

**V(A). Planned Program (Summary)**

**Program # 4**

**1. Name of the Planned Program**

Global Food Security and Hunger

**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	10%		2%	
111	Conservation and Efficient Use of Water	2%		2%	
201	Plant Genome, Genetics, and Genetic Mechanisms	12%		21%	
202	Plant Genetic Resources	5%		8%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	6%		9%	
204	Plant Product Quality and Utility (Preharvest)	6%		5%	
205	Plant Management Systems	17%		4%	
206	Basic Plant Biology	8%		17%	
211	Insects, Mites, and Other Arthropods Affecting Plants	3%		3%	
212	Pathogens and Nematodes Affecting Plants	3%		3%	
301	Reproductive Performance of Animals	2%		4%	
302	Nutrient Utilization in Animals	3%		2%	
304	Animal Genome	1%		3%	
307	Animal Management Systems	5%		0%	
501	New and Improved Food Processing Technologies	1%		3%	
502	New and Improved Food Products	3%		4%	
601	Economics of Agricultural Production and Farm Management	6%		3%	
603	Market Economics	2%		2%	
604	Marketing and Distribution Practices	2%		1%	
723	Hazards to Human Health and Safety	3%		4%	
	<b>Total</b>	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	100.0	0.0	145.0	0.0
Actual	101.5	0.0	131.9	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
2145669	0	1184591	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2145669	0	1184591	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
29436388	0	77374668	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

UC ANR's integrated research and extension programs conducted research projects, workshops, education classes and demonstrations, as well as one-on-one interventions. In addition, the programs used PSAs, newsletters, mass media, web sites and collaborations with other agencies and organizations to create and deliver programs.

**2. Brief description of the target audience**

- Farmers/ranchers and rangeland owners/operators/managers
- Allied agricultural industries professionals
- Landscaping professionals
- Organic farmers
- Consumers
- Food suppliers
- Food processors
- Food retailers

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Plan</b>	69000	0	9000	0
<b>Actual</b>	253304	0	10818	0

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

**Patent Applications Submitted**

Year: 2010  
 Plan: 10  
 Actual: 9

**Patents listed**

1. ASPARAGUS - M256
2. VX211, A NEW CLONAL ROOTSTOCK FOR WALNUTS
3. IDENTIFICATION OF ARCHAEAL SINGLE-STRANDED DNA BINDING PROTEINS
4. DEVELOPMENT OF AN ASSAY FOR AN INFORMATIVE SNP WHICH CAN BE USED TO IDENTIFY CARRIERS OF THE HERDA DISEASE ALLELE
5. RX1, A NEW JUGLANS MICROCARPA x J. REGIA CLONAL ROOTSTOCK FOR WALNUTS
6. METHOD AND COMPOSITIONS FOR PREPARING AND DELIVERING RUMEN-PROTECTED LIPIDS, OTHER NUTRIENTS AND MEDICAMENTS
7. DEVELOPMENT OF A SENSOR FOR RAPID DETERMINATION OF SOIL NITRATE CONTENT BASED ON MID-IR SPECTROSCOPY
8. OVEREXPRESSION OF LEAFY COTYLEDON2 GENE DELAYS SENESCENCE OF VEGETATIVE AND REPRODUCTIVE STRUCTURES IN PLANTS
9. ENGINEERING PHYTOCHROMES: BILIPROTEINS THAT SWITCH AND GLOW

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Plan</b>	90	580	
<b>Actual</b>	133	469	602

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Classes/Short Courses Conducted

Year	Target	Actual
2010	210	328

**Output #2**

**Output Measure**

- Workshops Conducted

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	210	117

**Output #3**

**Output Measure**

- Demonstrations and Field Days Conducted

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	170	62

**Output #4**

**Output Measure**

- Newsletters Produced

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	280	37

**Output #5**

**Output Measure**

- Web Sites Created or Updated

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	120	26

**Output #6**

**Output Measure**

- Research Projects Conducted

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	580	340

**Output #7**

**Output Measure**

- Videos, Slide Sets and other A/V or Digital Media Educational Products Created

<b>Year</b>	<b>Target</b>	<b>Actual</b>
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2010	20	4
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**Output #8**

**Output Measure**

- Manuals and Other Printed Instructional Materials Produced

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	90	19

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Percentage of farm and ranch owner/operators and managers and allied industry professionals participating in the programs gaining knowledge of crop and varietal selection factors and research-based performance data
2	Percentage of farm, ranch, and landscaping owner/operators and managers and allied industry professionals participating in the programs adopting improvements in cultural practices, pest and disease management, irrigation and drainage or other aspects of comprehensive management systems for plant and animal production
3	Percentage of farm, ranch and landscaping owner/operators and managers and allied industry professionals participating in the programs adopting superior varieties of crops
4	Percentage of farm/ranch/landscaping owner/operators and managers and allied industry professionals participating in the programs gaining knowledge of cultural practices, pest and disease management, irrigation and drainage or other aspects of comprehensive management systems for plant and animal production
5	Percentage of farm and ranch owner/operator/managers gaining knowledge of business management practices and marketing strategies, including the costs and risks associated with producing specialty crops
6	Percentage of members of public participating in the programs gaining knowledge of sustainable gardening practices
7	Percentage of tree fruit and nut owner/operators and managers and allied industry professionals participating in the programs adopting recommended pruning techniques or other orchard management practices
8	Percentage of farm and ranch owner/operators and managers and allied industry professionals participating in the program will be more likely to try out or adopt recommended cultural practices, pest and disease management, or other aspects of comprehensive management systems for animal and plant production
9	Percentage of farm and ranch owner/operators participating in the programs gaining skills in business management practices
10	Farm and ranch owner/operators and managers, and allied industry professionals, participating in agriculture education programs, gained knowledge of cultural practices or aspects of comprehensive management systems for plant and animal production.
11	Farm owner/operators and managers, and allied industry professionals, participating in agriculture education programs, gained knowledge of irrigation and water management practices.
12	Farm owner/operators and managers and allied industry professionals, participating in agriculture education programs, gained knowledge of pest and disease management for plant production.
13	Farm owner/operators and allied industry professionals, participating in agriculture education programs, gained knowledge of business management practices, economics, and marketing techniques.
14	Farm owner/operators and allied industry professionals, participating in agriculture education programs, gained knowledge of crop and varietal selection factors for plant production.
15	Members of the public, participating in Master Gardener Programs, gained knowledge of sustainable home gardening techniques, including varietal selection, composting, water conservation and proper use of pest control, to extend to members of the public.

16	Farm and ranch owners /operators and managers and allied industry professionals, participating in agriculture education programs, were more likely to try out or adopt recommended cultural practices, pest and disease management, or other aspects of comprehensive management systems for plant and animal production.
17	Farm owners/operators, including small scale specialty crop growers and family farmers participating in agriculture education programs, are interested in adopting superior varieties of crops or new commercial crops to improve economic viability.
18	Members of the public, participating in agritourism programs and events, felt more connected to local farms and were more likely to buy local agricultural products.
19	Farm and ranch owners/operators, participating in agriculture education programs, gained business management skills.
20	Farm and ranch owner/operators and managers, and allied industry professionals, participating in agriculture education programs, gained skills in recommended pest management practices.
21	Farm owner/operators and managers, and allied industry professionals, participating in agriculture education programs, adopted recommended cultural practices or other aspects of comprehensive management systems for plant and animal production.
22	Farm, ranch and nursery owner/operator and managers, and allied industry professionals, participating in agriculture education programs, adopted recommended irrigation or other water and soil management practices.
23	Tree fruit and nut producers, and backyard orchard owners, participating in agriculture education programs, adopted recommended pruning techniques or other orchard management practices.
24	Farm owner/operators and managers, and allied industry professionals, participating in agriculture education programs, adopted superior varieties of crops for plant production.
25	New access points offering fresh produce were established in low-income communities to increase the availability of affordable, healthy foods.
26	Small farmers successfully grew off season blueberries as an alternative profitable new crop, gaining on average \$10,000 in average net income.
27	UC Extension trained citrus crop producers, Master Gardeners, and industry people from commodity groups such as the California Avocado Commission and Society and the Citrus Research Board, monitored the pest Asian citrus phyllid and its related economically devastating disease citrus greening, which contributed to the resulting quarantine, helping to protect over 300,000 acres of citrus.
28	Farming families learned to plan for farm succession.
29	Research quantifying the impacts of late irrigation stress delineated tradeoffs in fruit quality and yield.
30	Avocado crop problems were biologically controlled, making them more profitable.
31	UC contributed to the development of rice harvest and storage practices, helping to keep the California rice industry competitive.

### **Outcome #1**

#### **1. Outcome Measures**

Percentage of farm and ranch owner/operators and managers and allied industry professionals participating in the programs gaining knowledge of crop and varietal selection factors and research-based performance data

Not Reporting on this Outcome Measure

### **Outcome #2**

#### **1. Outcome Measures**

Percentage of farm, ranch, and landscaping owner/operators and managers and allied industry professionals participating in the programs adopting improvements in cultural practices, pest and disease management, irrigation and drainage or other aspects of comprehensive management systems for plant and animal production

Not Reporting on this Outcome Measure

### **Outcome #3**

#### **1. Outcome Measures**

Percentage of farm, ranch and landscaping owner/operators and managers and allied industry professionals participating in the programs adopting superior varieties of crops

Not Reporting on this Outcome Measure

### **Outcome #4**

#### **1. Outcome Measures**

Percentage of farm/ranch/landscaping owner/operators and managers and allied industry professionals participating in the programs gaining knowledge of cultural practices, pest and disease management, irrigation and drainage or other aspects of comprehensive management systems for plant and animal production

Not Reporting on this Outcome Measure

### **Outcome #5**

#### **1. Outcome Measures**

Percentage of farm and ranch owner/operator/managers gaining knowledge of business management practices and marketing strategies, including the costs and risks associated with producing specialty crops

Not Reporting on this Outcome Measure

#### **Outcome #6**

##### **1. Outcome Measures**

Percentage of members of public participating in the programs gaining knowledge of sustainable gardening practices

Not Reporting on this Outcome Measure

#### **Outcome #7**

##### **1. Outcome Measures**

Percentage of tree fruit and nut owner/operators and managers and allied industry professionals participating in the programs adopting recommended pruning techniques or other orchard management practices

Not Reporting on this Outcome Measure

#### **Outcome #8**

##### **1. Outcome Measures**

Percentage of farm and ranch owner/operators and managers and allied industry professionals participating in the program will be more likely to try out or adopt recommended cultural practices, pest and disease management, or other aspects of comprehensive management systems for animal and plant production

Not Reporting on this Outcome Measure

#### **Outcome #9**

##### **1. Outcome Measures**

Percentage of farm and ranch owner/operators participating in the programs gaining skills in business management practices

Not Reporting on this Outcome Measure

#### **Outcome #10**

##### **1. Outcome Measures**

Farm and ranch owner/operators and managers, and allied industry professionals, participating in agriculture education programs, gained knowledge of cultural practices or aspects of comprehensive management systems for plant and animal production.

## 2. Associated Institution Types

- 1862 Extension
- 1862 Research

### 3a. Outcome Type:

Change in Knowledge Outcome Measure

### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	2767

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

## 4. Associated Knowledge Areas

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

## Outcome #11

### 1. Outcome Measures

Farm owner/operators and managers, and allied industry professionals, participating in agriculture education programs, gained knowledge of irrigation and water management practices.

### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

### 3a. Outcome Type:

Change in Knowledge Outcome Measure

### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	242

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water

## Outcome #12

### 1. Outcome Measures

Farm owner/operators and managers and allied industry professionals, participating in agriculture education programs, gained knowledge of pest and disease management for plant production.

### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

### 3a. Outcome Type:

Change in Knowledge Outcome Measure

### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	677

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants

#### Outcome #13

##### 1. Outcome Measures

Farm owner/operators and allied industry professionals, participating in agriculture education programs, gained knowledge of business management practices, economics, and marketing techniques.

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	611

##### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

## **Outcome #14**

### **1. Outcome Measures**

Farm owner/operators and allied industry professionals, participating in agriculture education programs, gained knowledge of crop and varietal selection factors for plant production.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	1444

### **3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
202	Plant Genetic Resources
204	Plant Product Quality and Utility (Preharvest)

## **Outcome #15**

### **1. Outcome Measures**

Members of the public, participating in Master Gardener Programs, gained knowledge of sustainable home gardening techniques, including varietal selection, composting, water conservation and proper use of pest control, to extend to members of the public.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	126

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
202	Plant Genetic Resources
205	Plant Management Systems
206	Basic Plant Biology

**Outcome #16**

**1. Outcome Measures**

Farm and ranch owners /operators and managers and allied industry professionals, participating in agriculture education programs, were more likely to try out or adopt recommended cultural practices, pest and disease management, or other aspects of comprehensive management systems for plant and animal production.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	218

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
307	Animal Management Systems

**Outcome #17**

**1. Outcome Measures**

Farm owners/operators, including small scale specialty crop growers and family farmers participating in agriculture education programs, are interested in adopting superior varieties of crops or new commercial crops to improve economic viability.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	300

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

### Outcome #18

#### 1. Outcome Measures

Members of the public, participating in agritourism programs and events, felt more connected to local farms and were more likely to buy local agricultural products.

#### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

#### 3a. Outcome Type:

Change in Knowledge Outcome Measure

#### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	374

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

## **Outcome #19**

### **1. Outcome Measures**

Farm and ranch owners/operators, participating in agriculture education programs, gained business management skills.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	94

### **3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

## **Outcome #20**

### **1. Outcome Measures**

Farm and ranch owner/operators and managers, and allied industry professionals, participating in agriculture education programs, gained skills in recommended pest management practices.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	1373

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants

**Outcome #21**

**1. Outcome Measures**

Farm owner/operators and managers, and allied industry professionals, participating in agriculture education programs, adopted recommended cultural practices or other aspects of comprehensive management systems for plant and animal production.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
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2010 {No Data Entered} 206

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

**Outcome #22**

**1. Outcome Measures**

Farm, ranch and nursery owner/operator and managers, and allied industry professionals, participating in agriculture education programs, adopted recommended irrigation or other water and soil management practices.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	71

**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
111	Conservation and Efficient Use of Water

#### Outcome #23

##### 1. Outcome Measures

Tree fruit and nut producers, and backyard orchard owners, participating in agriculture education programs, adopted recommended pruning techniques or other orchard management practices.

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	145

##### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

## **Outcome #24**

### **1. Outcome Measures**

Farm owner/operators and managers, and allied industry professionals, participating in agriculture education programs, adopted superior varieties of crops for plant production.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	150

### **3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
202	Plant Genetic Resources
204	Plant Product Quality and Utility (Preharvest)

## **Outcome #25**

### **1. Outcome Measures**

New access points offering fresh produce were established in low-income communities to increase the availability of affordable, healthy foods.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	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
604	Marketing and Distribution Practices

**Outcome #26**

**1. Outcome Measures**

Small farmers successfully grew off season blueberries as an alternative profitable new crop, gaining on average \$10,000 in average net income.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	100

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
601	Economics of Agricultural Production and Farm Management

### Outcome #27

#### 1. Outcome Measures

UC Extension trained citrus crop producers, Master Gardeners, and industry people from commodity groups such as the California Avocado Commission and Society and the Citrus Research Board, monitored the pest Asian citrus phyllid and its related economically devastating disease citrus greening, which contributed to the resulting quarantine, helping to protect over 300,000 acres of citrus.

#### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

#### 3a. Outcome Type:

Change in Condition Outcome Measure

#### 3b. Quantitative Outcome

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	958

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
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- 211 Insects, Mites, and Other Arthropods Affecting Plants
- 212 Pathogens and Nematodes Affecting Plants

## **Outcome #28**

### **1. Outcome Measures**

Farming families learned to plan for farm succession.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	0

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

A profitable, owner-operated system of agriculture is necessary for the economic well being of our rural communities. Many farmers will retire in the next two decades and younger people are needed to carry on these farm businesses. Young people have little opportunity to enter farming, and even those whose parents have a farm may lose the opportunity because of poor succession and estate planning. Several surveys have found that as many as 64 percent of landowners do not have estate plans. Careful planning is needed for families to provide retirement for the senior members and farming opportunities for the next generation.

#### **What has been done**

A UC Cooperative Extension farm advisor offered statewide conferences and regional workshops on farm succession by partnering with California Farmlink, a statewide non-profit organization. In addition, she conducts individual consultations with farmers and ranchers in Humboldt County. The conferences and workshops included speakers from UC Davis, Northern California Farm Credit, California FarmLink, and many other consultants, lawyers, land trust directors and accountants. Motivating producers to act on succession planning is the main objective. The Western Region Risk Management Agency provided grant funds to offer the conferences at a lower cost in order to reach wider audiences.

#### **Results**

Getting family members across the generations together to learn techniques and work seriously on this topic has had positive effects. About 70 families (200 people) have attended these events. Each family is unique and the outcomes are individual and personal. Statistical outcomes, such

as acres of farmland still in production, are hard to come by in this very dynamic and long-term arena, but we believe that the educational outreach has affected the future of California farming and ranching in a lasting way. Overall, we heard positive stories from individuals such as: "I slowed down and realized I was pressuring my 25-year-old." "Grandpa listened to us and realizes he needs better estate planning tools." "My off-farm heir respects her on-farm sister more." "We understand sweat equity now, and issues of fairness." "We met with a land trust about a conservation easement." "We shared the financials with our son while home on spring break and we signed up for more workshops!"

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

#### Outcome #29

##### 1. Outcome Measures

Research quantifying the impacts of late irrigation stress delineated tradeoffs in fruit quality and yield.

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Production of navel oranges for the early market is big business in the southern San Joaquin Valley of California. Minimum harvest standards exist for juice sweetness and fruit color within the industry. The first harvested fruit of the season that meet these minimum requirements often receive a large price premium in the marketplace. Concern exists within the industry that standards for sweetness and some other fruit quality parameters are not sufficient to meet consumer acceptability and that disappointed consumers are unlikely to return to buy navel orange fruit later in the season when the fruit is sweeter and juicier. Growers of early-maturing orange varieties approached late-season irrigation strategies differently and little scientific research existed to guide these decisions. Some growers irrigated fully until harvest, while others reduced irrigation as harvest approached. In drought years, irrigation decisions are not only made as they affect fruit quality and yield, but also with respect to water availability and cost.

### What has been done

UC Cooperative Extension farm advisors, working with a private citrus grower, developed and implemented a series of carefully monitored irrigation treatments that allowed delineation of the affects of late-season irrigation stress on fruit quality and yield. Yield and fruit quality evaluations of the fruit harvested from this trial were conducted. To determine if laboratory-measured differences in fruit quality parameters correlated with human sensory perception, fruit from the irrigation treatments was evaluated by a human sensory panel through a program developed by a UC Extension Specialist. Results from this project were presented at ANR-sponsored grower meetings in Kern County in 2007, 2008 and 2009 and appeared in a statewide newsletter, "Topics in Subtropics." A final report of the project appeared in the 2008 annual report of the Citrus Research Board, which is the statewide citrus commodity group in California.

### Results

Growers specializing in producing fruit for the early navel market now have available to them knowledge of the tradeoffs related to irrigating early navel varieties in the August-through-October time period. This research demonstrated, on the positive side, that late season irrigation stress saved water, increased development of early fruit color and increased the concentration of soluble solids, such as sugar, and organic acids. On the negative side, water stress, generally, reduced fruit size and yield.

## 4. Associated Knowledge Areas

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

## Outcome #30

### 1. Outcome Measures

Avocado crop problems were biologically controlled, making them more profitable.

### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

### 3a. Outcome Type:

Change in Condition Outcome Measure

### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

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Since 1882, when Mexican avocado seedlings were planted in Ventura County, the industry has been slowly expanding. Today there are 17,000 acres of avocados in Ventura and Santa Barbara counties. Initially there were few problems in the crop, other than searching for the ideal variety. For many years, avocados were one of the few crops in California that was unsprayed. Over time, a number of new pests have arrived. In the late 1940s, growers started seeing "avocado decline," a slow dying of the roots and canopies of the trees. ANR began the long-term study of what turned out to be a fungal disease that was renamed "avocado root rot." In the meantime, other problems began showing up in the \$80 million avocado crop (2008) - diseases, pests and management issues, such as pruning, irrigating and fertilizing.

#### **What has been done**

Working with growers, UC ANR campus- and county- based personnel tested various methods for controlling root rot. This involved field studies to finally come up with a package of strategies to control the disease. Disease-control strategies include clonal rootstocks (disease-resistant), mounding, mulching, gypsum and some chemical treatments. Selection for more tolerant rootstocks continues, but now the rootstocks are also being selected for salt tolerance and resistance to other diseases. For the various waves of pests that have come through these orchards, biological control and management techniques, such as pruning and fertilizing to control these problems, were devised.

#### **Results**

In general, the avocado crop in Ventura and Santa Barbara counties is in good biological control, requiring few pesticides. The management practices developed by UC ANR have made avocados economically very attractive for coastal growers where the costs of labor, land and water are so high.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
601	Economics of Agricultural Production and Farm Management

#### **Outcome #31**

##### **1. Outcome Measures**

UC contributed to the development of rice harvest and storage practices, helping to keep the California rice industry competitive.

##### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

##### **3a. Outcome Type:**

Change in Condition Outcome Measure

### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

California enjoys a reputation of producing high quality rice. Rice, unlike most other cereals, is consumed as a whole grain. Therefore physical properties such as size, shape, uniformity and general appearance are of utmost importance. Efforts to improve quality in other regions and countries challenge California growers to seek improved production and postharvest strategies to maintain the state's competitive edge in the global marketplace. To capitalize on new markets, retain market share, and remain competitive, it is essential to understand the production factors under the control of the grower that ultimately influence grain quality.

#### What has been done

For over 10 years UC Extension conducted a series of experiments to develop the best management practices to ensure high quality rice. A comprehensive approach to identify key points in the production and postharvest management continuum was developed as a result of several years of on-farm and laboratory research specifically applicable to the unique California rice production system.

#### Results

UC Extension published the Rice Quality Handbook as a standard reference for growers and dryer operators. The companion Rice Quality Workshop, attended by hundreds since its inception, is required training for employees of rice dryers throughout the Sacramento Valley. Understanding the production and processing variables affecting rice quality enables growers to harvest rice at lower moisture content, reduce drying costs, better preserve rice in storage and increase profitability. In addition, commercial dryers reported reducing energy use by as much as 20 percent.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

## **V(H). Planned Program (External Factors)**

### **External factors which affected outcomes**

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

### **Brief Explanation**

Some of the regional issues that will influence food security issues are as follows: competition and distribution of water in the arid West, loss of irrigated farmland to urbanization and other uses, parcelization of farmland, increased energy costs and concurrent increases in fertilizer costs, low cost imports that threaten the long-term viability of certain agricultural sectors, and invasive and imported pests.

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

### **1. Evaluation Studies Planned**

### **Evaluation Results**

### **Key Items of Evaluation**