goals to guide decision making, (2) will decrease spending, and (3) will practice saving regularly.

Short-term: Individuals and families will (1) evaluate spending patterns, (2) identify income and expenses, (3) make and implement a budget, and (4) develop and implement a savings plan.

**2. Outcome Type :** Change in Action Outcome Measure

**2009 :** 100

**2010 :** 100

**2011 :** 100

**2012 :** 100

**2013 :** 100

**3. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**V(J). Planned Program (External Factors)**

**1. External Factors which may affect Outcomes**

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

**Description**

- Downturn in the state's economy will impact outcomes.
- Natural, disease or human-driven catastrophes will affect outcomes.
- Unforeseen budget reductions that limit the creation of new knowledge or the curtailment of extension educational programs would impact outcomes.

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

**1. Evaluation Studies Planned**

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

**Description**

Research and extension faculty will use a range of evaluation strategies written into the programs developed to assess program impact. Indicators of success have been identified for each goal and will be used as indicated above.

**2. Data Collection Methods**

- Mail
- Case Study
- Sampling
- On-Site

**Description**

Studies will be conducted through Hatch projects and extension educational programs. All studies will be certified by the Institution Review Board of the University of Nebraska-Lincoln.