

V(A). Planned Program (Summary)

Program #6

1. Name of the Planned Program

Natural Resources and Environment

2. Brief summary about Planned Program

An increasing world population is placing greater demands on our natural resources. Public concern for a quality environment has increased as agriculture has become more complex and population pressures have increased. Natural resources must be conserved and their capacity maintained or improved in order to meet the needs of future generations. The long-term viability of agriculture and forestry production is tightly linked to proper use and protection of our soil, air and water resources. Impacts of urban horticulture on the environment are significant. Extension has active work teams in:

- Sustainable landscapes
- Environmental horticulture-Landscape Water Use
- Managing agricultural and natural landscapes
- Sustaining local agriculture and the environment

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

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

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

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

● 101	10%	Appraisal of Soil Resources
● 102	10%	Soil, Plant, Water, Nutrient Relationships
● 103	10%	Management of Saline and Sodic Soils and Salinity
● 111	20%	Conservation and Efficient Use of Water
● 112	10%	Watershed Protection and Management
● 121	10%	Management of Range Resources
● 123	10%	Management and Sustainability of Forest Resources
● 132	10%	Weather and Climate
● 403	10%	Waste Disposal, Recycling, and Reuse

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

1. Situation and priorities

Development of management practices that are compatible with a high quality environment requires new methods of study that involve entire agroecosystems. Quantitative relationships between agriculture, natural resource use, and environmental quality must be defined. This will require a more thorough understanding of basic biological/ecological processes, as well as computer-aided systems management research. Continuing to use natural resources to produce agricultural, range, and forestry

products requires new multiple use strategies which are realistic in terms of biological, economic, social and environmental constraints. Transport and fate of pesticides, fertilizers, and other agricultural chemicals, as well as threatened and endangered species, biodiversity, habitat, wetlands, and water are all issues of concern. Knowledge must be developed to understand and evaluate competitive land use impacts and interactions on agricultural, range, and forest lands. This research provides the basis for developing agricultural and forestry management systems that are more compatible with conservation and environmental goals.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Colorado State is in the ideal geographic position to address irrigated agro-ecosystem level issues. Colorado has a wide diversity of water supply/management regimes that include ground water, diverse surface water management in five river systems, and various diversions of West Slope water. Faculty have an international reputation in agro-ecosystem modeling and soil carbon dynamics and associations with the NSF Long Term Ecological Research Short-Grass Prairie unit near Ault, the USDS-ARS Great Plains Systems Unit in Akron, a five-university dryland agriculture research team, the modeling group at the Natural Resources Ecology Laboratory on campus, atmospheric sciences research programs at CU and CSU, the US Geological Survey, USDA-NRCS, USDA-ERS, a strong set of dryland cropping extension agents, and the dryland crops industries. Colorado State has field research laboratories at Walsh, Rocky Ford, Ft. Collins, Cortez, Center, Orchard Mesa, Rogers Mesa, and Fruita capable of experimentation on cropping systems. State and grant funding will continue at current levels to provide facilities and support required to conduct an applied, field based research and outreach program.

2. Ultimate goal(s) of this Program

- Conduct natural resources research to develop agricultural and forestry management systems that are compatible with conservation and environmental goals and economically sustainable.
- Study the effects of climate and climate variation on plant, animal and microbial ecosystems to allow an assessment of the impacts of global change on agricultural and natural ecosystems.
- Develop and test technical, institutional, or social solutions to water quality and quantity problems in Colorado.
- Develop technologies for managing agricultural and municipal wastes.
- Provide educational programs for urbanites on horticultural practices and the environment resulting in less pollution and more efficient water use.
- Sustain local agriculture while lessening adverse impacts on the environment.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2008	15.0	0.0	14.0	0.0
2009	15.0	0.0	14.0	0.0
2010	15.0	0.0	14.0	0.0
2011	15.0	0.0	14.0	0.0
2012	15.0	0.0	14.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct workshops and educational classes for producers, landowners, and agency personnel.
- Establish demonstration plots and field days to share research and outreach results.
- Consult with individual producers and landowners to address local problems.
- Conduct basic and applied research on environmental and natural resources issues.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Workshop ● Group Discussion ● Education Class ● Demonstrations ● One-on-One Intervention ● Other 1 (Field Days) 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● Web sites ● Other 1 (Radio spots)

3. Description of targeted audience

Individual agricultural producers, landowners, commodity groups, regulatory agencies, agribusinesses, and local, state, and federal land 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	500	5000	0	0
2009	500	5000	0	0
2010	500	5000	0	0
2011	500	5000	0	0
2012	500	5000	0	0

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

Expected Patent Applications

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2008	0	0	0
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0

V(H). State Defined Outputs

1. Output Target

- Number of attendees at workshops/trainings/field days.

2008 :500 2009 :500 2010 : 500 2011 :500 2012 :500

- Amount of grant dollars garnered to support natural resources research and outreach.

2008 :25000 2009 :25000 2010 : 25000 2011 :25000 2012 :25000

- Number of technical and refereed journal articles published.

2008 :25 2009 :25 2010 : 25 2011 :25 2012 :25

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of participants in workshops/trainings/field days indicating an increase in knowledge gained.
2	Percent of participants indicating change in behavior/best practices adopted.
3	Economic impact of the change in behavior reported.

Outcome #1

1. Outcome Target

Number of participants in workshops/trainings/field days indicating an increase in knowledge gained.

2. Outcome Type : Change in Knowledge Outcome Measure

2008 :60 2009 : 60 2010 : 60 2011 :60 2012 : 60

3. Associated Institute Type(s)

{No Data Entered}

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate

Outcome #2

1. Outcome Target

Percent of participants indicating change in behavior/best practices adopted.

2. Outcome Type : Change in Action Outcome Measure

2008 :50 2009 : 50 2010 : 50 2011 :50 2012 : 50

3. Associated Institute Type(s)

{No Data Entered}

4. Associated Knowledge Area(s)

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

Outcome #3

1. Outcome Target

Economic impact of the change in behavior reported.

2. Outcome Type : Change in Condition Outcome Measure

2008 :150000 2009 : 150000 2010 : 150000 2011 :150000 2012 : 150000

3. Associated Institute Type(s)

{No Data Entered}

4. Associated Knowledge Area(s)

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

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Local, state, and federal funding changes will impact ability to conduct programs. Significant changes in regulatory environment could dramatically alter the scope and goals of both research and extension programs. This is most notable in Colorado with respect to policies affecting use of public lands and both surface and ground water. Both water quantity and water quality are critical issues to the future of agriculture in the semi-arid west.

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

1. Evaluation Studies Planned

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

Description

Regular pre-post evaluations are used. Formative evaluations are often used during programs to adjust focus and direction. Case studies are used to clearly demonstrate impact.

2. Data Collection Methods

- Case Study
- Tests
- Sampling
- Observation

Description

Pre-post tests and standard survey methods.