

V(A). Planned Program (Summary)

Program # 20

1. Name of the Planned Program

Water and Environmental Quality

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 | 0% | | 10% | |
| 104 | Protect Soil from Harmful Effects of Natural Elements | 0% | | 10% | |
| 111 | Conservation and Efficient Use of Water | 30% | | 10% | |
| 112 | Watershed Protection and Management | 30% | | 10% | |
| 132 | Weather and Climate | 0% | | 10% | |
| 133 | Pollution Prevention and Mitigation | 30% | | 10% | |
| 215 | Biological Control of Pests Affecting Plants | 0% | | 10% | |
| 315 | Animal Welfare/Well-Being and Protection | 0% | | 10% | |
| 723 | Hazards to Human Health and Safety | 10% | | 10% | |
| 803 | Sociological and Technological Change Affecting Individuals, Families, and Communities | 0% | | 10% | |
| | Total | 100% | | 100% | |

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

| Year: 2010 | Extension | | Research | |
|------------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| Plan | 1.2 | 0.0 | 6.8 | 0.0 |
| Actual | 2.0 | 0.0 | 7.1 | 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 |
| 154184 | 0 | 326970 | 0 |
| 1862 Matching | 1890 Matching | 1862 Matching | 1890 Matching |
| 154184 | 0 | 326970 | 0 |
| 1862 All Other | 1890 All Other | 1862 All Other | 1890 All Other |
| 1922 | 0 | 2114533 | 0 |

V(D). Planned Program (Activity)

1. Brief description of the Activity

The Water Resources team is made up of 10 faculty members contributing a total of 2.0 FTEs to this project. Team members generated \$301,114 in external grant support and made 2,965 direct teaching contacts. Team members produced two articles in professional and scientific journals. The Team has three major areas of focus:

- Agricultural water conservation and management
- Watershed education/management
- Pollution prevention

Activities of the Team included development and circulation of a newsletter 24 times during the reporting year; a water resources - IPM symposium held in Boise, Idaho; the 5th biennial regional water conference titled "Water and Land Use in the Pacific Northwest: Integrating Communities and Watersheds" held on November 4-6, 2009 at the Skamania Lodge in Stevenson, Washington; completion of a survey on watershed groups in the Pacific Northwest; collaboration on a number of irrigation district task forces; presentations for pesticide recertification to educate about water issues; and a variety of publications for distribution and dissemination through various media including the regional water quality website.

2. Brief description of the target audience

target audiences include farmers, irrigation industry personnel, and local, state and federal agency personnel working in irrigation-related areas, water management professionals and stakeholders, elected decision makers, school teachers, and various general audiences.

V(E). Planned Program (Outputs)

1. Standard output measures

| 2010 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---------------|------------------------|--------------------------|-----------------------|-------------------------|
| Plan | 3000 | 100000 | 200 | 1000 |
| Actual | 1076 | 19000 | 0 | 350 |

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

Patent Applications Submitted

Year: 2010
 Plan: 1
 Actual: 2

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

| 2010 | Extension | Research | Total |
|--------|-----------|----------|-------|
| Plan | 5 | 10 | |
| Actual | 0 | 10 | 10 |

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- WQ Updates

| Year | Target | Actual |
|------|--------|--------|
| 2010 | 24 | 27 |

Output #2

Output Measure

- Number of Popular press articles published

| Year | Target | Actual |
|------|--------|--------|
| 2010 | 12 | 9 |

Output #3

Output Measure

- Number of water quality workshops and seminars

| Year | Target | Actual |
|------|--------|--------|
| 2010 | 10 | 19 |

Output #4

Output Measure

- Number of professional meetings attended

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2010 | 2 | 8 |

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

| O. No. | OUTCOME NAME |
|--------|--|
| 1 | O: Improved protection of Ground Water Resource. I: Number of participants who are land owners and managers that adopt BMPs that protect groundwater. |
| 2 | O: Improved protection of surface water resource. I: Number adopting BMPs to reduce runoff of sediment and nutrients. |
| 3 | O: An increase in the number of trained graduate students prepared to enter the workforce. I: Number of M.S. and Ph.D. candidates in water and environmental quality graduate training programs. |
| 4 | O: Improve protection of water resources. I: Number of pest management and nutrient management plans written with producers. |

Outcome #1

1. Outcome Measures

O: Improved protection of Ground Water Resource.I: Number of participants who are land owners and managers that adopt BMPs that protect groundwater.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

| Year | Quantitative Target | Actual |
|-------------|----------------------------|---------------|
| 2010 | 25 | 115 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Leaching of Nitrogen fertilizer adversely impacts the quality of groundwater in Idaho.

What has been done

Extension-led programs have promoted better timing of application and better placement of nitrogen of nitrogen fertilizers in soils. The combination of reduced nitrogen fertilizer use and improved efficiency of the fertilizer that is applied has reduced the introduction of nitrogen into both surface and groundwater in many parts of the Pacific Northwest.

Results

Nitrogen use efficiency in crop production has increased by 6% in the last 10 years. This results in less aquifer contamination.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|----------------|-------------------------------------|
| 112 | Watershed Protection and Management |
| 133 | Pollution Prevention and Mitigation |
| 723 | Hazards to Human Health and Safety |

Outcome #2

1. Outcome Measures

O: Improved protection of surface water resource. I: Number adopting BMPs to reduce runoff of sediment and nutrients.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

| Year | Quantitative Target | Actual |
|-------------|----------------------------|---------------|
| 2010 | 50 | 300 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Nutrient runoff contributes to surface water eutrophication

What has been done

Even though P fertilizer application rates in the region have remained stable over the last 10 years, because of improved fertilizer placement technologies, additions of P to surface waters via runoff from croplands have actually declined by more than 10 percent.

Results

Additions of P to surface waters via runoff from croplands have actually declined by more than 10 percent.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|----------------|---|
| 102 | Soil, Plant, Water, Nutrient Relationships |
| 104 | Protect Soil from Harmful Effects of Natural Elements |
| 111 | Conservation and Efficient Use of Water |
| 112 | Watershed Protection and Management |
| 133 | Pollution Prevention and Mitigation |
| 215 | Biological Control of Pests Affecting Plants |

Outcome #3

1. Outcome Measures

O: An increase in the number of trained graduate students prepared to enter the workforce. I: Number of M.S. and Ph.D. candidates in water and environmental quality graduate training programs.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

| Year | Quantitative Target | Actual |
|------|---------------------|--------|
| 2010 | 2 | 2 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---------|--|
| 102 | Soil, Plant, Water, Nutrient Relationships |
| 104 | Protect Soil from Harmful Effects of Natural Elements |
| 111 | Conservation and Efficient Use of Water |
| 112 | Watershed Protection and Management |
| 132 | Weather and Climate |
| 133 | Pollution Prevention and Mitigation |
| 215 | Biological Control of Pests Affecting Plants |
| 315 | Animal Welfare/Well-Being and Protection |
| 723 | Hazards to Human Health and Safety |
| 803 | Sociological and Technological Change Affecting Individuals, Families, and Communities |

Outcome #4

1. Outcome Measures

O: Improve protection of water resources. I: Number of pest management and nutrient management plans written with producers.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

| Year | Quantitative Target | Actual |
|------|---------------------|--------|
| 2010 | 150 | 55 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

NRCS can provide cost-share money to producers for writing pest management plans

What has been done

Extension participates on the NRCS State Technical Committee in order to get pest management planning entered into the Conservation Planning process. NRCS field staff can then enroll producers in IPM planning. All pesticides selected are evaluated using Win-PST.

Results

Growers continue to scout fields and plant green manure crops as two major pest management practices. Also, growers are encouraged to select pesticides that are less risky to the water resources.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---------|--|
| 102 | Soil, Plant, Water, Nutrient Relationships |
| 112 | Watershed Protection and Management |
| 133 | Pollution Prevention and Mitigation |
| 215 | Biological Control of Pests Affecting Plants |

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Appropriations changes
- Government Regulations

Brief Explanation

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

1. Evaluation Studies Planned

- Retrospective (post program)
- Time series (multiple points before and after program)
- Comparisons between program participants (individuals, group, organizations) and non-participants

Evaluation Results

Extension conducted a survey to assess the status of watershed groups in the PNW. In addition to defining Pacific Northwest watershed group structure and function, the survey was designed to measure PNW watershed group needs. Group needs were defined in two ways within the survey: 1) by watershed group's access to and use of technical watershed information, and 2) through an open-ended question, specifically asking survey respondents to list group needs.

Key Items of Evaluation

Conclusions based on the watershed group survey include the following:

1. The majority of PNW watershed groups had access to adequate amounts of technical watershed information and they willingly utilized this information in watershed planning and to accomplish watershed group missions and goals.
2. Watershed groups rely on agency personnel to provide necessary technical information and prefer to receive information in this manner.
3. The major, unmet needs of PNW watershed groups are sustainable, base funding, increased and varied participation, and specific baseline data for watersheds in which they work.