2008 Utah State University Combined Research and Extension Plan of Work

I. Plan Overview

1. Brief Summary about Plan Of Work

This plan of work encompasses nine major program areas: (1) Land and Sustainable Communities, (2) Sustainable Plant Communities, (3) Sustained Livestock Production, (4) Plant, Animal, and Microbial Genomics, (5) Nutrition, Production, and Safety of Food Products, (6) Water and Soil Conservation and Uses, (7) Natural Resource Systems and the Environment, (8) Production, Marketing, Trade, and Development Economics, and (9) Individuals, Families, and Communities. Each is briefly introduced below.

Land and Sustainable Communities

The Western U.S. contains many of the fastest growing states in the nation. These states often contain vast tracts of public land that comprise an average of 60% of the available land base, surrounding smaller areas that are privately owned, mostly adjacent to water. Traditionally, these states have relied on livestock or extractive industries to fuel local economies, but this situation is changing rapidly as urban areas expand into the relatively small privately held acreage, most of which involves agriculture in some form. In addition, there are many resulting conflicts between public and private land and their uses. Finally, many rural communities remain in peril as populations shift to urban areas and local industries become less profitable. The results of a state survey and forum listening sessions showed that eighty-nine percent of respondents felt USU should have strong community development programs, anchored in research, education, and teaching to help Utah's communities chart their futures. Further, results of the listening sessions showed that ninety-two percent of respondents believed that Utah State University should be involved in the development of programs and research which impact Utah communities' land use decisions at local, state, and federal levels. Respondents felt that specific program strategies to improve coordination and cooperation between federal, state, and local jurisdictions to achieve land management and resource conservation strategies were exceptionally important/reasonably important. Regional focus groups reported concern about several issues to be addressed by this program. They mentioned loss of agricultural lands and open space, concern with preservation of private development rights, and the need to revitalize rural Utah by building communities.

Sustainable Plant Communities

The overall goal of this research is to develop plant materials that are ideally suited to the Intermountain Region's climate. One of the basic parts of this planned program is the development of enhanced plant genetic material, primarily through traditional crop breeding programs. We are also improving plant biological efficiency and their ability to deal with abiotic stress. In addition, actual plant management systems need to be improved to gain the most from the other plant research that is done. Work is underway to control plant pests, including weeds, insects, pathogens, etc., especially in the area of augmented integrated pest management (IPM) systems. The state survey and forum listening sessions showed that an overwhelming 99 percent of respondents felt that agriculture production and marketing were exceptionally important or reasonably important to have in the new plan of work. Additionally, 87 percent felt that yard and garden issues were exceptionally or reasonably important issues and 76 percent felt that enhancement of crops and livestock on small acreages were important to the Extension plan of work.

Sustained Livestock Production

Livestock and livestock products comprise over 70% of the agricultural cash receipts in Utah. While the main focus of this planned program is animal nutrition and animal management systems, other diverse knowledge areas are also associated with this planned program area. With such a large proportion of agricultural receipts coming from livestock, it is critical that research and educational efforts be directed toward solving some of the major problems associated with livestock: profit, markets, rates of gain, health, and environmental concerns. The results of a state survey and forum listening sessions showed that an overwhelming 99 percent of respondents felt that agriculture production and marketing were exceptionally important or reasonably important to have in the USU's plan of work.

Plant, Animal, and Microbial Genomics

Work in genetics, particularly through biotechnology, is the next best technology available in improving plant, animal, and microbial efficiencies. Efforts to enhance plant, animal, and microbial efficiencies are central to the continued economic and physical viability of agriculture and food and fiber production. With prices essentially stable and costs rising, the primary hope for existing agricultural producers is that there will be technologies developed that will enhance productivity. With productivity gains, producers increase the likelihood that they can remain in business.

Production and Safety of Food Products

The food production complex is extraordinarily large within the US. As a part of this complex, U.S. citizens enjoy the largest variety of food of any nation on earth at the lowest relative cost. Consumers are driven to search out and try new and improved food products. Two areas of this food system that are of special interest to Utah are milk and meats, though other products are also researched. This vast choice of foods brings with it an issue of food safety throughout the system–production, processing, and consumption. With the large variety of food products, food safety is an issue that must be dealt with by producers, processors, distribution systems, and the final consumer. The results of a state survey and forum listening sessions showed that eighty-nine

percent of respondents believed that Utah State University should be involved in the development of programs and research which reduce the incidence of food borne illnesses and contaminants through science-based knowledge and education. Respondents felt that specific program strategies addressing food safety (91%), food quality (87%), preservation and storage in the home (87%), and commercial food handler's safety (81%) were exceptionally and reasonably important to a plan of work.

Water and Soil Conservation and Uses

Soil and water conditions greatly impact the earth's ability to produce plant materials, which in turn leads to issues related to animal feeding. Animal or livestock feeding is the major use made of arable land within Utah. Hence, issues related to plants and animals are truly based in the nature and composition of soil and water. Furthermore, water is extremely scarce in the semi-arid west. Most of Utah receives less than 16" of moisture per year. Water must be saved from winter periods of snowfall, held in reservoirs as it melts, then distributed to arable land through a vast network of ditches and canals. Wise water use is essential and is affected by the type of soil across which the water must flow. Work is needed to better understand plant biological efficiency and abiotic stresses affecting plants. This, in turns, impact plant management systems. All water and soil uses are tied together in water and soil markets, only the latter of which is relatively well-developed. The results of a state survey and forum listening sessions showed that an overwhelming 99 percent of respondents felt that addressing water supply, quality, and demand in Utah were exceptionally important or reasonably important to include in USU's plan of work. Additionally, 98 percent of respondents felt conserving and enhancing the efficient use of water in agricultural, 97 percent in residential settings, and 95 percent in commercial/business settings were important to the plan of work. Soil identification and conservation were rated as exceptionally important or reasonably important by 88 percent of survey respondents. Ninety-three percent felt that helping homeowners, farmers, ranchers, and government agencies manage natural resources were appropriate areas for extension and research.

Natural Resource Systems and the Environment

The natural resource base of any economy, be that local, regional, or national, is critically important to the economic and aesthetic environment for that area. The resource base of a region defines much of what can be done in a region. Changes to that natural system bring about changes in the underlying economic and social structure, some positive and some negative. Given the values associated with natural resources and the environment, it is critical that the elements of each be better understood. Although there are numerous aspects of a natural resource systems, for purposes of this program, the natural resources considered in this plan or work include those characteristics found in range, forest, animals, and air resources. The proper and efficient management of these resources become a primary concern, particularly for environments as varied and special as in the West. This planned program involves improving decision-making relative to environmental factors in an economic, social, and biological sense. The results of a state survey and forum listening sessions showed that 93 percent of respondents felt that helping homeowners, farmers, ranchers, and government agencies manage Utah terrain, including wildlife, are areas for programs and research. Ninety percent felt that management and sustainability of urban/rural forests are exceptionally important or reasonably important to a plan of work. Eighty-nine percent felt that enhancing the quality of range resources and 78 percent felt air resource conservation and management are exceptionally or reasonably important for extension and research programming.

Production, Marketing, Trade, and Development Economics

Economic analysis enters the decision-making process almost constantly as consumers and producers act. Economic analyses are critical to the adoption of various production and conservation practices. A primary area of focus will be that of market economics and marketing and distribution practices. International trade and its impact on local, regional, and national economies will also be examined and identified. Economic models that are based in theory must be developed and tested. Alternative quantitative methods are often used to measure economic impacts and are of critical importance to understanding economic influences. Jobs and the economy were the second highest priority issue for Utah citizens in a 2004 Utah Priorities Poll. The results of the state survey and forum listening sessions showed that ninety-four percent of respondents believed that creation of jobs, Utah's wage rates, and programs and incentives to attract new businesses were exceptionally and reasonably important to a plan of work. Utah State University should be involved in the development of programs and research that provide manufacturing assistance to Utah businesses (87%) and promote the economic prosperity of Utah through business competitiveness, entrepreneurship, and economic diversification (82%).

Individuals, Families, and Communities

This planned program is designed to answer many of the questions surrounding issues relating to individual, family, and community well-being. Eighty-nine percent of respondents believed that Utah State University should be involved in the development of programs and research that promote healthier food choices through research and education. Respondents felt that specific program strategies centered on health issues (93%) and nutrition (89%) were exceptionally and reasonably important to the plan of work. Ninety-one percent felt that programs and research which promote human development and well-being were important. Ninety-four percent of respondents felt programs and research that promote sound financial management and finances by strengthening Utah families in financial security were exceptionally important/reasonably important. Focus groups of recent

bankruptcies by Dan Jones & Associates revealed that many Utahns have poor financial management practices and skills. These include credit card abuse and mismanagement, a lack of savings, and poor financial skills including over-consumption. Through the Utah 4-H program youth become engaged in youth development activities offered by the county extension offices and the state 4-H office.

Summary

These program areas respond to these issues through the research and expertise of USU's Experiment Station faculty and Extension specialists, agents, and Extension assistants and volunteers. All of these professionals educate their respective target audiences. For experiment station faculty, their audiences are geared primarily towards extension specialists and other scientists while the specialists' audiences include peers, county agents, federal and state organizations, producer groups, and the general public. County agents, assistants, and volunteers work cooperatively with federal, state, and local governments, citizen groups, and the public to address Utah issues in their respective areas.

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

Year	Extension		Research	
	1862	1890	1862	1890
2008	158.0	0.0	37.5	0.0
2009	158.0	0.0	37.5	0.0
2010	158.0	0.0	37.5	0.0
2011	158.0	0.0	37.5	0.0
2012	158.0	0.0	37.5	0.0

II. Merit Review Process

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

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

2. Brief Explanation

Merit Review Process - Extension Plan: The cooperative extension service merit review process will involve a review by the University of Wyoming, University of Arizona, and the University of New Mexico extension services. These institutions will review the program components suggested in each program area utilizing extension faculty qualified as specialists with significant program experience in the area being reviewed. In turn, Utah State University Cooperative Extension Service will review the work from these three institutions.

Scientific Peer Review Process - Agricultural Experiment Station: The scientific peer-review process within the agricultural experiment station involves two steps. The first step includes a review by two scientists requested by the principal investigator (PI). These two scientists provide written comments regarding the proposal and return them to the PI for evaluation and response. Prior to submission to the experiment station, the PI's department head also reviews and signs off on the proposal. Once the proposal reaches the station, two additional scientific peer reviews are obtained from subject matter experts, either from other on-campus faculty (if the expertise exists) or off-campus faculty (if on-campus expertise does not exist). The reviews are returned to the experiment station and the PI's are subsequently asked to respond to issues raised by these reviewers. The PI must then modify his/her proposal to address the issues raised by the "outside" reviewers before resubmitting it to the experiment station for funding consideration. The practice of sending reviews off-campus to qualified subject matter experts has increased over the past two years.

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?

Identified issue areas of importance to research, program development and delivery will be reviewed periodically by collaborators. Collaborators include federal and state agencies, private and non-profit groups, geographically contiguous state extension and experiment stations, and university academic departments who have research and program interests identified by stakeholders. Research and program leaders will then establish a prioritized listing of critical issues of strategic importance in Utah which will be routinely reviewed and addressed in the plan of work.

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

Under-served and under-represented populations as one group have participated in the issue identification process that was considered in the development and orchestration of the Utah plan of work. The developed plan in each program area is designed to meet the identified stakeholder issues and due consideration of the needs of under-represented and under-served population are addressed in the plan. Priorities established in the plan will be routinely reviewed with under-served and under-represented audiences

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

The planned programs specifically describe the expected outcomes and impacts under each planned program area consistent with the required outline. The outcomes and impacts are enumerated as specifically as possible.

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

The planned programs will enhance program effectiveness and efficiency by setting specific objectives and associated outcomes and impacts that are measurable. Adjustments to the plan will be made based on outcomes achieved and re-targeting of programs to serve the needs of the clientel served.

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

Brief explanation.

Input from stakeholders was sought in each Utah county through a preliminary survey of issue areas. Targeted letters and personal contacts were made by Utah counties to under-represented and under-served populations inviting their participation in the issue identification process. Additional input was generated from a web-based on-line general public survey of issue areas. Newspaper advertisements and public service radio announcements were used as mass media approaches to invite Utah residents to open public forums where issues were discussed and identified. An on-going review of the issues identified and specified in the plan will be conducted with stakeholders periodically in selected counties in the state.

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
- Open Listening Sessions
- Use Internal Focus Groups
- Use Surveys

Brief explanation.

Utah State University Cooperative Extension and the Utah Agricultural Experiment Station began an internal review process of potential programs to be included in a future plan of work in March 2005. Program leaders and extension county faculty were asked to review issue areas identified by the Utah State University Cooperative Extension "Accountability in Action Program" surveys conducted 2000-2004 wherein issue areas and potential programs were delineated. The issue areas identified from this study were reviewed to determine if in fact these issues would be relevant to Utah populations in potential programs for the 2007-2011 Plan of Work (POW). All Utah county-base faculty were asked to suggest additional issue areas they believed should be validated by stakeholders through future input as potential program areas and issues are identified for a new plan of work.
A second internal program and issues review process with campus specialists and program leaders was undertaken in June 2005. A summary of issue areas and relevant strategies identified through these two processes was subsequently presented to program leaders for their consideration. Program leaders suggested a number of program issue areas and strategies as a result of this process. The identified issues and strategies were further refined by the POW team in the development of a survey instrument. The instrument focused on potential issues and strategies to be considered in a future plan of work in the areas of agriculture, natural resources, economic and community development, family and consumer science, and youth. A preliminary issues and strategies plan of work survey tool was developed and pre-tested with program leaders and regional directors to ensure that the issues suggested by county and campus faculty were included in the tool and that the tool was easy to use.

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

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

Brief explanation

The survey tool was approved by the Utah State University Institutional Research Board and subsequently provided to each county in Utah. Counties were instructed to select a purposeful sample of a minimum of 10 persons within their county to complete the survey. Suggestions were made that those completing the survey might include county advisory board members, commissioners, and others who have been engaged with extension and the agricultural experiment station program advisement in the county. Additionally, the statewide Extension Advisory Council was also asked to complete the issues and strategies survey.
Those selected to complete the survey were asked to evaluate how important the issue areas and strategies in each of the program areas was to them and their family in the next five years. Further, respondents were asked to suggest other issue areas and program strategies they believe extension and the agricultural experiment station should pursue in developing a plan of work for 2007-2011. The 27 county surveys of extension/experiment station advisors was conducted August-September 2005.
All 27 counties responded with more than 290 surveys completed by county program advisors. Each county then announced the availability of the survey for all residents to complete electronically or by attending an open public listening session to be held in their area in the fall of 2005. Extension and the agricultural experiment station participated in each of these listening sessions.
The electronic version of the survey was developed and placed on extension’s public web site. Web site viewers were encouraged to give feedback by completing the survey of issues and strategies proposed for the 2007-2011 plan of work.
High priority issue and strategy areas were identified by both the purposeful sample and by the general public electing to complete the survey on the web site. The input from these two sources allowed for a listing of the highest priority areas to be developed. These high priority issue and strategy areas were further validated by open to the public stakeholder listening session conducted in six regions of Utah in November - December of 2005. Sessions were advertised regionally in local newspapers, via personal letter, and telephone calls. All reasonable effort was made to contact county under-served populations encouraging their attendance and participation at the listening sessions which were held in the Uintah Basin-Vernal, Wasatch Front South-Salt Lake City, Southwest Utah-Cedar City, Southwest Utah-Richfield, Southeast Utah-Price, and Wasatch Front North-Ogden. Stakeholder input from these open meetings was then integrated into the POW survey database to provide a composite view from more than 500 Utahans.

3. A statement of how the input will be considered

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

Brief explanation.

Input from the various stakeholders will be used in helping set research and extension agendas for the next 5 years. Stakeholders have included research scientists, community leaders, community citizens, politicians, underserved, and extension faculty and staff. Therefore, the areas targeted in this plan of work should reflect the views of a broad set of stakeholders and should provide a valuable guide to the programs selected for emphasis. The program and research issues which were identified in these public processes were then prioritized and ranked by extension survey researchers. Plan of work teams in each of the areas of Agriculture, Natural Resources, Economic and Community Development, Family and Consumer science, and Youth then reviewed the ranking and input received from the public sessions conducted. Program and research plans with measurable outcomes were then developed to address the issues identified in the process.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

1. Name of the Planned Program

Individuals, Families, and Communities

2. Brief summary about Planned Program

This planned program is designed to answer many of the questions surrounding nutrition and human health, plus other issues relating to individual, family, and community well-being. Thirty-five percent of the effort has to do with improvements in nutrition. The remaining sixty-five percent of the effort has to do with actual individual, family, and community actions and interactions.
Eighty-nine percent of respondents believed that Utah State University should be involved in the development of programs and research which promote healthier food choices through research and education. Respondents felt that specific program strategies centered on health issues (93%) and nutrition (89%) were exceptionally and reasonably important to a plan of work. Ninety-one percent felt that programs and research which promote human development and well-being are important. Ninety-four percent of respondents felt programs and research that promote sound financial management and finances by strengthening Utah families in financial security are exceptionally important/reasonably important. Focus groups of recent bankruptcies by Dan Jones & Associates revealed that many Utahns have poor financial management practices and skills. These include credit card abuse and mismanagement, a lack of savings, and poor financial skills including over-consumption.
The Individuals and Families Program responds to these and other individual, family, and community matters through the research and expertise of USU Experiment Station faculty and Extension specialists, agents and assistants. All of these professionals educate their respective target audiences. For Experiment Station faculty their audiences are geared primarily towards extension specialists and other scientists; the specialists' audiences include peers, county agents, federal and state organizations, producer groups, and the general public. County agents work cooperatively with federal, state, and local governments, citizen groups, and the public to address agricultural animal issues in their areas. Nutrition assistants work directly with adults and youth.
Through the Utah 4-H program youth become engaged in youth development activities offered by the county Extension offices and the State 4-H office.

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

- 701 10% Nutrient Composition of Food
- 702 5% Requirements and Function of Nutrients and Other Food Components
- 703 15% Nutrition Education and Behavior
- 704 5% Nutrition and Hunger in the Population
- 801 20% Individual and Family Resource Management
- 802 15% Human Development and Family Well-Being
- 803 10% Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 20% Youth Development

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

1. Situation and priorities

Community is the focal point where people feel a sense of personal involvement and take pride in their actions. People join with their neighbors to plan for a secure and prosperous future at a time where Utah families face unprecedented challenges as our society adjusts to continuing technological advances, changing economic conditions, rising energy costs, evolving demographics, and fluctuating employment patterns. In many instances, these continual changes create additional stresses for the state's individuals and families. Many families must develop individual risk-bearing strategies.
There has been a crises of nutrition in the U.S. even though there have also been large food surpluses. There is a need to provide much better nutrition information on various types of food to enable consumers to make wise choices. As the relationships among diet, health, and disease prevention have become clearer, nutrition and the promotion of healthy eating behaviors and lifestyles have received increased attention. Many teenage mothers are found in the low income brackets and they can benefit from

participating in various nutrition programs as well as those eligible for Food Stamp Assistance. There is an epidemic of obesity in America. Yet, even with the surplus of food items there are many in the U.S. who are undernourished and hunger is a constant companion. More work needs to be done to allow all people within the U.S. to share in the abundance of food items. Poverty rates are particularly high for the state's minority populations and for single mothers and fathers with one or more minor children living with them. Poor health disproportionately affects minority and low-income U.S. populations. One of the priorities of this planned program area is to expand nutritional research, education, and enhance nutrition behavior.
Utah is in the top 5 of the U.S. states with bankruptcy and much more research and education need to be done in order to free the state's consumers from this trap. Although Utah's poverty rates are virtually identical to those rates elsewhere in the country, because of Utah's typically larger family size, the amount of income available for basic family needs slips below the mean for the rest of the United States. Utah families already face high debt loads leading to bankruptcy, low savings, and the lack of liquid assets. Hence, another priority of this planned program is to enhance individual and family resource management.
Finally, youth issues are paramount in a state with higher than average birth rates. As the number of youth grow, more research and education is needed in identifying factors that influence that growth and maturation so that good citizens will be the result of today's training programs. Therefore, a significant priority of this planned program area is to discover added methods for encouraging positive youth development.

2. Scope of the Program

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

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

1. Assumptions made for the Program

1. Food nutritional content is an important area of concern to Americans.
2. Nutrition in foods can be manipulated to enhance the value of food to all those who eat.
3. People can be educated to improve their own nutrition.
4. Individuals and families can be educated to improve their resource management through appropriate research and education.
5. Human development and well-being is an important goal for public institutions.
6. Improvements in the way in which youth develop can be determined and, if shown to be effective, will be adopted by American individuals and families.
7. Adults and youth learn best through a hands-on learn-by-doing approach.
8. Individuals and families can make significant improvements in daily living by learning and adopting ten key food-related practices. These practices are:
Plan meals ahead
Compare prices before buying food
Shop with a grocery list
Do not let foods sit out for more than two hours
Do not thaw frozen foods at room temperature
Think about healthy food choices
Prepare foods without adding salt
Use "Nutrition Facts" on the food label to make food choices
Have children eat within 2 hours of waking up
9. It is assumed that youth can improve their daily living by:
Eating a variety of foods
Learning the essentials of human nutrition
Selecting nutritious low cost foods, and
Improving practices in food preparation and safety.
10. Teenage mothers will benefit from participation in EFNEP.
11. Increased awareness and understanding of the relationship between nutrition and chronic disease will help lower healthcare costs. Therefore, nutrition education that supports a healthy lifestyle will help to lower healthcare cost.
12. Nutrition Education Assistants can learn and deliver nutrition education and chronic disease information to adults and youth.
13. Family Consumer Scientists and Nutrition Education Assistants are available to receive training in nutrition and chronic disease information.

14. Food and nutrition specialists and health specialists are available as resource people.
15. Most states' coordinators are looking for a new curriculum that incorporates 2005 Dietary Guidelines for Americans and MyPyramid.
16. Consumers are interested in learning more about food and ways to enjoy them, especially if they could preserve their cultural and traditional cooking.
17. That the three-part framework established in Cooperative Extension's Community Development Foundation of Practice (understanding communities, implementing community projects, and special emphasis area) lays an appropriate foundation for extension's efforts in community development.
18. That analytical capacities (e.g., surveys, planning, GIS) are critical to effective local governance, and the communities in Utah vary considerably in their access to and use of those methods.
19. That extension personnel assist their communities when they serve in various community roles on boards, as facilitators, when participating in special projects, assisting in grant writing, etc.).
20. That effective leadership in community governance leads to more effective decisions.
21. Skills in effective leadership can be trained.
22. That community institutions (social services, health care, education, transportation, etc.) are important contributors to the quality of life.

2. Ultimate goal(s) of this Program

The overall goal of this program is to ensure healthy and financially secure individuals, families, and communities. The sub-goals of this program area include:
1. Expand nutritional research and education to enhance human nutrition and nutrition-related behavior.
2. Enhance individual and family resource management.
3. Develop improved methods of raising youth to become good citizens.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2008	65.0	0.0	1.5	0.0
2009	65.0	0.0	1.5	0.0
2010	65.0	0.0	1.5	0.0
2011	65.0	0.0	1.5	0.0
2012	65.0	0.0	1.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The faculty affiliated with the experiment station will:
1. Conduct research with respect to human nutrition, family finances, bankruptcy, and community development.
2. Publish studies and make presentations related to individuals, family finances, and community well-being.
Specialists and agents will conduct workshops and meetings, deliver activities, develop new curricula, write newsletters and news releases and post Internet fact sheets. They will provide training in a variety of mediums–face-to-face, satellite, group discussions, demonstrations, conferences and workshops, via DVDs, CDs, fact sheets, newsletters, and other media.
Individual and family financial activities will include: Take Charge of Your Money, Power Pay and Power Saves, Utah Saves Education and Outreach, Individual Development Account, First Time Homebuyer Assistance, Financial Education for Bankruptcy Filers (USU is certified by the Department of Justice to offer debtor education classes), Living Well on Less, Money Sense for Your Children, and Earned Income Credit assistance.
Teaching methods of The Utah Food Stamp Nutrition Education include individual, group classes, DVD video series, and an on-line course. FSNE Nutrition Education Assistants will provide other nutrition education opportunities to FSNE participants via demonstrations, newsletters, fact sheets, etc. as determined by Food Stamp Eligible needs in each county. Additionally, printed

materials and educational displays will be available at local employment centers and other places where low-income people gather. Several counties will continue conducting cooking schools in cooperation with the local employment center; some will continue distribution of newsletters to participants.
The Nutrition Education Assistants will use the "Give Your Body the Best" curriculum developed in 2005 by USU to teach individuals or groups of low income persons. They will also teach lessons on chronic diseases; on food allergies, intolerance, and poisoning; and lessons on getting to know foods and enjoy them.
Community development specialists and extension personnel who are knowledgeable in community assessment will increase the capacity among other extension personnel to participate in or lead community self-assessments that lay the groundwork for subsequent project activities. These assessments come in various forms (SWOT analyses, asset mapping, search conferencing, surveys, etc.) and typically participatory, drawing upon the values and knowledge of local residents. They will also develop capacity in extension personnel to conduct activities identified as priorities through the community self-assessments.

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

Extension	
Direct Methods	**Indirect Methods**
• Other 2 (Conferences) • Workshop • Education Class • One-on-One Intervention • Other 1 (BREEZE System) • Demonstrations • Group Discussion	• Other 2 (Satellite Broadcasts) • Public Service Announcement • Other 1 (DVDs) • Web sites • TV Media Programs • Newsletters

3. Description of targeted audience

The target group is the general population of Utah (including youth), with a special emphasis on Native Americans, Latinos, African Americans, Asians/Pacific Islanders, and low income families with children at or below poverty levels, food stamp program eligible individuals, and individuals facing bankruptcy. A subgroup of the audience targets is pregnant teens and teen mothers.
Elected officials, appointed officials, general population (including youth), and at-large community opinion leaders and influential people are targeted for community development.

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
2008	45000	10637	220000	694600
2009	45000	10637	220000	694600
2010	45000	10637	220000	694600
2011	45000	10637	220000	694600
2012	45000	10637	220000	694600

2. (Standard Research Target) Number of Patents

Expected Patents

2008 :0 **2009 :**0 **2010 :** 0 **2011 :** 0 **2012 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target
2008	25	0
2009	26	0
2010	26	0
2011	27	0
2012	27	0

V(H). State Defined Outputs

1. Output Target

- Number of peer-reviewed journal articles and books extensively peer reviewed.

  2008 :25 **2009 :**26 **2010 :** 26 **2011 :**27 **2012 :**27

- Number of intermediate publications and presentations (i.e., refereed proceedings).

  2008 :5 **2009 :**6 **2010 :** 6 **2011 :**7 **2012 :**7

- Level of contract/grant funding.

  2008 :35000 **2009 :**45000 **2010 :** 55000 **2011 :**65000 **2012 :**65000

- Number of graduate students trained.

  2008 :3 **2009 :**3 **2010 :** 4 **2011 :**4 **2012 :**4

- Number of undergraduate students involved in research.

  2008 :2 **2009 :**3 **2010 :** 3 **2011 :**3 **2012 :**3

- Number of theses/dissertations completed.

  2008 :2 **2009 :**2 **2010 :** 3 **2011 :**3 **2012 :**3

V(I). State Defined Outcome

1. Outcome Target

Number of clientele who gain knowledge about healthy and financially secure individuals, families, or communities.

2. Outcome Type : Change in Knowledge Outcome Measure

2008 :21700 **2009 :** 22000 **2010 :** 22300 **2011 :**22600 **2012 :** 22900

3. Associated Knowledge Area(s)

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 801 - Individual and Family Resource Management

- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development

1. Outcome Target

Number of clientele who implement practices for healthy and financially secure individuals, families, or communities.

2. Outcome Type : Change in Action Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
12000	12200	12400	12500	12600

3. Associated Knowledge Area(s)

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development

1. Outcome Target

Percentage of Adult Graduates Who Reported Seven or More Days Physical Health NOT Good in the Past 30 Days. (Less than or equal to the 2004 Utah IBI-PH Indicator, Income less than $20,000.)

2. Outcome Type : Change in Condition Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
23	23	23	23	23

3. Associated Knowledge Area(s)

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 806 - Youth Development

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Natural disasters can have a dramatic influence on the ways in which nutrition is viewed and is able to be obtained (i.e., Hurricane Katrina). The general state of the economy also impacts the ways in which food and nutrition play into our daily lives. As more funds are appropriated to solve a problem, in this case nutrition, clearly more work will be undertaken and more results will be obtained. Public policy changes such as how much of a decision of food choice is left to consumers would most certainly influence nutrition. Nutrition labeling, for example, has been shown to have an effect on certain types of food. The EFNEP and Food Stamp Nutrition and Education activities in Utah depends highly upon the para-professional Nutrition Education Assistants. Should external forces reduce funding the number of NEA's that are hired would be reduced so fewer low income families would be served. Funding also dictates the number of workshops that can be delivered, thus affecting the outcomes of the program. The program works closely with the Division of Workforce Services, who administers the Food Stamp Program in Utah. Any public policy changes in the Food Stamp Program has the potential to affect the pool of eligible applicants for The FSNE Program. If competing programmatic changes occur, then consumption and nutrition may be impacted. Finally, population changes, particularly cultural groupings, additional challenges are placed before the consumers in making wise nutrition decisions. Each of the external factors will also impact family and individual resource management and human development and family well-being.
Community development extension programming requires the participation of partner organization perhaps more so than any other arena of extension programming. By its nature, community development programming demands the active involvement of community leaders to identify needs, convene groups, and conduct projects. As such it is challenging to predict the nature of the community partnerships that will emerge over the next several years.
Other organizations in the state may feel that they adequately address community development needs and regard emerging activities by Utah State University as a form of competition. To date that competition has not appeared, but it may emerge for unforeseen reasons at some point in the future. Along with that, the external funding for USU Extension will may affect the outcome, as might the internal allocation of funding to community development work.

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

1. Evaluation Studies Planned

- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Before-After (before and after program)
- After Only (post program)
- Time series (multiple points before and after program)
- During (during program)

Description

Evaluation studies planned for this program area are consistent with those commonly undertaken by scientists engaging in social science research. Many different types of evaluation will be done and each will have its own unique data and methodological needs. The skill building/in-service activities will be evaluated using traditional instructional effectiveness metrics. NEERS5 is an evaluation program designed to assess dietary and behavioral improvement of EFNEP and Food Stamp participants.

2. Data Collection Methods

- Journals
- Sampling
- On-Site
- Whole population
- Structured
- Observation
- Mail
- Case Study

Description

Data collection methods will also vary according to the type of study being undertaken. In most studies, some sampling will occur (in contrast to whole populations studies) due to limited resources. Many times these experiments are not controlled as one might be in a laboratory. Survey methods are expected to include more mail and telephone approaches. Structured interviews will be conducted for some of the studies to be undertaken. Obviously, case studies and general observations will be an integral part of how data are collected. Finally, journals will provide not only potential data sources, but also study methods that have reached broad approval.

Extension agents and specialists will collect data from their extension clientele as services are delivered. Follow-up information will be collected through Utah State University Extension Accountability in Action Program surveys. Youth contact numbers will be collected through the 4-H Martech program.

V(A). Planned Program (Summary)

1. Name of the Planned Program

Land Use and Sustainable Communities

2. Brief summary about Planned Program

The Western U.S. contains many of the fastest growing states in the nation. These states often contain vast tracts of public land that comprise an average of 60% of the available land base, surrounding smaller areas that are privately owned, mostly adjacent to water. Traditionally, these states have relied on livestock or extractive industries to fuel local economies, but this situation is changing rapidly as urban areas expand into the relatively small privately held acreage, most of which involves agriculture in some form. In addition, there are many resulting conflicts between public and private land and their uses. Finally, many rural communities remain in peril as populations shift to urban areas and local industries become less profitable.
The results of a state survey and forum listening sessions showed that eighty-nine percent of respondents felt USU should have strong community development programs, anchored in research, education, and teaching to help Utah's communities chart their futures. Further, results of the listening sessions showed that ninety-two percent of respondents believed that Utah State University should be involved in the development of programs and research which impact Utah communities' land use decisions at local, state, and federal levels. Respondents felt that specific program strategies to improve coordination and cooperation between federal, state, and local jurisdictions to achieve land management and resource conservation strategies are exceptionally important/reasonably important.
Regional focus groups reported concern about several issues to be addressed by this program. They mentioned loss of agricultural lands and of open space, concern with preservation of private development rights, and the need to revitalize rural Utah by building communities
The Land Use and Sustainable Communities Program area responds to these and other land use and community matters through the research and expertise of experiment station faculty and extension specialists, agents, and assistants. All of these professionals educate their respective target audiences. For experiment station faculty their audiences are geared primarily towards extension specialists and other scientists; the specialists' audiences include peers, county agents, federal and state organizations, producer groups, and the general public. County agents work cooperatively with federal, state, and local governments, citizen groups, and the public to address land use and community issues in their areas.

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

- 131 15% Alternative Uses of Land
- 608 60% Community Resource Planning and Development
- 610 10% Domestic Policy Analysis
- 803 15% Sociological and Technological Change Affecting Individuals, Families and Communities

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

1. Situation and priorities

The existing conflicts between private and public land owners and urban-rural pressures are likely to be exacerbated over the next 5 years as alternative uses of public and private lands increase and urban encroachment continues to extend into rural areas of the state and region, resulting in a decline of available open-space. The economic viability of many rural areas is also in jeopardy. The three priorities in relationship to this planned program are (1) Reducing conflicts between multiple-users of public and adjoining private lands; (2) Providing a basis for planning that takes account of public and private goods in relation to urban development as it encroaches on private, primarily agricultural, land; and (3) Enhance economic opportunities in rural areas of the state and region that are in jeopardy.
Utah rural communities lack the planning personnel and skills to adequately develop provisions for comprehensive planning and design. They often lack personnel with needed skills for designing community entrances, parks, public areas, sidewalks, streets etc., and to develop and put into operation community master plans, subdivision ordinances, and to explore additional options to

maintain the health, welfare and safety of community residents. Many have expressed the need for specific help with planning and design projects.

2. Scope of the Program

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

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

1. Assumptions made for the Program

1. Vast amounts of public lands will remain in the West.
2. Pressures between alternative users of public lands will increase as populations increase.
3. Urban encroachment into rural, often agricultural, lands will continue as the population grows.
4. Rural economies can remain economically viable given an active and insightful local population.
5. People will work together to find solutions to existing problems if a way is provided for them to work together and they are allowed a say in the final solution.
6. Funding will remain secure throughout the study interval.
7. Sufficient faculty and staff will remain available to work in this area to bring the project to a successful conclusion.
8. Community planning contributes to long-term quality of life and conserves important natural resource and environmental values.
9. Communities (particularly the smaller ones) benefit from access to specialized planning and design assistance.
10. Federal and state land managers and agencies will continue to involve the public in open forum planning collaborations.

2. Ultimate goal(s) of this Program

1. Reduce the level of disharmony between multiple users of public lands.
2. Facilitate transition from rural to urban areas while retaining open-space.
3. Improve economic viability of rural communities.
4. Help community decision makers manage growth and change to preserve and enhance desirable local attributes, while simultaneously avoiding the various unfortunate consequences of unmanaged growth.

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
2008	4.0	0.0	2.9	0.0
2009	4.0	0.0	2.9	0.0
2010	4.0	0.0	2.9	0.0
2011	4.0	0.0	2.9	0.0
2012	4.0	0.0	2.9	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

1. Conduct research experiments and/or develop theories that can be used to explain (a) causes for public land conflicts and potential solutions, (b) solutions to the urban expansion into rural areas and open space, and (c) conditions for continued rural community economic viability.
2. Publish studies and make presentations related to these areas of concern.
3. Conduct workshops and meetings to educate local, state, and regional stakeholders concerning these issues.

4. Deliver educational and informational services through various media.
5. Develop educational resources related to rural economic viability for community leaders and other stakeholders
6. Provide for local training in principles developed that are related to this area of study.
7. Conduct design activities (for a park, a Main Street revitalization, etc.) that will typically yield a design of variable specificity (some might be conceptual drawings, others might be more extensive).
8. Provide consultations regarding land use planning policies and their implications on growth.

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

Extension	
Direct Methods	**Indirect Methods**
• Group Discussion • One-on-One Intervention • Workshop • Demonstrations • Other 1 (BREEZE System) • Education Class	• Web sites • TV Media Programs • Newsletters • Public Service Announcement • Other 2 (Satellite Broadcasts) • Other 1 (DVDs)

3. Description of targeted audience

The target audience for this work will be community leaders, community, state and federal policy makers, at-large public, academic units, private land holders, public land users, businesses, and local, state, and regional political leaders. Establishing joint efforts with public and private interests in the community will be important in establishing the needed credibility for adoption of recommended practices or acceptance of alternative designs.

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
2008	1800	2272	0	0
2009	1800	2272	0	0
2010	1800	2272	0	0
2011	1800	2272	0	0
2012	1800	2272	0	0

2. (Standard Research Target) Number of Patents

Expected Patents

2008 :0 **2009 :**0 **2010 :** 0 **2011 :** 0 **2012 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target
2008	10	0
2009	11	0
2010	11	0
2011	12	0
2012	12	0

V(H). State Defined Outputs

1. Output Target

- Number of peer-reviewed journal articles and books/chapters in books extensively peer reviewed

2008 :10 **2009 :**10 **2010 :** 11 **2011 :**12 **2012 :**12

- Number of intermediate publications and presentations (i.e., refereed proceedings).

2008 :4 **2009 :**5 **2010 :** 6 **2011 :**7 **2012 :**7

- Level of contract/grant funding

2008 :20000 **2009 :**30000 **2010 :** 30000 **2011 :**40000 **2012 :**40000

- Number of graduate students trained

2008 :3 **2009 :**4 **2010 :** 4 **2011 :**5 **2012 :**5

- Number of undergraduate students involved in research

2008 :2 **2009 :**3 **2010 :** 3 **2011 :**4 **2012 :**5

- Number of theses/dissertations completed

2008 :3 **2009 :**4 **2010 :** 4 **2011 :**5 **2012 :**5

V(I). State Defined Outcome

1. Outcome Target

Number of clients gaining land use and sustainable communities knowledge.

2. Outcome Type : Change in Knowledge Outcome Measure

2008 :540 **2009 :** 540 **2010 :** 540 **2011 :**540 **2012 :** 540

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

1. Outcome Target

Number of clients who implement land use and sustainable communities practices

2. Outcome Type : Change in Action Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
270	270	270	270	270

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

1. Outcome Target

Number of communities preserving desirable community attributes

2. Outcome Type : Change in Condition Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
2	3	3	4	4

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

1. Outcome Target

Increase in local area protection expressed in percentage terms for those areas implementing protection.

2. Outcome Type : Change in Condition Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
2	3	3	4	4

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

1. Outcome Target

Maintenance of rural community services expressed by the expenditures of communities assisted.

2. Outcome Type : Change in Condition Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
2	2	3	3	3

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

1. Outcome Target

Improvement in rural community vitality as measured by convergence of urban/rural family-level income (i.e., closure in

differences expressed in percent/year terms).

2. Outcome Type : Change in Knowledge Outcome Measure

2008 :	2009 :	2010 :	2011 :	2012 :
2	2	3	3	3

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Drought and other weather disturbances may well impact the use of public lands and associated rural communities. Changes in the national or regional economies will most certainly have an impact on rural communities. Appropriation changes, particularly to the base funds, will induce many changes with land use and sustainable communities. Changes in the way in which public lands are viewed through policy changes will have an effect upon public land use and rural communities. Government regulations, particularly those associated with public lands (but also private lands in the "takings" area) are expected to influence the outcome of the program area. As immigration patterns change, so do the impacts on rural communities. Obviously, competing programmatic challenges have the potential to change how successful the program might be.
A proposal is being discussed in state government to provide local community planning assistance through the Association of Governments. If this assistance becomes available, it will have an unforeseen impact on the demand for USU's assistance through this program (i.e., it could increase the requests for assistance if this new planning program sees USU as an important source specialized expertise.)

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

1. Evaluation Studies Planned

- Before-After (before and after program)
- Case Study
- Retrospective (post program)
- Time series (multiple points before and after program)
- During (during program)
- Comparison between locales where the program operates and sites without program intervention

Description

The most effective means of evaluation will be (1) time series (which could include before-after) studies, (2) case studies where individual examples of land use and community development might provide some guidance for other areas, (3) and comparisons of locales where programs might operated and sites without program intervention.
Community design assistance is typically a "one-off" endeavor–each project is unique unto itself. That argues for a case-study based research protocol that examines the project's effectiveness in the context in which it occurred, rather than an aggregated research approach that attempts to derive generalizable conclusions. Case study research that measures before and after

conditions, acres of land affected (or preserved), or number of people interacting with the design are all potentially relevant measures. Community self-assessments will be evaluations themselves, but the process of doing the self-assessments will be evaluated via pre-and post-assessment surveys of the participants in terms of their knowledge of the community and their attitudes about the community's future and options. Finally, the community initiatives will be evaluated through case-studies and post-hoc satisfaction measures.

2. Data Collection Methods

- Sampling
- Case Study
- Portfolio Reviews
- Observation
- Whole population
- Unstructured
- Journals
- Mail
- Structured

Description

Besides reviewing the available literature to determine what has been successful elsewhere, observations over time and case study approaches will be used as data collection methods. The most common data collection methods will a combination of quantitative and qualitative ex post measurements of project results. The quantitative measures could be Likert-type survey questions administered through a variety of instruments. The qualitative are more likely to be derived from semi-structured interviews of the projects partners and beneficiaries.

V(A). Planned Program (Summary)

1. Name of the Planned Program

Natural Resource Systems and the Environment

2. Brief summary about Planned Program

The natural resource base of any economy, be that local, regional, or national, is critically important to the economic and aesthetic environment for that area. The resource base of a region defines much of what can be done in a region. Changes to that natural system bring about changes in the underlying economic and social structure, some positive and some negative. Given the values associated with natural resources and the environment, it is critical that the elements of each be better understood. Although there are numerous aspects of a natural resource systems, for purposes of this program, the environment is considered those characteristics found in range, forest, animals, and air resources. The proper and efficient management of these resources become a primary concern, particularly for environments as varied and unique as in the West. This planned program involves improving decision-making relative to environmental factors in an economic, social, and biological sense.
The results of a state survey and forum listening sessions showed that 93 percent of respondents felt that helping homeowners, farmers, ranchers, and government agencies manage Utah terrain, including wildlife, are areas for programs and research. Ninety percent felt that management and sustainability of urban/rural forests are exceptionally important or reasonably important to a plan of work. Eighty-nine percent felt that enhancing the quality of range resources and 78 percent felt air resource conservation and management are exceptionally or reasonably important for extension and research programming.
The Natural Resource Systems and the Environment Program area responds to these and other natural resource matters through the research and expertise of USU Experiment Station faculty and Extension specialists and agents. All of these professionals educate their respective target audiences. For experiment station faculty their audiences are geared primarily towards extension specialists, county agents, and other scientists; the specialists' audiences include peers, county agents, federal and state organizations, producer groups, and the general public. County agents work cooperatively with federal, state, and local governments, citizen groups, and the public to address natural resource issues in their areas.

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

- 112 10% Watershed Protection and Management
- 121 20% Management of Range Resources
- 122 5% Management and Control of Forest and Range Fires
- 123 20% Management and Sustainability of Forest Resources
- 125 5% Agroforestry
- 134 5% Outdoor Recreation
- 135 10% Aquatic and Terrestrial Wildlife
- 136 5% Conservation of Biological Diversity
- 141 10% Air Resource Protection and Management
- 605 10% Natural Resource and Environmental Economics

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

1. Situation and priorities

Agriculture is closely tied to the general environment found for a specific region. The use and nonuse of natural resource systems and the environment has a major potential impact on agriculture and urban growth and development. The opposite relationship also holds true, i.e., agriculture and urban growth and development have major impacts on the environment. Hence, it is necessary to more closely examine the environments that do exist in the West, particularly in Utah, and to determine their relationship to the environmental and economic health of various regions.
Wildlife of all forms have been an abundant natural resource but are being impacted by increasing population centers, homes being

built on traditional wildlife ranges, increased human interactions and predation. Proper management is difficult but is often further complicated by policies and rules that do not consider the specific local conditions and needs.
Approximately 79% of Utah is classified as rangeland and grazeable woodland or forest. Much of this important land area is administered by federal or state agencies but with public access. There are also extensive areas of tribal lands and private land areas that are often interspersed within the public land areas.
Cheatgrass has gained dominance over thousands of acres of desert and semi-desert rangeland. At the same time and in the absence of fire in more mesic areas, there has been an aging of the sagebrush until much of it is now classed as decadent with little structural, age class, or associated species diversity. This creates significant impacts to the habitat for numerous species, especially the sage grouse, pigmy rabbit, sage sparrow and other sagebrush obligate species, many of which have been considered for placement on the endangered species list.
The forest lands have also gradually changed with reduced fire frequency resulting from decades of aggressive fire suppression and associated fuel build up, conifer invasion and aspen depletion. Conversion from deciduous aspen woodlands to coniferous forest results in reduced yields of water from these watersheds, as well as reduced forage productivity for wildlife and livestock. Urban forests also are becoming increasingly important as Utah's urban population grows and has greater needs for the environmental benefits of community trees.
Invasive and noxious weeds have become an increasing menace to the productivity of rangeland and forest due to increased traffic and seed transfer over long distances. Once established in a new area many of these are very difficult to control and almost impossible to eradicate. Non-indigenous invasive weeds disrupt the delicate ecological balance of Utah's native plant and wildlife communities, posing perhaps the single greatest threat to natural ecosystems in the West. Very few professionals within federal and state land management agencies currently have any formal weed science training, and yet they are expected to effectively manage invasive weeds. The agencies are calling upon Extension to provide the necessary weed science training for their employees, and to act as technical consultants on the specific weed control methods and strategies that should be used.
Air quality is becoming an issue of concern because of new regulations but also because of problems which occur in some areas with temperature inversions. Agriculture is being blamed for contributing to this problem and needs to be involved in the evaluation and resolution of this problem.

2. Scope of the Program

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

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

1. Assumptions made for the Program

1. The West contains many unique and varied environments.
2. Men and women and their interests, desires, and needs are an integral part of the region's environments.
3. Men and women can adapt their lives to live more in synch with the environments in which they live.
4. Not all development has a negative impact on the environment; not all development has a positive impact on the environment–it is very case specific.
5. Humans and the environments in which they live can coexist in order to sustain life over time.
6. Environmental goods do not have an infinite positive value, just as actions taken by humans do not have an infinite negative value.
7. Water and wildlife are critical elements of the natural resources in Utah.
8. Many different interests and needs vie for use of these resources.
9. Education and science based information are essential for coordination.
10. Range and forest lands as well as urban forests are very valuable resources in Utah.
11. Ease of travel and increased use of public lands has increased the occurrence and spread of weeds and increased the frequency of large scale fires followed by invasion of cheat grass and other weeds and a repeated fire cycle.
12. A lack of low intensity fires resulting from decades of aggressive fire suppression has enabled the conifers to greatly expand their range and crowd out the aspen groves.
13. These problems are too large for resolution without the combined effort of agricultural and forest producers, agencies, specific interest groups and even the general public. Cooperation and working together is essential. Research and education plays a key role in helping all of these groups to understand the need and their role.
14. Improved management is essential to maintaining or increasing the value of grazed rangelands and forest for livestock grazing

as well as for wildlife habitat, watershed function, recreation, and other uses.

2. Ultimate goal(s) of this Program

1. Improve range resource management
2. Enhance forest resource management
3. Strengthen air resource protection and management
4. Advance natural resource and environmental economics
5. Protect, maintain, and improve terrestrial wildlife and their habitat in Utah.

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
2008	13.0	0.0	5.1	0.0
2009	13.0	0.0	5.1	0.0
2010	13.0	0.0	5.1	0.0
2011	13.0	0.0	5.1	0.0
2012	13.0	0.0	5.1	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Work will be undertaken that attempts to identify principles and practices that maximize the overall benefits from range and forest use/nonuse. Additional research will be undertaken that focuses on air quality–both protection and management of said resource. Finally, economic studies involving environmental issues, primarily management of natural resources, will be continued in order to identify potential economic strategies that will enhance the quality of life and maintain viable environments.
Extension will outreach to livestock producers, general public including youth, private land forest owners, agency personnel, special interest groups and green industry professionals to:
1. Conduct projects consultations, and workshops focusing on the role of outdoor recreation and natural resource-based tourism in relation to community development.
2. Provide information, resources, research, and expertise related to the development of outdoor recreation and natural resources-based tourism opportunities to assist in the diversification of local economies, especially in rural Utah.
3. Partner with others in education and use of resources to rehabilitate the sagebrush steppe environment.
4. Educate and partner to enable the recovery of the sage grouse, pygmy rabbit and others to avoid listing as endangered species.
5. Continue to facilitate and assist the establishment and success of local Conservation Resource Management (CRM) groups, for more local control of decisions on natural resources.
6. Educate the public with respect to the principle causes of air pollution and their role in prevention.
7. Partner with others to enable agriculture producers to meet the requirements of the EPA.
8. Provide training in practical weed inventory and mapping techniques to state and federal land managers.
9. Establish herbicide demonstration/research plots to evaluate the efficacy of these products under local conditions.
10. Determine management options that slows or stops the cycle of cheatgrass and fire on previously burned areas through range rehabilitation, seeding programs and nontraditional approaches to grazing management.
11. Educate producers and agency personnel on the need for continued range evaluation, monitoring, and management improvements and the role of grazing management in sustainable resource management.
12. Educate the public on responsible use and the value of multiple uses on rangelands.
13. Demonstrate the need for controlled logging, thinning and cleaning of some forests to reduce the fire danger and enhance the re-establishment of aspen groves.
14. Illustrate the need for management and control of pinion-juniper forests to restore watershed, wildlife habitat and forage values on rangelands.
15. Educate landowners on how to have timber harvested from their lands in a manner that increases their income while

maintaining or enhancing the forest resource.
16. Provide information to landowners and users on grazing management of graze able woodlands.
17. Provide information on how to manage these areas to reduce or control the invasion of harmful insects and invasive weeds from public forests into their private forest lands.
18. Partner with and educate city foresters, green industry professionals, and citizens on health and management trees in urban settings.
19. Partner with and educate livestock producers and agency personnel on the identification and methods of control of the specific noxious and invasive species.
20. Educate developers, home owners, small acreage owners, outdoor recreationists, youth, and others interested in public lands on their critical role in preventing, reporting, and even helping to control these plants.
21. Emphasize the strategic elements of early detection and rapid response as outlined in the most recent National Invasive Species Management Plan.

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

Extension	
Direct Methods	**Indirect Methods**
• Group Discussion • Education Class • Workshop • Demonstrations • Other 2 (Field Days) • Other 1 (Conferences)	• Public Service Announcement • Newsletters • Web sites • Other 1 (Electronic Fact Sheets) • Other 2 (Satellite Broadcasts)

3. Description of targeted audience

The target audience includes the general public (including youth), users of various environments (agricultural producers, extractive industry representatives, environmentalists, recreationists, green industry professionals, etc.), small acreage owners, private forest owners, federal and state government officials, extension agricultural agents, and other academics and resource managers.

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
2008	25800	17473	13000	8804
2009	25800	17473	13000	8804
2010	25800	17473	13000	8804
2011	25800	17473	13000	8804
2012	25800	17473	13000	8804

2. (Standard Research Target) Number of Patents

Expected Patents

2008 :0 **2009 :**0 **2010 :** 0 **2011 :** 1 **2012 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target
2008	50	0
2009	52	0
2010	52	0
2011	54	0
2012	0	0

V(H). State Defined Outputs

1. Output Target

- Number of peer-reviewed journal articles and books/chapters in books extensively peer reviewed.

  2008 :50 **2009 :**52 **2010 :** 52 **2011 :**54 **2012 :**54

- Number of intermediate publications and presentations (e.g., refereed proceedings).

  2008 :8 **2009 :**9 **2010 :** 9 **2011 :**10 **2012 :**10

- Level of contract/grant funding.

  2008 :50000 **2009 :**75000 **2010 :** 100000 **2011 :**125000 **2012 :**125000

- Number of graduate students or post-doctorate's trained.

  2008 :3 **2009 :**3 **2010 :** 4 **2011 :**5 **2012 :**5

- Number of undergraduate students involved in research.

  2008 :3 **2009 :**4 **2010 :** 4 **2011 :**5 **2012 :**5

- Number of theses/dissertations completed.

  2008 :3 **2009 :**4 **2010 :** 4 **2011 :**5 **2012 :**5

V(I). State Defined Outcome

1. Outcome Target

Number of program participants who gain knowledge on natural resource systems and the environment.

2. Outcome Type : Change in Knowledge Outcome Measure

2008 :7740 **2009 :** 7740 **2010 :** 7740 **2011 :**7740 **2012 :** 7740

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry
- 134 - Outdoor Recreation

- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 141 - Air Resource Protection and Management
- 605 - Natural Resource and Environmental Economics

1. Outcome Target

Number of program participants who implement positive natural resource systems and the environmental practices.

2. Outcome Type : Change in Action Outcome Measure

2008 : 3870	**2009 :** 3870	**2010 :** 3870	**2011 :** 3870	**2012 :** 3870

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry
- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 141 - Air Resource Protection and Management
- 605 - Natural Resource and Environmental Economics

1. Outcome Target

Percent of permitted acres maintained at appropriate land conditions and water and air standards.

2. Outcome Type : Change in Condition Outcome Measure

2008 : 65	**2009 :** 65	**2010 :** 65	**2011 :** 65	**2012 :** 65

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry
- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 141 - Air Resource Protection and Management
- 605 - Natural Resource and Environmental Economics

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Natural disasters are part of the environments in which we live. Hence, major changes in weather, precipitation, earthquakes, etc., will have a major impact on this planned program area. With growth in the economy comes a renewed interest in protecting our natural resources and environment. Changes in the economy can bring about changes in the ways that natural resources are produced (i.e., the current shortage of petroleum products and decisions to open gulf coast or Arctic areas to increased drilling). As more dollars are appropriated for environmental purposes, the means to protect or better manage environments becomes greater. The same can be said for public policy changes, government regulations, competing public priorities, and competing programmatic challenges. Changes in population (both in terms of number and cultures) will have a potential impact on natural resources.

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

1. Evaluation Studies Planned

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

Description

Various evaluation methods will be employed for activities involving direct contact. "Before and after" instruments will be used in most workshops, short courses, and range schools. Solicited and unsolicited testimonials and comments will be used where activities are more consultative and personal. Indirect contact activities such as web publication and information presentation will be evaluated based on use and user statistics and questions or requests for information. Analysis will be conducted using time series methods, as well as case studies. In most cases, the studies will compare a "with" and a "without" situation to determine environmental and economic impacts.

2. Data Collection Methods

- Structured
- On-Site
- Sampling
- Telephone
- Case Study
- Whole population
- Observation
- Journals
- Mail

Description

Sampling will be an integral part of the research and extension programs undertaken in the natural resources and environment

planned program area. In most workshops, short courses, and range schools all participants will be encouraged to complete an evaluation. Surveys will also be used to collect data between users and nonusers. Indirect contact can best be evaluated by collecting web statistics and tracking requests and contacts as well as outside review. Some case studies will be prepared utilizing data collected from specific sites or locations. Observations are an integral part of an research or extension program. Data from journals will be used as a means of verifying (where possible) the results from the other studies conducted.

V(A). Planned Program (Summary)

1. Name of the Planned Program

Plant, Animal, and Microbial Genomics

2. Brief summary about Planned Program

Work in genetics, particularly through biotechnology, is a significant technology available for in improving plant, animal, and microbial efficiencies. Efforts to enhance plant, animal, and microbial efficiencies are central to the continued economic and physical viability of agriculture and food and fiber production. With prices essentially stable and costs rising, the primary hope for existing agricultural producers is that there will be technologies developed that will enhance productivity. With productivity gains, producers can remain economically viable.

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

- 201 25% Plant Genome, Genetics, and Genetic Mechanisms
- 203 5% Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 301 15% Reproductive Performance of Animals
- 303 20% Genetic Improvement of Animals
- 304 20% Animal Genome
- 305 5% Animal Physiological Processes
- 501 10% New and Improved Food Processing Technologies

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

1. Situation and priorities

The very survival of producers is at stake with respect to advances in technologies that will enhance efficiency. Producers typically have little or no control over prices received or prices paid. Therefore, a primary source of hope lies with enhanced efficiencies. The priority of this planned program is to enhance efficiency of plant, animal, and food products such that the classic cost-price squeeze doesn't force additional producers out of business, thereby economically endangering many additional rural communities.

2. Scope of the Program

- In-State Research
- Multistate Research

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

1. Assumptions made for the Program

1. Prices received by producers will remain out of the control of producers.
2. Prices paid by producers will remain out of the control of producers.
3. Enhancements to efficiency remain the primary solution to the historical and current cost-price squeeze.
4. The potential for biotechnological improvements exists in both plants and animals.
5. Funding will remain secure throughout the study interval.
6. Sufficient faculty and staff will remain available to work in this area to bring the planned program to a successful completion.
7. Sufficient funds will exist for the adoption of new biotechnology processes as they become available.
8. Sufficient physical (laboratory) space will remain available to complete the planned program.

2. Ultimate goal(s) of this Program

The ultimate goal of this planned program is to develop efficiency enhancing technologies so that producers of plants, animals, and food products can take advantage of it to remain a viable business enterprise. More specifically to:

1. Utilize genomics to enhance animal production.
2. Increase use of genomics to enhance plant production.
3. Use genomics to develop a more robust microbial and food production and processing system.

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
2008	0.0	0.0	7.9	0.0
2009	0.0	0.0	7.9	0.0
2010	0.0	0.0	7.9	0.0
2011	0.0	0.0	7.9	0.0
2012	0.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

1. Conduct research experiments and develop theories that can be used to enhance plant and animal productive efficiencies.
2. Publish studies related to these areas of concern.
3. Conduct workshops and meetings for other scientists involved in this area of research.
4. Develop applications for the research on plant and animal genomics to directly benefit producers, youths, and other scientists.

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

Extension	
Direct Methods	Indirect Methods
• Demonstrations • Workshop	• Other 1 (Journals) • Other 2 (Peer Presentations) • Public Service Announcement

3. Description of targeted audience

The target audience for this research will primarily be other scientists involved in genomics work but the gains achieved will eventually be available to the general public as these technologies become commercialized. Other interested parties include numerous businesses related to this area of research. The eventual end-user, i.e., the producer or food processor, will realize benefits from the research long term.

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
2008	30	60	20	40
2009	35	60	22	40
2010	35	60	22	40
2011	40	60	24	40
2012	40	60	24	0

2. (Standard Research Target) Number of Patents

Expected Patents

2008 :0 **2009 :**0 **2010 :** 0 **2011 :** 1 **2012 :** 1

3. Expected Peer Review Publications

Year	Research Target	Extension Target
2008	40	0
2009	40	0
2010	42	0
2011	42	0
2012	42	0

V(H). State Defined Outputs

1. Output Target

- Number of peer-reviewed journal articles and books/chapters in books extensively peer reviewed

  2008 :40 **2009 :**40 **2010 :** 42 **2011 :**42 **2012 :**42

- Number of intermediate publications and presentations (e.g., refereed proceedings)

  2008 :3 **2009 :**4 **2010 :** 4 **2011 :**5 **2012 :**5

- Level of contract/grant funding

  2008 :500000 **2009 :**750000 **2010 :** 750000 **2011 :**1000000 **2012 :**1000000

- Number of graduate students or post-doctorate's trained

  2008 :3 **2009 :**3 **2010 :** 3 **2011 :**4 **2012 :**4

- Number of undergraduate students involved in research

  2008 :2 **2009 :**3 **2010 :** 3 **2011 :**4 **2012 :**4

- Number of theses/dissertations completed

2008 :2 **2009 :**2 **2010 :** 3 **2011 :**3 **2012 :**3

V(I). State Defined Outcome

1. Outcome Target

Increase in productivity (plant and animal) per year (expressed in percentage terms) due to enhanced genetical capacity.

2. Outcome Type : Change in Knowledge Outcome Measure

2008 :0 **2009 :** 0 **2010 :** 2 **2011 :**2 **2012 :** 3

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 301 - Reproductive Performance of Animals
- 303 - Genetic Improvement of Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 501 - New and Improved Food Processing Technologies

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

The nature of the economy will influence the impacts that can be derived from this planned program area as reduced funding for this critical area of work will greatly expand the time between conceptualization and commercialization. The same could be said for changes in appropriation or competing public priorities. The public's perception of genomics may well serve as the final test of efficacy of these techniques. Government regulations will also have an impact on the extent and nature of genomic work that will be done within the Land Grant System.

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

1. Evaluation Studies Planned

- During (during program)
- Time series (multiple points before and after program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Case Study

Description

Evaluation studies regarding the efficacy of this work will be conducted throughout the duration of the planned program area. Highly sophisticated statistical and numeric methods of comparison will be utilized. The primary work of genomics lies in its comparison of genetic materials, some with a desirable trait and some without such a trait. Some case studies will be used to demonstrate a particularly important trait.

2. Data Collection Methods

- Observation
- Journals
- Sampling
- Portfolio Reviews
- Case Study

Description

Sampling will be the primary data collection method, but that will be augmented by case studies, observations, and data from journals. A review of the genomics area portfolio is also anticipated during the proposed program period.

V(A). Planned Program (Summary)

1. Name of the Planned Program

Production and Safety of Food Products

2. Brief summary about Planned Program

The food production complex is extraordinarily large within the US. As a part of this complex, U.S. citizens enjoy the largest variety of food of any nation on earth at the lowest relative cost. Consumers are driven to search out and try new and improved food products. Two areas of this system that are of special interest to Utah are milk and meats, though other products are also researched. This vast choice of foods brings with it an issue of food safety throughout the system–production, processing, and consumption. With the large variety of food products, food safety is an issue that must be dealt with by producers, processors, distribution systems, and the final consumer.
The results of a state survey and forum listening sessions showed that eighty-nine percent of respondents believed that Utah State University should be involved in the development of programs and research which reduce the incidence of food borne illnesses and contaminants through science-based knowledge and education. Respondents felt that specific program strategies addressing food safety (91%), food quality (87%), preservation and storage in the home (87%), and commercial food handler's safety (81%) were exceptionally and reasonably important to a plan of work.
The Production and Safety of Food Products program area responds to these and other food safety matters through the research and expertise of USU Experiment Station faculty, Extension specialists and agents. All of these professionals educate their respective target audiences. For experiment station faculty members, their audiences are geared primarily towards extension specialists and other scientists; the specialists' audiences include peers, county agents, federal and state organizations, producer groups, and the general public. County agents work cooperatively with federal, state, and local governments, citizen groups, and the public to address food issues in their respective areas.

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

- 501 20% New and Improved Food Processing Technologies
- 511 15% New and Improved Non-Food Products and Processes
- 701 15% Nutrient Composition of Food
- 702 20% Requirements and Function of Nutrients and Other Food Components
- 711 10% Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.
- 712 20% Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

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

1. Situation and priorities

A substantial portion of the U.S. Agricultural complex is involved in the production of food and nonfood products. New methods of food production offer the potential for an even more efficient food production system. This includes new food and nonfood products from agricultural output. There is considerable potential for producing foods that are more healthy and delicious, both in terms of existing products, as well as new products. Food borne illness is a major cause of death, claiming the lives of our most vulnerable populations: the elderly, young, pregnant women, people with impaired immune function and the chronically ill. It also causes needless lost time from productive roles in the workplace. Improper food handling and preparation of food in food service establishments and in the home contribute to food borne illnesses. U.S. citizens have the broadest selection of food products in history. With these new food products, as well as with traditional food items, food safety has become a more critical topic in light of recent food safety issues or events, i.e., E coli recently found in many foods. Hence, there is a need for better methods of controlling diseases and pests as related to food products. Priorities include the development of new, healthy food products and the development of food safety procedures that will ensure a safe food product when delivered to the consumers.

2. Scope of the Program

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

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

1. Assumptions made for the Program

1. Food production and processing remains a critical link in the agricultural complex.
2. New products are desired by the public that are healthy, delicious, and require little preparation time.
3. Food safety is a critical issue as the potential source of foods becomes greater through new food producing technologies.
4. New and improved methods of handling and preparing food safely are available.
5. Funding will remain secure throughout the study interval.
6. Sufficient faculty and staff will remain available to work in this area to bring the planned program to a successful conclusion.
7. Laboratory and related space will remain sufficient to carry out this program area.
8. Foodborne illness, a preventable and under-reported disease, is a public health and economic challenge.
9. Greater adoption of science-based home canning techniques is still needed by consumers.
10. Pregnant women, young children, older adults, and those with weakened immune systems are at greater risk for foodborne illness.
11. Others are at-risk groups because of low literacy and high risk behaviors.
12. Food Safety Managers Training is a vital component to reduce the established risk factors in retail and foodservice foodborne illness.
13. Small food manufacturers often lack the specific knowledge to produce safe and wholesome food products.

2. Ultimate goal(s) of this Program

1. Strengthen the relationship between food structure and composition and human health.
2. Reduce the cases of food borne illnesses in Utah.
3. Improve the methods of safe food production, processing, and preservation.

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
2008	11.0	0.0	3.3	0.0
2009	11.0	0.0	3.3	0.0
2010	11.0	0.0	3.3	0.0
2011	11.0	0.0	3.3	0.0
2012	11.0	0.0	3.3	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The experiment station will:
1. Conduct experiments and develop theories that can be used to develop a safer food supply from production, through processing, and to the final consumer.
2. Conduct experiments and develop theories that can be used to develop new food products or improve existing food products.
3. Publish studies and make presentations related to these two areas of concern.

Extension will outreach to Utah residents, family consumer scientist agents, small and medium sized food processors, restaurant food safety managers to provide educational training and in-depth information on:
1. Safe food handling practices
2. Safe food preservation and storage practices
3. Certification to food safety managers
4. Safe food handling practices for processors
5. 4-H nutrition and health safety curricula and programs

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

Extension	
Direct Methods	**Indirect Methods**
• One-on-One Intervention • Workshop • Group Discussion • Demonstrations • Education Class	• TV Media Programs • Other 1 (On-line Presentations) • Public Service Announcement • Web sites

3. Description of targeted audience

The target audience will include food processors, agricultural producers, general consumers (both within and without Utah), family consumer science agents, at risk groups and their families, 4-H youth, and other scientists.

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
2008	24000	33043	700	963
2009	24000	33043	700	963
2010	24000	33043	700	963
2011	24000	33043	700	963
2012	24000	33043	700	963

2. (Standard Research Target) Number of Patents

Expected Patents

2008 :0 **2009 :**0 **2010 :** 0 **2011 :** 1 **2012 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target
2008	15	0
2009	15	0
2010	17	0
2011	17	0
2012	17	0

V(H). State Defined Outputs

1. Output Target

- Number of peer-reviewed journal articles and books/chapters in books extensively peer reviewed

2008 :15 **2009 :**15 **2010 :** 17 **2011 :**17 **2012 :**17

- Number of intermediate publications and presentations (e.g., refereed proceedings).

2008 :2 **2009 :**4 **2010 :** 4 **2011 :**4 **2012 :**4

- Level of contract/grant funding

2008 :50000 **2009 :**75000 **2010 :** 75000 **2011 :**100000 **2012 :**100000

- Number of graduate students or post-doctorate's trained

2008 :2 **2009 :**4 **2010 :** 4 **2011 :**4 **2012 :**4

- Number of undergraduate students involved in research

2008 :2 **2009 :**3 **2010 :** 3 **2011 :**3 **2012 :**3

- Number of theses/dissertations completed

2008 :2 **2009 :**3 **2010 :** 3 **2011 :**3 **2012 :**3

V(I). State Defined Outcome

1. Outcome Target

Number of clients who increase their knowledge of production and safety of food products.

2. Outcome Type : Change in Knowledge Outcome Measure

2008 :7200 **2009 :** 7200 **2010 :** 7200 **2011 :**7200 **2012 :** 7200

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 511 - New and Improved Non-Food Products and Processes
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 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 Occuring Toxins

1. Outcome Target

Number of clients who implement positive food safety practices.

2. Outcome Type : Change in Action Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
3600	3600	3600	3600	3600

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 511 - New and Improved Non-Food Products and Processes
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 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 Occuring Toxins

1. Outcome Target

Number of cases per 100,000 population of food borne illness in Utah less than the 2005 UIBI-PH indicators for campylobacteriosis (expressed as percentage of population).

2. Outcome Type : Change in Condition Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
12	12	12	12	12

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 511 - New and Improved Non-Food Products and Processes
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

1. Outcome Target

Number of cases per 100,000 population of food borne illness in Utah less than the 2005 UIBI-PH indicators for E. Coli (expressed as percent of population).

2. Outcome Type : Change in Condition Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
1	1	1	1	1

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 511 - New and Improved Non-Food Products and Processes
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

1. Outcome Target

Number of cases per 100,000 population of food borne illness in Utah less than the 2005 UIBI-PH indicators for salmonella (expressed as percentage of population).

2. Outcome Type : Change in Condition Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
14	14	14	14	14

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies

- 511 - New and Improved Non-Food Products and Processes
- 702 - Requirements and Function of Nutrients and Other Food Components
- 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 Occuring Toxins

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

As evidenced by recent major storm events, natural disasters can have a major impact on food production, processing, and distribution systems. The state of the economy will influence changes in consumer habits, which may also change producer practices. Government regulations, either requiring the addition of certain food-related elements or the exclusion of certain food-related elements, can have a major impact on all parts of the food production industry and can even reach down to the consumer. Populations changes, which often introduce new cultures and cultural interests, can be a prime motivating factor for change in this food production, processing, distribution, and consumption sectors.

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

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Case Study
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Time series (multiple points before and after program)
- Before-After (before and after program)
- During (during program)

Description

Time series studies will have to be used to assess the change in the number and quality of food products available, primarily from meat and milk products. Case studies will be conducted including the use of taste panels for various food products. Intergroup comparisons will also be made, both those with and without and those with full, partial, or none.

2. Data Collection Methods

- Mail
- Case Study
- Observation
- Structured
- Whole population
- Portfolio Reviews
- Journals
- Tests
- Sampling
- On-Site
- Telephone

Description

Sampling will be done as the studies progress. Surveys will be conducted, mail, telephone, and on-site, in order to gather data particularly with respect to food safety. Case studies, observations, portfolio reviews, tests, and journals will all be used as additional sources for data. Extension agents and specialists will collect data from their extension clientele as services are delivered. Follow-up information will be collected through Utah State University Extension Accountability in Action Program surveys.

V(A). Planned Program (Summary)

1. Name of the Planned Program

Production, Marketing, Trade, and International Economics

2. Brief summary about Planned Program

Economic analysis enters our decision-making process almost constantly as consumers and producers. Economic analyses are critical to the adoption of various production and conservation practices. A primary area of focus will be that of market economics and marketing and distribution practices. International trade and its impact on local, regional, and national economies will also be examined and identified. Economic models that are based in theory must be developed and tested. Alternative quantitative methods are often used to measure economic impacts and are of critical importance to understanding economic influences.
Jobs and the economy were the second highest priority issue for Utah citizens in a 2004 Utah Priorities Poll. The results of the state's state survey and forum listening sessions showed that ninety-four percent of respondents believed that creation of jobs, Utah's wage rates, and programs and incentives to attract new businesses were exceptionally and reasonably important to a plan of work. Utah State University should be involved in the development of programs and research that provide manufacturing assistance to Utah businesses (87%) and promote the economic prosperity of Utah through business competitiveness, entrepreneurship, and economic diversification (82%).
The Marketing, Trade, and Development Economics Program area responds to these and other economic matters through the research and expertise of USU Experiment Station faculty and Extension specialists and agents. All of these professionals educate their respective target audiences. For experiment station faculty their audiences are geared primarily towards consumers of extension specialists and peer reviewed journals; the specialists' audiences include peers, county agents, federal and state organizations, producer groups, and the general public. County agents work cooperatively with federal, state, and local governments, citizen groups, and the public to address agricultural economics issues in their areas.

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

- 601 10% Economics of Agricultural Production and Farm Management
- 602 5% Business Management, Finance, and Taxation
- 603 15% Market Economics
- 604 15% Marketing and Distribution Practices
- 605 15% Natural Resource and Environmental Economics
- 606 10% International Trade and Development
- 607 5% Consumer Economics
- 608 5% Community Resource Planning and Development
- 609 15% Economic Theory and Methods
- 611 5% Foreign Policy and Programs

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

1. Situation and priorities

From the agricultural side, agriculture continues to be strongly influenced by the classical price-cost squeeze in which costs increase relative prices. Two possibilities exist for enhancing agricultural-level profitability: increasing price or reducing costs. Prices are most often beyond the control of individual producers, though there are some actions by cooperatives that are helpful in offsetting the control realized by more concentrated agricultural processing and distribution industries. Niche marketing can also influence prices. Costs are primarily reduced by enhancing efficiency of production. This means that costs would have to decrease per unit of production. Priorities for this program area include an examination of alternative markets for agricultural goods (as a means of receiving an enhanced price), an analysis of alternative production and processing technologies with promise of lowering costs on a per unit basis, and an expansion of international trade in areas that would most directly impact state and regional

production and profitability.
Many residents of rural communities depended upon traditional agriculture for their primary source of family income. There has been a decline in traditional agriculture based income. Persons living in rural areas often experience lower individual incomes and fewer opportunities for non-farm jobs than persons living in urban areas.
Businesses and communities in rural areas face several challenges including (a) low population size and density, limited local demand, (b) remoteness from markets, (c) limited opportunities for mentoring and networking with other business owners, and (d) lack of capital and other support infrastructure.
The new paradigm for economic development is on entrepreneurship or "grow your own". With the new paradigm, it is important that communities create a climate and culture in which entrepreneurs can start and grow a business. Community members can embrace collaboration among governments, nonprofits, and the private sector to create an entrepreneur friendly community. An example would be the partnership between extension, rural Utah, and the governor's Office of Economic Development.
According to the latest census, state tax records, and direct survey by the Utah Manufacturers Association, Utah has over 4,500 small and medium sized manufacturers dispersed across urban, rural, and semi-rural regions. Small and medium sized manufacturers confront major problems in responding to increasing global competition. These problems encompass a broad range of issues, only some of which relate directly to technology. Inadequate resources – people, money, expertise, information, and insufficient time are reasons that many small industrial firms are not improving their manufacturing performance.
One very specific priority for this program will come from a strategic focus on Utah's small manufacturers and on Utah's supply chain linkages. Priority will be given to those objectives that best conform to the mission of the MEP, which is; "To raise the competitiveness, performance, and profitability of Utah's manufacturers."

2. Scope of the Program

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

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

1. Assumptions made for the Program

1. Product differentiation can bring about enhanced prices and provide enhanced profits.
2. Farm-level receipts can be increased by decreasing costs or increasing prices.
3. Farm producers are profit maximizing entrepreneurs in the broadest sense possible (including benefits received from land investment and lifestyle).
4. International trade benefits both sides of the trade and enhances each economy's output, though not necessarily uniformly across all industrial segments.
5. Producers can make changes in their management style to reduce risk and enhance net earnings.
6. The regulatory environment creates a disproportionate burden for businesses and small manufacturers.
7. Small manufacturers are often unfamiliar with changing technology, production techniques, and business management practices.
8. Small manufacturers are less likely to be aware of best manufacturing practices, innovative application of new technologies, and fresh approaches to improved production efficiencies.
9. Small manufacturers are generally isolated and have too few opportunities for interaction with other companies in similar situations which is deemed essential to continuous improvements.
10. It is often difficult for owners and managers of smaller companies to find high-quality, unbiased information, advice, and assistance.
11. Operating capital and investment funds for modernization are difficult for small and medium sized businesses and manufacturing firms to obtain.
12. Significant numbers of American consumers are becoming increasingly concerned about the processes used to produce food.
13. Methods for marketing of products and management of financial risk are becoming increasingly important for producers economic survival.
14. The international and global marketing are increasing the competitive pressure for efficiency of production.
15. Agricultural producers have become increasingly concerned about the shrinking percentage of the consumer's dollar spent on food that flows back to the producer.
16. Developing value-added food products is a potential method for increasing producer incomes.
17. Consumer interest in locally-produced food products exists. This is because these products are often considered to be higher

quality than "regular" food products bought in traditional retail outlets.
18. An understanding of advanced economic and marketing principles is very important for producer survival. Producers must become more active in marketing of their products rather than just selling of a commodity.
19. Business, entrepreneurship, and economic development programs can help Utah communities, businesses and individuals make choices regarding growth, employment, and development opportunities and options.
20. Communities and businesses can evaluate the advantages and disadvantages of development strategies.
21. Entrepreneurs and business owners can learn and apply strategic and business planning tools, market research, feasibility studies, and training in business management to improve their businesses.
22. Field staff will actively participate in providing entrepreneurship education opportunities for their clientele.
23. Training and one-on-one consultation are the most effective means of developing entrepreneurs and emerging businesses.
24. Agents will seek local input when planning entrepreneurship training in their respective county.

2. Ultimate goal(s) of this Program

1. Improve marketing and distribution practices for agricultural producers.
2. Enhance returns from international trade and development.
3. Strengthen farm- and ranch-level net returns.
4. Create jobs in agriculture and other sectors that will survive economically.

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
2008	7.0	0.0	1.2	0.0
2009	7.0	0.0	1.2	0.0
2010	7.0	0.0	1.2	0.0
2011	7.0	0.0	1.2	0.0
2012	7.0	0.0	1.2	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Under the auspices of the experiment station, market tests will be conducted in order to determine the price premium associated with alternative production and marketing programs. Models will be built to quantify the impacts associated with international trade. Work will continue in the area of risk reduction for agricultural producers. Research and extension efforts will be needed to more thoroughly analyze the impacts of alternative, risk reducing strategies. Finally, firm-level analyses will continue so as to identify specific changes that might be made on individual farms and ranches that would enhance net returns.
More specifically, extension will outreach to agriculture businesses, small manufacturers, and entrepreneurs to provide educational training and in-depth information on:
Small business management
Home-based businesses
Main street community programs
Business retention and expansion
Rural and heritage tourism
Rural and economic development activities.
E-commerce programs
Community entrepreneurship programs
Marketing (Market feasibility, research, customer relations/service, pricing)
Finances (recordkeeping, raising capital, growing/expanding financial issues)
Business plans for potential business owners

Patents/trademarks/copyrights
Insurance, zoning, and legal requirements
Identifying business opportunities
Developing a youth entrepreneurship program

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

Extension	
Direct Methods	**Indirect Methods**
• Workshop • One-on-One Intervention • Education Class • Other 1 (Conferences)	• Other 2 (Satellite Broadcasts) • TV Media Programs • Public Service Announcement • Other 1 (DVDs) • Web sites • Newsletters

3. Description of targeted audience

The target audience for this planned program will include Utah communities, business owners, manufacturers, entrepreneurs, agricultural producers, agribusiness firms, state agencies, local governments, small acreage producers, policy makers, and the general public (including youth).

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
2008	10000	11861	500	593
2009	10000	11861	500	593
2010	10000	11861	500	593
2011	10000	11861	500	593
2012	10000	11861	500	593

2. (Standard Research Target) Number of Patents

Expected Patents

2008 :0 **2009 :**0 **2010 :** 0 **2011 :**0 **2012 :**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target
2008	10	0
2009	10	0
2010	11	0
2011	11	0
2012	11	0

V(H). State Defined Outputs

1. Output Target

- Number of peer-reviewed journal articles and books/chapters in books extensively peer reviewed.

2008 : 10 **2009 :** 10 **2010 :** 11 **2011 :** 11 **2012 :** 11

- Level of contract/grant funding.

2008 : 50000 **2009 :** 60000 **2010 :** 60000 **2011 :** 70000 **2012 :** 70000

- Number of intermediate publications and presentations (i.e., refereed proceedings).

2008 : 3 **2009 :** 4 **2010 :** 4 **2011 :** 5 **2012 :** 5

- Number of graduate students trained.

2008 : 3 **2009 :** 3 **2010 :** 4 **2011 :** 4 **2012 :** 4

- Number of undergraduate students involved in research.

2008 : 2 **2009 :** 2 **2010 :** 3 **2011 :** 3 **2012 :** 3

- Number of theses/dissertations completed.

2008 : 2 **2009 :** 3 **2010 :** 3 **2011 :** 4 **2012 :** 4

V(I). State Defined Outcome

1. Outcome Target

Number of clients who increase their knowledge of marketing trade, and economic development.

2. Outcome Type : Change in Knowledge Outcome Measure

2008 : 3000 **2009 :** 3000 **2010 :** 3000 **2011 :** 3000 **2012 :** 3000

3. Associated Knowledge Area(s)

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

1. Outcome Target

Number of clients who implement positive marketing, trade, and economic development practices.

2. Outcome Type : Change in Action Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
1500	1500	1500	1500	1500

3. Associated Knowledge Area(s)

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

1. Outcome Target

A 1% 12 month increase in manufacturing employment in Utah.

2. Outcome Type : Change in Condition Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
1	1	1	1	1

3. Associated Knowledge Area(s)

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

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Natural disasters in the U.S. and throughout the world will impact this planned program area as natural disasters typically require large movements of food and fiber products (i.e., Hurricane Katrina). The state of the general economy also has a major impact on firm-level profitability and also effects the probability of international trade. Regulations (i.e., no imports of beef from Canada) will also impact this program area. Competing public priorities and changes in public policy (i.e., away from a cheap food policy) will have a substantial impact on firm-level profitability. Population changes (both in terms of numbers and culture) can also have a major impact on domestic and international trade. Developing economies and our relationship with them can also have a major impact on U.S. agriculture.

Presently both the Federal and State level administrations support economic development as key issues in their administration. However, concerns over homeland security, defense, and other social issues place the current level of appropriations at risk. These public policy issues must be monitored and managed to insure the program continues to support the most current legislative agendas.

There are a number of external factors which may influence the program in both positive and negative ways. These include; Appropriation changes, Public policy changes, and the Economy.

The primary input for MEP comes from a formal partnership with Utah State University and the Manufacturing Extension Partnership. The MEP is an independent 501 c3. The MEP receives both federal and state funds to support the outreach efforts across the state. Each year the program must submit its case for ongoing support from both the state and federal agencies. Any changes in stakeholder appropriation support may affect the outcomes of the program.

Any and all of these factors will affect the outcomes of this program. With the Farm Bill for 2007 there are sure to be changes in appropriations, public policy and government regulations. These may change the direction needed for the program.

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

1. Evaluation Studies Planned

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

Description

Most of the evaluation studies for this planned program area cannot be based on controlled experiments. Therefore, comparative studies will play a large role in evaluating the success of this planned program. Time series analysis will be used to examine profitability, trade, and the impacts of international development. Some case studies may be used with the research involving product enhancement.

The MEP program performs a pre-assessment of the individual manufacturing company receiving services to establish a "benchmark" of current performance and profitability. During the implementation phase and following the project, "scorecards" are established to measure improvements in customer satisfaction, benefits to companies, and to insure the sustainability of the incorporated changes.

At the conclusion of each MEP project, a report is sent to the National Institute of Standards and Technology (NIST). One year after the project has been completed, an independent survey instrument is sent directly to the participating company. The company itself then evaluates the services received from the program. The primary focus of the post-survey instrument is to insure that real impact was derived by the company from the services delivered by the program.

2. Data Collection Methods

- Observation
- Case Study
- Journals
- Sampling
- Whole population
- Telephone
- Mail
- On-Site
- Structured

Description

Data will be collected using a variety of data collection techniques including surveys, interviews, case studies, observation, and journals. Journals can be used to identify alternative data sources or methods that verify the usefulness of what has been done. The MEP program uses numerous methods to gather and analyze data. The collection of impact results is fundamental to the overall success and longevity of the MEP program. This information of benchmark data and post implementation data is used to direct the program to enhance the services and the impact to the clients served.

A number of surveys are conducted each year to determine "needs." The program is a needs driven program. Surveys will be conducted by mail, phone, and on-site assessments. This information is then used in product or service delivery development.

V(A). Planned Program (Summary)

1. Name of the Planned Program

Sustainable Plant Communities

2. Brief summary about Planned Program

The overall goal of this research is to develop plant materials that are ideally suited to the Intermountain region's climate. One of the basic parts of this planned program is the development of enhanced plant genetic material, primarily through traditional crop breeding programs. We are also improving plant biological efficiency and their ability to deal with abiotic stresses. In addition, the actual plant management system needs to be improved to gain the most from the other plant research that is done. Work is underway to control plant pests, including weeds, insects, pathogens, etc., especially in the area of augmented integrated pest management (IPM) systems.

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

- 201 10% Plant Genome, Genetics, and Genetic Mechanisms
- 202 10% Plant Genetic Resources
- 203 10% Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 10% Plant Product Quality and Utility (Preharvest)
- 205 10% Plant Management Systems
- 211 10% Insects, Mites, and Other Arthropods Affecting Plants
- 212 10% Pathogens and Nematodes Affecting Plants
- 213 10% Weeds Affecting Plants
- 215 10% Biological Control of Pests Affecting Plants
- 216 10% Integrated Pest Management Systems

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

1. Situation and priorities

For the Intermountain West and Utah, plant production primarily serves the livestock industry, though plant production is becoming a more critical part of the urban scene as well, i.e., horticulture and landscaping. Whether for eventual use as a livestock feed or for landscaping, plant production comprises a significant portion of the state's and region's agricultural complex. As an example, over 400,000 irrigated acres in Utah are used in the production of alfalfa hay, some for local livestock, some for export. The green industry in Utah generates approximately $1.6 billion dollars and continues to grow. Priorities include (a) continuing development of new grain, grass, and alfalfa varieties to help the livestock sector to remain economically viable and to do so in an environmentally friendly manner and (b) expansion of "native" landscapes in urban settings.
The results of a state survey and forum listening sessions showed that an overwhelming 99 percent of respondents felt that agriculture production and marketing were exceptionally important or reasonably important to have in the Extension Plan of Work. Additionally, 87 percent felt that yard and garden issues were exceptionally or reasonably important issues, and 76 percent felt that enhancement of crops and livestock on small acreages are important for future areas of work.
The Sustainable Plant Production Program responds to these and other agriculture plant matters through the research and expertise of USU's Experiment Station faculty and Extension specialists and agents. All of these professionals educate their respective target audiences. For experiment station faculty members, their audiences are geared primarily towards extension specialists and other scientists; the specialists' audiences include peers, county agents, federal and state organizations, producer groups, and the general public. County agents work cooperatively with federal, state, and local governments, citizen groups, and the public to address plant issues in their areas. Through the Utah 4-H program, youth become engaged in plant production issues by studying Junior Master Gardening programs and other 4-H plant curricula and becoming involved in various 4-H plant activities offered by the county extension offices and the State 4-H office.

2. Scope of the Program

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

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

1. Assumptions made for the Program

1. Forage and grain crops will remain the largest user of irrigated land.
2. There is a greater need for efficiency, especially in water use and production
3. Forage (including grasses, and alfalfa) and grain crops will continue to be processed and consumed locally, as well as exported to surrounding states.
4. Funding will remain in place through the study period.
5. Sufficient faculty and staff will remain available to work in this area to make substantial progress.
6. Plant production in Utah will continue to remain very important, both economically and aesthetically.

2. Ultimate goal(s) of this Program

1. Enhance plant genetic resources.
2. Improve plant biological efficiency and ability to deal with abiotic stresses.
3. Strengthen existing plant management systems.
4. Protect crops and plants from insects, diseases, weeds and other pests without causing other damage. Control plant pests including weeds, insects, pathogens, etc.
5. Augment existing IPM systems.
6. Expand the use of plants and specific varieties in the many ways for which they are best adapted.

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
2008	33.0	0.0	8.7	0.0
2009	33.0	0.0	8.7	0.0
2010	33.0	0.0	8.7	0.0
2011	33.0	0.0	8.7	0.0
2012	33.0	0.0	8.7	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

1. Conduct research experiments with plants and plant material.
2. Publish studies and make presentations related to plant propagation and production.
3. Conduct workshops and meetings to educate local, state, and regional stakeholders concerning progress in producing plants that are economically viable and environmentally friendly.
4. Deliver educational resources through various media
5. Release new plant varieties relative to this program area under plant variety protection (PVP) status.
6. Expand use of Integrated Pest Management (IPM).
7. Provide "Orchard Pest Advisories" on over 15 insect, mite, and pathogen pests of tree fruit and small fruit crops (commercial

and home garden).
8. Provide pest diagnostic assistance and management information to county agents, state and federal partners, commercial agriculture and horticulture producers, and the general public through the Utah Plant Pest Diagnostic Laboratory.
9. Certify or recertify Pesticide Applicator Training (PAT) for pesticide applicators to apply restricted use pesticides and to comply with the Utah Pesticide Control Act and the Federal Insecticide, Fungicide, and Rodenticide Act.
10. Coordinate efforts with other states and the Western Region Pest Management Center (WRPMC).
11. Enhance the USU Master and 4-H Junior Master Gardener Programs.
12. Conserving water in the landscape through appropriate landscape management and plant selection with regard to turfgrass management.
13. Develop a manual that would meet the needs of industry professionals seeking certification as a Utah Certified Nursery Professional
14. Collaborate with the Utah Nursery and Landscape Association in an annual conference and trade show to illustrate "best management practices."
15. Continue the Western SARE Program.
16. Expand the Geospatial Extension Program.
17. Utilize multiple demonstrations/applied research plots to manage weeds in agronomic crops with results reported at field days, workshops, or annual meetings.

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

Extension	
Direct Methods	**Indirect Methods**
• Other 1 (Field Days) • One-on-One Intervention • Workshop • Demonstrations • Other 2 (Conferences) • Education Class • Group Discussion	• Public Service Announcement • Web sites • Newsletters • Other 1 (Radio)

3. Description of targeted audience

The target audience for this work would be other scientists, agricultural producers, landscapers, general public, home owners, green industry officials, professional landscape managers, turfgrass sod producers, other private businesses, and government entities that conduct work in this area.

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
2008	85000	1052460	2900	35907
2009	85000	1052460	2900	35907
2010	85000	1052460	2900	35907
2011	85000	1052460	2900	35907
2012	85000	1052460	2900	35907

2. (Standard Research Target) Number of Patents

Expected Patents

2008 :0 **2009 :**0 **2010 :** 0 **2011 :** 1 **2012 :** 1

3. Expected Peer Review Publications

Year	Research Target	Extension Target
2008	15	0
2009	15	0
2010	17	0
2011	17	0
2012	17	0

V(H). State Defined Outputs

1. Output Target

- Number of variety or seed releases

  2008 : 1 **2009 :**2 **2010 :** 2 **2011 :** 3 **2012 :** 3

- Number of peer-reviewed journal articles and books/chapters in books extensively peer reviewed

  2008 : 18 **2009 :**19 **2010 :** 19 **2011 :** 20 **2012 :** 20

- Number of intermediate publications and presentations (i.e., refereed proceedings)

  2008 : 2 **2009 :**3 **2010 :** 3 **2011 :** 4 **2012 :** 4

- Level of contract/grant funding

  2008 : 100000 **2009 :**150000 **2010 :** 150000 **2011 :** 200000 **2012 :** 200000

- Number of graduate students or post-doctorate's trained

  2008 : 2 **2009 :**3 **2010 :** 3 **2011 :** 4 **2012 :** 4

- Number of PVP's (Plant Variety Protection) established

  2008 : 1 **2009 :**1 **2010 :** 1 **2011 :** 2 **2012 :** 2

- Number of undergraduate students involved in research

  2008 : 2 **2009 :**3 **2010 :** 3 **2011 :** 3 **2012 :** 3

- Number of theses/dissertations completed

  2008 : 3 **2009 :**4 **2010 :** 4 **2011 :** 5 **2012 :** 4

V(I). State Defined Outcome

1. Outcome Target

Number of clients (growers, government agency personnel, home orchardists, and others) increasing their knowledge of sustained plant production.

2. Outcome Type : Change in Knowledge Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
25500	25500	25500	25500	25500

3. Associated Knowledge Area(s)

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

1. Outcome Target

Number of times clients (growers, government agency personnel, home orchardists, and others) implement one or more sustained plant production practice(s).

2. Outcome Type : Change in Action Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
12750	12750	12750	12750	12750

3. Associated Knowledge Area(s)

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

1. Outcome Target

Percentage increase in crop cash receipts (based on 1999-2004 average aggregate receipts).

2. Outcome Type : Change in Condition Outcome Measure

2008 :	**2009 :**	**2010 :**	**2011 :**	**2012 :**
2	2	2	2	2

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems

1. Outcome Target

Percentage increase in overall crop productivity (based on 1999-2004 average aggregate output).

2. Outcome Type : Change in Condition Outcome Measure

2008 : 2 **2009 :** 2 **2010 :** 2 **2011 :** 2 **2012 :** 2

3. Associated Knowledge Area(s)

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

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Drought and weather extremes have a major impact on plant production and especially impact agriculture and the orchard and berry industries. Over the next few years there may be an important impact from competing public priorities in regard to water. The introduction of weeds has a major impact for many years to come. The economy may have a major impact if fuel and other input prices stay high or elevate. There is certainly some impact from population growth as much of the best land for agricultural

production is used up for home and commercial buildings. Changing government regulations and policies, particularly with respect to pest control or growing or harvesting environment will impact this program area, as would additional emphasis on biofuels.

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

1. Evaluation Studies Planned

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

Description

Pre and post workshop surveys to examine immediate learning taking place in workshops. Time series data will be used in analyzing the program area as a whole. Individual plant species may be used as a case study in identifying the impacts of this planned program area. Comparisons between program participants and nonparticipants, as well as groups given treatment levels versus those not given treatment, will be used to measure the difference of the program.

2. Data Collection Methods

- Portfolio Reviews
- Journals
- Sampling
- Observation
- Whole population
- Case Study

Description

There will be data collected that will allow for an estimation of the impact of these programs whether that collection be through secondary data, case studies, or actual field or greenhouse observations. It is anticipated that there will be a portfolio review during the latter part of this planning period that will allow an assessment of success as well. Finally, data from journals will be used where available to ascertain the success of the methods and products generated.
Extension agents and specialists will collect data from their extension clientele as services are delivered. Surveys at the end of meetings for evaluation of presentations but also for learning during presentation and adoption of a practice. Follow-up information will be collected through Utah State University Extension Accountability in Action program surveys. 4-H contact numbers will be collected through the 4-H Martech program.

V(A). Planned Program (Summary)

1. Name of the Planned Program

Sustained Livestock Production

2. Brief summary about Planned Program

Livestock and livestock products comprise over 70% of the agricultural cash receipts in Utah. While the main focus of this planned program is animal nutrition and animal management systems, other, often diverse, knowledge areas are also associated with this planned program area. With such a large proportion of agricultural receipts coming from livestock, it is imperative that research and educational efforts be directed toward solving some of the major problems associated with livestock: profit, markets, rates of gain, health, and environmental concerns.
The results of a state survey and forum listening sessions showed that an overwhelming 99 percent of respondents felt that agriculture production and marketing were exceptionally important or reasonably important to have in the Extension Plan of Work. The Sustained Agriculture Animal Production Program responds to these and other agriculture animal matters through the research and expertise of USU Experiment Station faculty, Extension Specialists, and Extension Agents. All of these professionals educate their respective target audiences. For Experiment station faculty members, their audiences are geared primarily towards extension specialists and other scientists; the specialists' audiences include peers, county agents, Federal and state organizations, producer groups, and the general public; and county agents work cooperatively with federal, state, and local governments, citizen groups, and the public to address agricultural animal issues in their areas.

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

- 301 10% Reproductive Performance of Animals
- 302 20% Nutrient Utilization in Animals
- 303 10% Genetic Improvement of Animals
- 305 10% Animal Physiological Processes
- 306 5% Environmental Stress in Animals
- 307 20% Animal Management Systems
- 311 10% Animal Diseases
- 314 5% Toxic Chemicals, Poisonous Plants, Naturally Occuring Toxins, and Other Hazards Affecting Animals
- 402 5% Engineering Systems and Equipment
- 722 5% Zoonotic Diseases and Parasites Affecting Humans

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

1. Situation and priorities

Animals are very important to the Utah economy for the utilization of plant production and for the income generated, especially for rural Utah. Animal producers need improved production efficiency and management techniques to remain competitive. In addition, they need to ensure a safe and secure food system (i.e., food tracking systems); adjust breeding and nutrition programs to meet preferences of consumers; implement control procedures to preserve the quality of products; and utilize value added, diversification and niche market opportunities to increase income.
There is a bimodal distribution of livestock producers in the state of Utah and surrounding areas: large, commercial producers and small, part-time producers. The middle segment, medium-sized family farms, are becoming more scarce due to economic pressures. Even for the largest livestock producers, profits are low when compared to those earned in other financial instruments (at least by some measures). More profitable animal production and management systems need to be developed in order to ensure the continued existence of many of the commercial-, medium-, and small-size livestock operations. The major priority for this planned program is the development of economically viable livestock systems.
Niche markets can improve profitability for early adopters. One niche market includes the establishment of the meat goat industry

as another livestock alternative. Owners of agricultural animals also need to be educated about animal diseases and pests and their prevention and control, especially those transmissible to humans. Diseases are a major continuing threat.
Grazing of public lands has a long history as a valuable resource. It can be beneficial for plant growth, aiding fire prevention, wildlife habitat, and weed control if managed properly. There are special interest groups that would like to reduce or prevent grazing of public lands. Should producers lose access to public lands they will need alternative grazing systems.
There is a growing number of small acreage operations in Utah, many who have had little small acreage animal experience or education. These small acreage operations need help in facility management, manure and odor management, and disposal, grazing and pasture management; as well as management information on horses, other livestock, and poultry.

2. Scope of the Program

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

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

1. Assumptions made for the Program

1. Animal production is an important industry for Utah's economy and for aesthetic values.
2. The large amount of public lands in the West will slowly be reduced as competing users take advantage of these lands.
3. Other means of feeding large quantities of livestock (principally cattle) will have to be developed as public lands become less available.
4. Livestock (beef and dairy) will continue as the principle source of agricultural income for Utah and surrounding states.
5. Alternative feeding and management strategies exist or can be developed capable of assisting in maintenance of profitability for all sizes of livestock operations.
6. Niche markets are becoming available that would enhance profitability for early adopters but often require animals with exact specifications.
7. Disease and pests are major detriments of profitability and must be prevented.

2. Ultimate goal(s) of this Program

1. Enhance animal genetic resources.
2. Improve the reproductive performance of animals.
3. Enhance nutrient utilization in animals.
4. Strengthen animal management systems.
5. Reduce effects of animal diseases and toxins.
6. Enrich bio-energy development from animals.
7. Educate existing and potential animal producers so they can be competitive and remain on the farms and ranches in Utah when so desired.

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
2008	17.0	0.0	3.7	0.0
2009	17.0	0.0	3.7	0.0
2010	17.0	0.0	3.7	0.0
2011	17.0	0.0	3.7	0.0
2012	17.0	0.0	3.7	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The Utah Agricultural Experiment Station will:
1. Conduct research experiments and develop theories that can be used to enhance livestock production in an environmentally friendly manner.
2. Publish studies and make presentations related to this research.
3. It is expected that this research will eventually result in one patent issued in year 2011/year.
Extension will outreach to adult and youth producers and provide educational training, farm and ranch visits, and in-depth applied information on:
1. Dairy management and related topics
2. Beef Quality Assurance principles to beef producers
3. Master Beef Managers
4. Master Livestock Managers
5. Understanding and ability to keep and use farm records
6. Optimal production techniques for year round turkey production
7. The threat of foreign animal diseases and the role and methods of biosecurity for control and prevention
8. Disease and pest control
9. Agrarian and equine needs of small acreage owners
10. Sheep and goats

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

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

3. Description of targeted audience

The target audience for this work would be local and regional livestock (primarily beef, dairy, and equine) producers, small acreage owners, 4-H youth, veterinarians, USDA, state policy makers, academic units, businesses, and local, state, and regional political leaders.

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
2008	26000	54577	15000	31487
2009	26000	54577	15000	31487
2010	26000	54577	15000	31487
2011	26000	54577	15000	31487
2012	26000	54577	15000	31487

2. (Standard Research Target) Number of Patents

Expected Patents

2008 :0 **2009 :**0 **2010 :** 0 **2011 :** 1 **2012 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target
2008	40	0
2009	40	0
2010	41	0
2011	41	0
2012	41	0

V(H). State Defined Outputs

1. Output Target

- Number of peer-reviewed journal articles and books/chapters in books extensively peer reviewed

  2008 :40 **2009 :**42 **2010 :** 42 **2011 :**44 **2012 :**44

- Number of intermediate publications and presentations (i.e., refereed proceedings).

  2008 :10 **2009 :**10 **2010 :** 12 **2011 :**12 **2012 :**12

- Level of contract/grant funding

  2008 :100000 **2009 :**150000 **2010 :** 150000 **2011 :**200000 **2012 :**200000

- Number of graduate students or post-doctorate's trained

  2008 :2 **2009 :**3 **2010 :** 3 **2011 :**4 **2012 :**4

- Number of undergraduate students involved in research

2008 :2 **2009 :**3 **2010 :** 3 **2011 :**3 **2012 :**4

- Number of theses/dissertations completed

2008 :2 **2009 :**3 **2010 :** 3 **2011 :**3 **2012 :**3

V(I). State Defined Outcome

1. Outcome Target

Number of agricultural animal owners increasing their knowledge of sustained animal production practices.

2. Outcome Type : Change in Knowledge Outcome Measure

2008 :7800 **2009 :** 7800 **2010 :** 7800 **2011 :**7800 **2012 :** 7800

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occuring Toxins, and Other Hazards Affecting Animals
- 402 - Engineering Systems and Equipment
- 722 - Zoonotic Diseases and Parasites Affecting Humans

1. Outcome Target

Number of times agricultural animal owners implemented one or more sustained animal production practices.

2. Outcome Type : Change in Action Outcome Measure

2008 :3900 **2009 :** 3900 **2010 :** 3900 **2011 :**3900 **2012 :** 3900

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occuring Toxins, and Other Hazards Affecting Animals
- 402 - Engineering Systems and Equipment
- 722 - Zoonotic Diseases and Parasites Affecting Humans

1. Outcome Target

Improvement in livestock productivity (i.e., pounds of beef or milk produced per animal per year, expressed in percentage terms).

2. Outcome Type : Change in Condition Outcome Measure

2008 : 3 **2009 :** 3 **2010 :** 3 **2011 :** 4 **2012 :** 4

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occuring Toxins, and Other Hazards Affecting Animals
- 722 - Zoonotic Diseases and Parasites Affecting Humans

1. Outcome Target

Improvement in cash receipts from livestock production relative to average of 1999-2004 production years.

2. Outcome Type : Change in Condition Outcome Measure

2008 : 2 **2009 :** 3 **2010 :** 4 **2011 :** 5 **2012 :** 4

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occuring Toxins, and Other Hazards Affecting Animals
- 402 - Engineering Systems and Equipment
- 722 - Zoonotic Diseases and Parasites Affecting Humans

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Natural disasters, particularly drought, can have a major impact on this planned program area. Changes within the economy, particularly as related to disposable personal income, will also influence this program area. Appropriation changes, competing public priorities, and competing programmatic challenges could all have the potential to impact sustained animal production. More direct impacts would likely be felt if there were changes in public policy which dealt with grazing practices on public lands or the manner in which confined animal feeding operations were handled. As the population changes, new foods for new cultural groups may become increasingly important, thus impacting the nature of this planned program area. One major area of concern is that of disease, particularly BSE and the impact that would have on livestock production systems in the US were there to be a significant outbreak of that disease.

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

1. Evaluation Studies Planned

- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- After Only (post program)
- Case Study
- Before-After (before and after program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Time series (multiple points before and after program)
- During (during program)
- Retrospective (post program)
- Comparison between locales where the program operates and sites without program intervention

Description

Pre and Post workshop surveys will be conducted to examine immediate learning taking place in workshops. Surveys will be taken to determine longer-term management changes relative to workshop learning. Comparisons will be made prior to, during, and following any major study involving animals. Time series analysis will be used using public birthrate and weight data to determine what type of changes have occurred over time. Some case studies data will be utilized in assessing impacts, particularly with animal trials. Comparisons between program participants and nonparticipants (or partial participation) will be examined to determine "with" and "without" effects.

2. Data Collection Methods

- Journals
- On-Site
- Case Study
- Portfolio Reviews
- Sampling
- Telephone
- Observation
- Whole population
- Mail

Description

Extension agents and specialists will collect data from their extension clientele as services are delivered. Follow-up information will be collected through Utah State University Extension Accountability in Action Program surveys. Sampling is a method that is

widely used to collect data on those animal units that have received a particular treatment as well as those who haven't. Data collection relevant to case studies will be collected for some of the animal feeding impacts. Observation will be used in gather data on animal behavior. A review of the research and outreach portfolio will be held during the latter part of the planning period. Data from journals will be collected and compared to those data from those within this planned program area.

V(A). Planned Program (Summary)

1. Name of the Planned Program

Water and Soil Conservation and Uses

2. Brief summary about Planned Program

Soil and water conditions greatly impact the earth's ability to produce plant materials, which in turn leads to issues related to animal feeding. Animal or livestock feeding is the major use made of arable land within Utah and many of the states that surround Utah. Hence, issues related to plants and animals are truly based in the nature and composition of soil and water. Furthermore, water is extremely scarce in the semi-arid west. Most of Utah receives less than 16" of moisture each year. Water must be saved from periods of snowfall, held in reservoirs, then distributed to arable land through a complex and comprehensive network of water distribution structures, i.e., ditches and canals. Wise water use is essential and is affected by the type of soil across which the water must flow. Plant management systems are closely tied to water and soil and work is needed to better understand plant biological efficiency and abiotic stresses affecting plants. This, in turns, impact plant management systems. Weeds are also impacted by the nature of the soil and availability of water in the system. All water and soil uses are tied together in water and soil markets, only the latter of which is relatively well-developed.

The results of a state survey and forum listening sessions showed that an overwhelming 99 percent of respondents felt that addressing water supply, quality, and demand in Utah were exceptionally important or reasonably important to have in the Extension Plan of Work. Additionally, 98 percent of respondents felt conserving and enhancing the efficient use of water in agricultural, 97 percent in residential settings, and 95 percent in commercial/business settings were important to the Extension plan of work.
Soil identification and conservation were rated as exceptionally important or reasonably important by 88 percent of survey respondents. Ninety-three percent felt that helping homeowners, farmers, ranchers, and government agencies manage natural resources are areas for program and research.
The Water and Soil Conservation Program responds to these and other water and soil matters through the research and expertise of USU Experiment Station faculty, Extension Specialists, and Extension Agents. All of these professionals educate their respective target audiences. For experiment station faculty their audiences are geared primarily towards extension specialists and other scientists; the specialists' audiences include peers, county agents, federal and state organizations, producer groups, and the general public. County agents work cooperatively with federal, state, and local governments, citizen groups, and the public to address soils and water issues in their areas.

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

- 101 10% Appraisal of Soil Resources
- 102 20% Soil, Plant, Water, Nutrient Relationships
- 103 5% Management of Saline and Sodic Soils and Salinity
- 104 5% Protect Soil from Harmful Effects of Natural Elements
- 111 20% Conservation and Efficient Use of Water
- 112 10% Watershed Protection and Management
- 203 10% Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 10% Plant Management Systems
- 213 5% Weeds Affecting Plants
- 605 5% Natural Resource and Environmental Economics

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

1. Situation and priorities

Historically, development in the West generally originated along flowing rivers and streams as the rest of the land was considered too dry in most places for crop production. Extensive periods of drought are often followed by periods of plentiful rain and snow fall. Utah's watersheds are the mountains and the winter snows provide an annual cycle to refill the groundwater and storage facilities. Management of forest lands impacts the yield of the watersheds and must be part of the plans for future water resources.
The major water user in the State of Utah is irrigated agriculture and that also is most pronounced along side rivers and streams. As urban pressures increase for open space, water must often be taken from agriculture to meet demands. Secondary water systems for use outside rather than using culinary water for irrigation of yards and lawns or small acreage areas need to be designed and developed. Animal owners need to be educated on preventing contamination of water. Furthermore, given the limited water and good soil, it seems wise to consider the very nature of plant, soil, and water relationships in this semi-arid environment. Watershed maintenance and protection become a high priority in water-short areas. Priorities are given to the identification of soil, water, and plant relationships. Conservation becomes a priority under these tenuous circumstances.
Soil is a basic resource and much of plant and animal production is dependent on fertile soils being used for appropriate plant growth. It is essential that this basic resource is conserved. As urbanization takes some areas of excellent soil out of production there is a need to improve other lesser quality soils and bring them into production.

2. Scope of the Program

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

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

1. Assumptions made for the Program

1. Water and soil are critical elements in Utah.
2. Water will continue to be relatively scarce throughout critical production agriculture areas and general expanding urban areas.
3. Soils are an integral part of the food production system equation and more pressure will continue to be placed on marginal soils as urban influence expands.
4. Water conservation will continue as a necessary part of life for those in the West where water often becomes the limiting development factor.
5. Plant production, including weeds, are controlled by soil type and water quantity and quality.
6. Economics drive much of the use of soil and water and it is this fundamental relationship that becomes so important for the West. Markets for the purchase and sale of land are well-established, but water markets are less accepted and less common.
7. There will be increasing pressure on water quality, both for agricultural, residential, and commercial purposes.
8. Education and science based information are essential for coordination.
9. Extension is needed for a key role of facilitation and education.
10. Knowledge can be increased for soil types, fertility, management and conservation by agricultural producers, home owners, small acreage owners and the general public.
11. Improved knowledge will lead to improved use and conservation.
12. To obtain and implement some improvements, laws / regulations may be required.
13. Management of forest lands impacts the yield of the watersheds and must be part of the plans for future water resources.
14. Much progress has been made on reducing contamination of water with animal waste but problems still exist and continued education is needed along with resolution for specific problems.
15. Irrigation is essential for most agricultural production and urban development in Utah.

2. Ultimate goal(s) of this Program

1. Better identify soil, plant, water, and nutrient relationships.
2. Develop conservation and efficient water-use systems for both urban and agricultural settings.
3. Protect and manage watersheds.
4. Enhance the quantity and quality of water available for use in Utah.
5. Improved soil management, conservation and quality.

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
2008	8.0	0.0	3.3	0.0
2009	8.0	0.0	3.3	0.0
2010	8.0	0.0	3.3	0.0
2011	8.0	0.0	3.3	0.0
2012	8.0	0.0	3.3	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Experiment station faculty will:
1. Conduct experiments and develop theories that can be used to enhance water efficiencies for agronomic areas and urban areas.
2. Conduct experiments and develop theories that can be used to develop a safer, more reliable supply of water for agricultural and urban consumption.
3. Publish studies related to these two areas of concern.
4. Conduct workshops and meetings to educate the "educators" concerning these issues.
Extension will outreach and partner with agricultural producers and the public to provide educational training, problem solving, and in-depth applied information on:
1. Animal Waste Management
2. Alternative methods of dealing with animal waste such as composting or digestion, especially for those animal owners with small acreages.
3. Partnering to facilitate rehabilitation of degraded watersheds and to enhance the management and water yield of specific watersheds.
4. Protecting and managing watersheds and water resources.
5. Preserve reservoirs, aquifers and other waters.
6. Conserve, manage and enhance efficient water use by agricultural, residential, commercial, and business users.
7. Derive efficient irrigation strategies and technologies.
8. Implement water-wise landscaping practices, including xeriscape use.
9. Initiate landscape water auditing.
10. Evaluate and promote plants that require less water and are drought tolerant.
11. Educate youth and adults on their role in preserving and enhancing water quality.
12. Monitor, identify problem waters, and facilitate improvement of quality through partnering efforts.
13. Enhance quality, capture, and use of storm-water.
14. Facilitate knowledge, methods, and use of gray-water.
15. Demonstrate potential of new technology for improving quality or reclaiming water.
16. Expand the knowledge of soil types and selection of appropriate plants for various types of soils, along with the amount of water available.
17. Identify areas of current or potential soil loss or reduced soil fertility and partner with other agencies to reduce and control these problems.
18. Educate producers on the important interactions of soil and irrigation as well as soil and plant type or variety, especially with respect to soil salinity.
19. Provide information on soil nutrient deficiencies and cost effective soil quality and fertility improvements.
20. Continue demonstration projects – salt levels, soil types, alkalinity, non-traditional soil fertility amendments, fertilizer formulation efficacy, organic matter use and management.

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

Extension	
Direct Methods	**Indirect Methods**
• One-on-One Intervention • Workshop • Group Discussion • Other 1 (Conferences) • Demonstrations • Education Class	• Other 1 (Satellite Broadcasts) • Web sites • Newsletters • Public Service Announcement

3. Description of targeted audience

The target audience is extension agriculture and horticulture agents, agricultural producers, home and garden owners, small acreage owners, professional landscape managers, the general public, elected officials, federal and state water and soil management agencies.

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
2008	6720	2589	10200	3930
2009	6720	2589	10200	3930
2010	6720	2589	10200	3930
2011	6720	2589	10200	3930
2012	6720	2589	10200	3930

2. (Standard Research Target) Number of Patents

Expected Patents

2008 :0 **2009 :**0 **2010 :** 0 **2011 :** 1 **2012 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target
2008	50	0
2009	52	0
2010	52	0
2011	54	0
2012	54	0

V(H). State Defined Outputs

1. Output Target

- Number of peer-reviewed journal articles and books extensively peer reviewed.

2008 :40 **2009 :**40 **2010 :** 42 **2011 :**42 **2012 :**42

- Number of intermediate publications and presentations (i.e., refereed proceedings).

2008 :3 **2009 :**3 **2010 :** 4 **2011 :**4 **2012 :**4

- Level of contract/grant funding

2008 :50000 **2009 :**75000 **2010 :** 75000 **2011 :**100000 **2012 :**100000

- Number of graduate students or post-doctorate's trained

2008 :2 **2009 :**3 **2010 :** 3 **2011 :**4 **2012 :**4

- Number of undergraduate students involved in research

2008 :2 **2009 :**3 **2010 :** 3 **2011 :**3 **2012 :**3

- Number of theses/dissertations completed

2008 :2 **2009 :**2 **2010 :** 3 **2011 :**3 **2012 :**3

V(I). State Defined Outcome

1. Outcome Target

Number of clients (agricultural producers, home owners, small acreage owners and the general; public) increasing their knowledge of soil and/or water conservation.

2. Outcome Type : Change in Knowledge Outcome Measure

2008 :2016 **2009 :** 2016 **2010 :** 2016 **2011 :**2016 **2012 :** 2016

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 605 - Natural Resource and Environmental Economics

1. Outcome Target

Number of clients (agricultural producers, home owners, small acreage owners and the general public) implementing soil

and/or water conservation practices.)

2. Outcome Type : Change in Action Outcome Measure

2008 : 1008	**2009 :** 1008	**2010 :** 1008	**2011 :** 1008	**2012 :** 1008

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 605 - Natural Resource and Environmental Economics

1. Outcome Target

Decrease the percent of assessed impaired miles of rivers and streams below a given percentage.

2. Outcome Type : Change in Condition Outcome Measure

2008 : 26	**2009 :** 26	**2010 :** 26	**2011 :** 26	**2012 :** 26

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 605 - Natural Resource and Environmental Economics

1. Outcome Target

Decrease the percent of assessed impaired acres of lakes, ponds, and reservoirs below a certain percentage.

2. Outcome Type : Change in Condition Outcome Measure

2008 : 30	**2009 :** 30	**2010 :** 30	**2011 :** 30	**2012 :** 30

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 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
- Government Regulations
- Populations changes (immigration,new cultural groupings,etc.)
- Economy
- Competing Programatic Challenges
- Appropriations changes
- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)

Description

Natural disasters are particularly relevant to this planned program area. Changes within the economy (both nationally and regionally) could heighten the demand for water or change the supply of water or both. Appropriations changes, particularly if the political climate changes so that additional water storage dams were built, would have a substantial impact on the planned program. Government regulations, say those which further restrict alternative land uses, would most certainly impact this planned program area. Competing public policies and priorities can have a detrimental or positive effect on the current state of water and soil in the West. This is such a large issue that virtually any change in culture, population, competing programmatic challenges, etc. would have a potential impact on water and soil conservation and uses.

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

1. Evaluation Studies Planned

- Before-After (before and after program)
- Comparison between locales where the program operates and sites without program intervention
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Time series (multiple points before and after program)
- Retrospective (post program)
- After Only (post program)
- Case Study
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- During (during program)

Description

Data will be collected during the study period involving soil, water, and nutrient relationships, as well as other means of data collection. Comparisons with other situations (existing conditions) will be made for most of the water conservation approaches. A case study involving water demand for the Salt Lake Valley will be evaluated using economic models of efficiency. Pre- and post-workshop surveys to examine immediate learning taking place in workshops. Surveys to determine longer-term management changes relative to workshop learning. The landscape water audit recipients are evaluated in terms of their water use and savings by looking at their water billing data and comparing it to comparable control populations. Large water use workshop participants will be surveyed to see how they irrigated before the workshop and how they intend to irrigate afterwards.

2. Data Collection Methods

- Mail
- Whole population
- Telephone
- Observation
- Sampling
- Journals
- Case Study

Description

Data collection methods will include selective sampling to determine the differences in water-plant uses, while a case study approach will be taken with some specific issues (water conservation by a town or portion of a town) while considering the economic consequences of such actions. Many methods of conservation have been identified and data will be gathered from journals as appropriate to the study. Extension Agents and Specialists will collect data from their extension clientele as services are delivered. Follow-up information will be collected through Utah State University Extension Accountability in Action Program surveys and program specific surveys.