

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Ag: High Rainfall and Irrigated Cropping Systems

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	16%			
111	Conservation and Efficient Use of Water	6%			
112	Watershed Protection and Management	5%			
204	Plant Product Quality and Utility (Preharvest)	15%			
205	Plant Management Systems	20%			
216	Integrated Pest Management Systems	20%			
403	Waste Disposal, Recycling, and Reuse	3%			
405	Drainage and Irrigation Systems and Facilities	6%			
502	New and Improved Food Products	4%			
603	Market Economics	5%			
	Total	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	61.8	0.0	0.0	0.0
Actual	35.9	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
479482	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
479482	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1564106	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

A combination of activities (methods listed below) that are designed to meet the needs and opportunities of the communities of interest will be built upon the research base of the university.

2. Brief description of the target audience

1. Crop producers in this group of crops generally produced in the high rain fall or irrigated production system in Oregon
 2. Agricultural infrastructure, suppliers and service providers
 3. State and federal agencies managing both regulatory and incentive based programs

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	126000	400000	1000	1000
Actual	122720	375293	1042	2093

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

Patent Applications Submitted

Year: 2010
 Plan: 49
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
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Plan	0	0	
Actual	47	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Educational Classes Planned

Year	Target	Actual
2010	493	537

Output #2

Output Measure

- Number of Workshops Planned

Year	Target	Actual
2010	493	570

Output #3

Output Measure

- Number of Group Discussions Planned

Year	Target	Actual
2010	246	284

Output #4

Output Measure

- Number of Demonstrations Planned

Year	Target	Actual
2010	123	155

Output #5

Output Measure

- Number of One-On-One Interventions Planned

Year	Target	Actual
2010	2052	2284

Output #6

Output Measure

- Web Sites Maintained (Planned)

Year	Target	Actual
2010	6	12

Output #7

Output Measure

- Number of Newspaper Articles Planned

Year	Target	Actual
2010	164	173

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Thousands of acres of improved varieties planted
2	Thousands of acres of new crops planted
3	Economic impact of new varieties planted (Million \$)
4	Economic value of new crops planted (Million \$)
5	Improvement in air, soil and water parameters resulting from application of new technologies (% Improvement)
6	Sales value (Million \$) of new value added products
7	Value of information received by growers (Million \$; reported value based on survey results)

Outcome #1

1. Outcome Measures

Thousands of acres of improved varieties planted

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	6	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Potatoes are the third-most-consumed food crop in the world after rice and wheat, and the #1 vegetable in the U.S.

What has been done

In partnership with the USDA and universities in Idaho and Washington, OSU is developing new varieties of potatoes that meet the needs of growers, processors, retailers and consumers. The program aims to produce potatoes that resist pests and diseases, are attractive, have higher yields, are more nutritious, and handle processing better. So far that effort has resulted in the release of more than 30 new varieties. With the help of Extension faculty's educational efforts, about a third of Oregon's potato acreage is planted with varieties jointly developed by OSU and its collaborators.

Results

Varieties recently released by the tri-state program are produced on more than 140,000 acres in the Northwest, with value to growers estimated at about \$505 million. In Oregon, farmers sold \$173 million of potatoes in 2010, making them the state's sixth-largest crop and Oregon's leading vegetable crop in terms of gross farm gate sales. Sales of processed potatoes from the tri-state program total at least \$300 million a year in Oregon.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water

112	Watershed Protection and Management
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
502	New and Improved Food Products
603	Market Economics

Outcome #2

1. Outcome Measures

Thousands of acres of new crops planted

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	10	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The alternative crops program is an effort to identify profitable alternative crops that can be successfully integrated into traditional wheat/fallow production. In 2005, an organic wheat production study was initiated. The organic wheat market continues to experience growth and premium prices. The market premiums paid for organic wheat make it an attractive alternative to conventional production if certain obstacles such as fertility requirements and effective weed control can be determined.

What has been done

Research looking at organic wheat as an alternative crop began in 2005. The current study is being conducted as a cooperative effort with Extension and Ag Reserach Center in Pendleton. The research is studying in-crop weed control options, green manure cover crops, in combination with a 3 year rotational study. The current study was completed in 2010. The research trial's preliminary results were presented during the Weed and Crop Tour. Additional results were also presented at the Columbia Basin Cereal Seminar. In 2010, the study also added Washington State University as a partner, and incorporated the Nelson site into a two state organic cropping systems research study. Farm visits and regular communication is helping early adopters

overcome some significant challenges.

Results

Adoption of organic wheat production still faces many challenges; however, growers rely on and use information from the organic research trials, resulting in a production of about 3,500 acres within the region.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
502	New and Improved Food Products
603	Market Economics

Outcome #3

1. Outcome Measures

Economic impact of new varieties planted (Million \$)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	1	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Oregon hazelnuts are one of Oregon's top agricultural commodities and a crop that OSU Extension specialists and OSU College of Agricultural Science plant breeders have supported for

many years via a series of research and outreach education programs. Oregon grows 99 percent of the U.S. hazelnut crop.

What has been done

Over the past three decades Extension specialists and field faculty, working closely with growers, have concentrated research and education efforts on helping the Oregon hazelnut industry cope with the fungal disease eastern filbert blight (EFB), which is deadly to trees lacking EFB resistance.

OSU CAS plant breeders introduced the first EFB resistant hazelnut tree varieties in 2005 and additional resistant varieties were released in 2008-09. As Oregon hazelnut growers begin planting the new varieties now available, Extension educators continue to work alongside researchers doing field testing of new crop management strategies, reporting results and making recommendations to growers. In addition to assisting with introduction of new EFB resistant hazelnut trees, Extension specialists and researchers have also helped growers reduce reliance on chemical sprays for pest control.

Results

In 2010 the state's hazelnuts production climbed to 47,000 tons, 47 percent larger than the previous year. The value of the crop was \$74.7 million, increasing 44 percent from 2009.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
502	New and Improved Food Products
603	Market Economics

Outcome #4

1. Outcome Measures

Economic value of new crops planted (Million \$)

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Improvement in air, soil and water parameters resulting from application of new technologies (% Improvement)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	8	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Current irrigation management in containerized nursery production results in the over-application of water. This increases the leaching fraction resulting in increased leaching of nutrients and pesticides. These practices result in water misuse and threaten water quality.

What has been done

Growers were educated on current irrigation scheduling research and practices through workshops, seminars, and an article published in the industry press. In addition, research was conducted to determine impact of irrigation schedules on crop growth and water use efficiency. A technique was also developed to monitor water use and schedule irrigation on a gravimetric basis. This method had the added benefit of providing insight into diurnal water use throughout the season.

Results

Irrigation scheduling by leaching fraction in container nurseries in the Willamette Valley and in the Midwest has reduced water use by >30%. Although still being evaluated for full impact, the gravimetric approach could decrease water use by a minimum of 100,000 gal per growing acre per year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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- 102 Soil, Plant, Water, Nutrient Relationships
- 111 Conservation and Efficient Use of Water
- 112 Watershed Protection and Management
- 403 Waste Disposal, Recycling, and Reuse
- 405 Drainage and Irrigation Systems and Facilities

Outcome #6

1. Outcome Measures

Sales value (Million \$) of new value added products

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	10	18

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The process of making wine is complex and OSU is helping improve the process from field to market. The Oregon Wine Research Institute focuses industry collaboration in research and Extension.

What has been done

OSU vine experts have found that using a cover crop in a mature vineyard produces higher-quality grapes and a better bottom line. Grapes from vines with grass alleyways scored the highest in terms of phenolics, which affect how wine feels in the mouth, and anthocyanins, which are pigments that produce a more intense red - a desirable trait in Oregon's famous Pinot noir. That increased quality translates into higher prices for Oregon grapes and for the wine made from them.

Results

For Oregon's 835 vineyards, that bottom line was nearly \$77 million in sales of grapes in 2010. That's in addition to the \$202 million in cases that the state's 395 wineries sold.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
216	Integrated Pest Management Systems
502	New and Improved Food Products
603	Market Economics

Outcome #7

1. Outcome Measures

Value of information received by growers (Million \$; reported value based on survey results)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	10	31

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Spotted wing drosophila (SWD), a potentially devastating threat to Oregon's \$100 million berry crop industry, was detected for the first time in the Willamette Valley in 2009. The small fly is native to southeast Asia and capable of despoiling tons of unharvested fruit in a short time. The majority of U.S. small fruits production occurs in the Pacific Coast states.

What has been done

CAS researchers and Extension specialists responded quickly, organizing a Pacific Northwest region-wide team of entomologists and berry crops specialists to battle the problem. In 2010, the team tested alternative methods for effective control of SWD and conducted grower education programs to help producers identify the pest in fruit, berry, and grape crops.

Results

In the absence of spotted wing drosophila detection and control measures, economists project a potential loss of \$31.4 million per year to Oregon small and tree fruit producers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
204	Plant Product Quality and Utility (Preharvest)
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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 and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- Case Study
- Comparisons between program participants (individuals, group, organizations) and non-participants

Evaluation Results

Potato varieties recently released by the tri-state research and Extension program are produced on more than 140,000 acres in the Northwest, with value to growers estimated at about \$505 million.

In 2010 Oregon's hazelnuts production climbed to 47,000 tons, 47 percent larger than the previous year. The value of the crop was \$74.7 million, increasing 44 percent from 2009.

Irrigation scheduling by leaching fraction in container nurseries in the Willamette Valley has reduced water use by >30%.

Adoption of organic wheat production still faces many challenges; however, growers rely on and use information from the organic research trials, resulting in a production of about 3,500 acres within the region.

Key Items of Evaluation