V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

☑ 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
102	Soil, Plant, Water, Nutrient Relationships	5%		4%	
104	Protect Soil from Harmful Effects of Natural Elements	35%		0%	
132	Weather and Climate	25%		14%	
135	Aquatic and Terrestrial Wildlife	0%		5%	
202	Plant Genetic Resources	0%		63%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		10%	
303	Genetic Improvement of Animals	0%		4%	
605	Natural Resource and Environmental Economics	25%		0%	
608	Community Resource Planning and Development	10%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	4.2	0.0	4.1	0.0
Actual Paid Professional	2.3	0.0	4.7	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**
257900	0	488195	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
257900	0	488195	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
221348	0	2191171	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

In 2014 Extension programming relevant to climate change will be included in the ANR Food Security Program assisting farmers and landowners in adapting to the impacts of extreme weather fluctuations on crop and livestock production by reducing risk.

Faculty participate in the associated multistate research committees, NC7, NC1179 and NC1190.

2. Brief description of the target audience

Targeted audiences are those with whom research and education can make a difference, and who can benefit from and apply research-based information, such as those whose production systems are affected by climate change, as well as those who consult or influence the decision-makers of these growers and producers. Extension programming efforts focused on producers who had excessively wet and cold soils in the spring, thereby delaying or preventing corn and soybean planting and those who experienced drought. These growing conditions impacted the quality of harvested grain, which in turn, had consequences related to feedstuffs.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	34334	43500	0	0

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	10	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of current year citations of climate related publications.

Year	Actual
2013	1

Output #2

Output Measure

- Number of current year climate relevant educational programs.

Year	Actual
2013	8

Output #3

Output Measure

- Number of acres under recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, wetlands.
  Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Of the _____ number of participants, the number that adopt recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, wetlands.

Year	Actual
2013	2625

Output #5

Output Measure

- Number of producers and landowners who adopt BMPs after severe flooding.
  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 acres under recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, & wetlands.
2	Of the _____ number of participants, the number that adopt recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, & wetlands.
3	Number of producers and landowners who adopt BMPs after severe flooding.
4	Number of producers indicating adoption of recommended practices because of drought conditions.

Outcome #1

1. **Outcome Measures**

Number of acres under recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, & wetlands.

Not Reporting on this Outcome Measure

Outcome #2

1. **Outcome Measures**

Of the _____ number of participants, the number that adopt recommended adaptation strategies for production agriculture and natural resources management, including invasive species, pest management, pollutant loads, & wetlands.

Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

Number of producers and landowners who adopt BMPs after severe flooding.

Not Reporting on this Outcome Measure

Outcome #4

1. **Outcome Measures**

Number of producers indicating adoption of recommended practices because of drought conditions.

2. **Associated Institution Types**

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2625

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Drought conditions during the growing season ended up reducing corn yields by 25% across Iowa when compared to expected trend-line corn yields. Iowa has 13.7 million acres of corn each year, and this loss could represent reduced production of about six hundred million bushels of corn, reducing Iowa farm income by billions of dollars. Some counties approached a 55% reduction in corn yields compared to their 10 year average. Forage production fell similarly, reducing the feedstuffs available for cattle operations across Iowa.

What has been done
Iowa State University Extension responded by holding 65 "Drought Meetings" across Iowa during the months of June, July and August, which attracted 2625 attendees. Over 750 cornstalk samples were tested for potentially toxic levels of nitrates. Drought years historically cause problems well past the growing season, so 22 fall and winter beef meetings were held attracting 324 cattle producers. Drought management fact sheets were developed and shared, a central drought web page was maintained, and useful information was shared statewide through the media.

Results
75% of participants from fall and winter beef meetings increased their understanding of drought related feedstuff issues. Three different surveys showed that between 66 to 80 percent of attendees were monitoring feeds for toxic nitrate levels, based on our recommendation, and an average of 43% made ration changes to insure adequate nutrition without toxicity risks for their livestock. As a result of educational efforts, 90% of one surveyed audience and 48% of another conducted substantial alfatoxin monitoring of their grain to ensure safety of grain in the supply chain. 90% of service providers surveyed shared ISU information with their clients. 76% of a surveyed group said they were better prepared to work with their crop insurance adjustors in the wake of substantial yield losses from drought. 81-87% of producers surveyed in different areas of Iowa indicated that they scouted for excessive spider mite populations in their crops. On average, 43% had to treat for this pest, based on ISU recommendations. One survey showed that these respondents represented 3 million acres of crops. Yield increases average 2.5 bushels per acre when treating for this pest.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships

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

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

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76% of a surveyed group said they were better prepared to work with their crop insurance adjustors in the wake of substantial yield losses from drought. 81-87% of producers surveyed in different areas of Iowa indicated that they scouted for excessive spider mite populations in their crops. On average, 43% had to treat for this pest, based on ISU recommendations. One survey showed that these respondents represented 3 million acres of crops. Yield increases average 2.5 bushels per acre when treating for this pest.

Key Items of Evaluation

Of respondents representing 3 million acres of crops, 43% (on average) had to treat for this spider mites, based on ISU recommendations. Yield increases average 2.5 bushels per acre when treating for this pest.