V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	0%		5%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		15%	
202	Plant Genetic Resources	0%		10%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		5%	
205	Plant Management Systems	48%		5%	
211	Insects, Mites, and Other Arthropods Affecting Plants	8%		2%	
213	Weeds Affecting Plants	4%		5%	
215	Biological Control of Pests Affecting Plants	0%		5%	
216	Integrated Pest Management Systems	8%		5%	
301	Reproductive Performance of Animals	0%		10%	
302	Nutrient Utilization in Animals	0%		5%	
304	Animal Genome	0%		20%	
307	Animal Management Systems	32%		5%	
603	Market Economics	0%		3%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	44.0	0.0	22.0	0.0
Actual Paid	30.3	0.0	22.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
484124	0	1187626	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
484124	0	1190300	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	5338670	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

1. Conducted research experiments with livestock and plants and plant material.
2. Published studies and make presentations related to plant propagation and livestock reproduction and actual plant and livestock production.
3. Conducted workshops and meetings to educate local, state, and regional stakeholders concerning progress in producing livestock and plants that are economically viable and environmentally friendly.
4. Provided new methods of livestock pest control and disease prevention.
5. Released new plant varieties relative to this program area under plant variety protection (PVP) status.
6. Expanded use of Integrated Pest Management (IPM).
7. Provided 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.
8. Coordinated efforts with other states and the Western Region Pest Management Center (WRPMC).
9. Enhanced the USU Master and 4-H Junior Master Gardener Programs.
10. Utilized multiple demonstrations/applied research plots to manage weeds in agronomic crops with results reported at field days, workshops, or annual meetings.
11. Conducted research experiments and developed theories that can be used to enhance plant and animal productive efficiencies through the use of genomics.
13. Conducted workshops and meetings for other scientists involved in this area of research.
14. Developed applications for the research on plant and animal genomics to directly benefit producers, youths, and other scientists.
15. Conducted market tests to determine the price premium associated with alternative production and marketing programs.
16. Built models to quantify the impacts associated with international trade.
17. Developed risk reduction models for agricultural producers.
18. Analyzed firm-level decisions to identify specific changes that might be made on individual farms and ranches that would enhance net returns.
19. Provided 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, 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, identification of business opportunities, and youth entrepreneurship programs.

2. Brief description of the target audience

The target audience for this work are other scientists, agricultural producers, landscapers, the general public, home owners, green industry officials, professional landscape managers, turfgrass sod producers, local and regional livestock (primarily beef, dairy and equine) producers, small acreage owners, veterinarians, USDA, other private businesses, and government entities that conduct work in this area.

3. How was eXtension used?

eXtension was used in 10% of UCES programs.

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	15834	641368	8003	324167

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

Patent Applications Submitted

Year: 2014

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	58	58

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Patent Applications Submitted
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of Peer Reviewed Publications
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of clientele who gain knowledge about improved human, plant, and animal management systems.
2	Number of clientele who implement improved human, plant, and animal management systems.

Outcome #1

1. Outcome Measures

Number of clientele who gain knowledge about improved human, plant, and animal management systems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	36884

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Farmers and ranchers facing limitations due to illness, injury, or disability often find it difficult to remain in agriculture. This program provides education, and technical assistance on modifications and assistive technology devices to help them remain in agriculture.

What has been done
AgrAbility of Utah is currently assisting a total of 72 clients and their families that are facing limitations due to injury, illness, or disability. Through on-site farm and home assessments, AgrAbility of Utah develops individualized plans that help producers and their families facing a disability remain in agriculture. These plans often involve working with other agencies/organizations (e.g., Vocational Rehabilitation) to help them obtain funding for needed assistive technology.

Results
To date, AgrAbility of Utah, has helped over 230 agriculturalists and their family members remain in agriculture.

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms

202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
304	Animal Genome
307	Animal Management Systems
603	Market Economics

Outcome #2

1. Outcome Measures

Number of clientele who implement improved human, plant, and animal management systems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	15322

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
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: reproduction rates, rates of gain, health, and environmental concerns.

What has been done

A significant portion of the state's and region's agricultural complex. We have continued work in (a) 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) have expanded the use of "native" landscapes in urban settings. We have developed plant materials that are ideally suited to the Intermountain region's climate through breeding, management, and genetic assessments and programs. We continue our work in genomics, as well as in the economic analyses critical to the adoption of various production and conservation practices, including both local markets and international trade.

Results

Production gains of commodities through research and outreach have increased milk, alfalfa, barley and wheat production between 2% and 5%. Significant advances have been made in identifying diseases, as well as economically important traits of livestock through our genomics work. Work has advanced in the identification of diseases of animals and in medical use of animals as models for humans.

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
304	Animal Genome
307	Animal Management Systems
603	Market Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

There are many factors influencing our ability to follow through on the goals set herein. Economic conditions are still somewhat subdued. Stable budgets have occurred as the state's economy continues to adapt to new world economic realities. County-level budgets remain the same over the short term. Competing public priorities (primarily social programs, public health, and particularly prisons) have impacted budgets to CES and UAES. The composition of the state's population continues to change, with a higher immigration and in-migration of Individuals outside traditional groups. This has brought about evolving goals and program areas, particularly with respect to Hispanic and displaced international populations. Technology has changed ways previously thought not possible, with much more being done online in interactive settings. Government regulations and public policy changes have continued to have an significant impact on how many of our stated goals can be achieved. In short, external factors have had a more significant impact on our ability to deliver science-based information than any time in the recent past.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Utah Cooperative Extension System (UCES) programs are viewed as being successful by the vast majority of program participants. Utah Agricultural Experiment Station (UAES) programs are typically not viewed as being separate from UCES programs. In one sense, this is a good result as the public feels they can come to the College of Agriculture Applied Sciences to get answers to their questions without being concerned about which unit the answer will come from. The primary difficulty with the lack of separation in identities is that it is sometimes difficult getting the legislature to understand which primary function is associated with each unit as each unit is funded separately. Each activity is typically evaluated using one or more of the various means identified above. This information is used to strengthen both the UCES and UAES programs. Specific evaluation results are associated with each activity and it is not possible summarize the results of each of those activities in this reporting space.

Key Items of Evaluation

UCES programs, and UAES programs by association, are viewed as successful by more than 90% of program participants. Between 3% and 5% of attendees are dissatisfied on the

average, with the remaining portion being neutral. Of course this percentage varies according to each specific planned program. As an example, more than 93% of the participants in the local food marketing program have adopted practices consistent with sustainable agricultural programs and have improved profits by 8%. As another example, more than 90% of the participants in beef improvement programs have adopted critical additional management skills have improved production and profits by more than 2%. The adoption of recommendations made by UCES and UAES scientists by fruit tree producers have increased fruit production by more than 3% and have reduced pesticide applications by approximately 12%. Improvements in dairy health programs have reduced mastitis on producers' herds by more than 10%, with improved identification practices, processes or tests being adopted by more than 55% of dairy herd producers.