

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

**Program # 3**

**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
123	Management and Sustainability of Forest Resources	1%		0%	
133	Pollution Prevention and Mitigation	6%		0%	
205	Plant Management Systems	6%		10%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		17%	
215	Biological Control of Pests Affecting Plants	0%		3%	
216	Integrated Pest Management Systems	6%		9%	
307	Animal Management Systems	1%		0%	
308	Improved Animal Products (Before Harvest)	1%		0%	
311	Animal Diseases	0%		14%	
313	Internal Parasites in Animals	1%		0%	
315	Animal Welfare/Well-Being and Protection	2%		0%	
601	Economics of Agricultural Production and Farm Management	39%		15%	
602	Business Management, Finance, and Taxation	16%		6%	
604	Marketing and Distribution Practices	3%		11%	
605	Natural Resource and Environmental Economics	8%		1%	
608	Community Resource Planning and Development	0%		6%	
609	Economic Theory and Methods	0%		4%	
723	Hazards to Human Health and Safety	9%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%		4%	
903	Communication, Education, and Information Delivery	1%		0%	
	<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	25.0	0.0	10.0	0.0
Actual	25.6	0.0	16.8	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
799718	0	707777	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2355011	0	940428	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1486867	0	101752	0

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

**1. Brief description of the Activity**

Extension program efforts:

- \* Beginning Farmers: combines research activities with education and technical assistance to help new and aspiring farmers explore farming as a feasible and sustainable business opportunity
- \* Ag Business Management Educate farmers so they can better understand and manage their farm's finances.
- \* Agricultural safety Improve safety measures on farms
- \* Apples and Grapes Project covers apple growing, organic apple production and grape production.
- \* Community Preparedness Bio-security Education
- \* Equine program: To provide information and resources to equine industry members.
- \* Farm and Forest Transfers: enhance the ability of farmers to transfer farms to next generation and for next Generation to obtain and manage farms with greater ease.
- \* Farm Viability: Assist in development and writing of business plans.
- \* Farming Alternatives: support farmers in identifying new possibilities for their farm..
- \* Forage and Pasture Management Education: to increase knowledge about forage selection, grazing management and pasture quality.
- \* Maple Program: To provide information to maple producers to allow them to increase sap production and conduct more efficient maple processing.
- \* Nutrient Management Program: learn about nutrient management planning and guiding them through the process.
- \* Organic Grain Project: assess grain production, storage and utilization options..
- \* Pest Management Education. IPM and Pesticide Education and Safety Program (PESP) training.
- \* Sheep program. Hands-on workshop, applied research, newsletter.
- \* Private/Commercial Landowner and Industry Professional Education: Tour and conference
- \* Senior Farm Share Nutrition Programs: to increase their consumption of local, fresh produce
- \* UVM Tax School. conference, tax book

\* Vegetable and Berry Growers: provide high quality information about production, marketing and management that will enhance profitability, stewardship and community connections.

\* Vermont New Farmer Network: Improving collaboration and quality of technical assistance for new farmers.

\* Vermont Pasture Network: information, support, and technical advice in creating and improving grass-based farms

\* Vermont Tourism and Recreation: is to enhance positive impacts and reduce negative impacts associated with tourism and recreation.

\* Master Gardener. Course, train the trainer

\* Women's Agricultural Network: provide educational and technical assistance to individuals starting or expanding agricultural businesses.

\* Sustainable Forests: Education for forest owners, managers and users.

AES Program Efforts:

\*Vermont Dairy; Characterize current agricultural laborers and social network of farms; improve economic and environmental sustainability

\*Organic Apple orchards; opportunities and challenges of organic production

\*Pest management; due to climate range expansion, Colorado Potato Beetle increase in agriculture, biological controls of Asian Longhorned Beetle

\*Institutional Food Services Operations; market opportunity for vegetable farmers

\*Animal Disease; immunology of mastitis in dairy cattle

\*Community & Development Entrepreneurship; technical assistance to entrepreneurs in the fields of product marketing, promotion, business plan, and financial analysis

\*Community Development Resources and food outreach system research; convene food system stakeholders in VT for sharing of research and knowledge

\*Vermont farms and rural communities; strategies and policy options that increase the integration of local economics and farms

\*Vermont milk distribution; transportation and economic perspectives

\*Farmland access, tenure and succession; impacts on farms, land use and environment

\*Greenhouse industry; vital to expansion of the agricultural economy by increasing greenhouse ornamental industry

\*Community-wide biosecurity plan; identify costs and challenges

\*Artisan Cheese; enhance profitability of dairy farms through artisan cheese & value added products

\*Grass-based livestock farms; evaluation of the environmental significance and trends

## 2. Brief description of the target audience

- 4-H: Youth
- Adults
- Age 19 - 24 Young Adult
- Age 25 - 60 Adult
- Age 46 - 65 Adult
- Age 6 - 12 School Age
- Agriculture/Natural Resources: Watershed Based Organizations
- Agriculture: Apple Growers
- Agriculture: Beef Producers
- Agriculture: CCA & Crop Consultants
- Agriculture: Crop Producers
- Agriculture: Dairy Producers
- Agriculture: Equine Producers/Owners

- Agriculture: Farm Employees
- Agriculture: Farm Families
- Agriculture: Farm Managers
- Agriculture: Farmers
- Agriculture: Goat & Sheep Producers
- Agriculture: Greenhouse Ornamental Growers
- Agriculture: Home Gardeners
- Agriculture: Industry Professionals
- Agriculture: Livestock producers
- Agriculture: Maple Industry
- Agriculture: Maple Sugar Producers
- Agriculture: Non-Dairy Producers
- Agriculture: Nursery operators
- Agriculture: Ornamentals Industry Professionals
- Agriculture: Service Providers
- Agriculture: Small Fruit & Vegetable Growers
- Agriculture: Veterinarians
- Agriculture: Dairy Goat, Meat Goat and Dairy Sheep Producers
- Agriculture: Government Agency Personnel
- Communities: Educators
- Community leaders and citizens
- Dairy Professionals
- Extension: Advisors
- Extension: Faculty/Staff
- Food Industry: Food Service Workers
- Food Industry: Processors
- Policy Makers: Legislators
- Public: Age 16-21
- Public: Age 65+ (Seniors)
- Public: College Students
- Public: General
- Public: Media Outlets
- Public: Nonprofit Organizations
- Public: Small Business Owners/Entrepreneurs
- School Grade: 6
- USDA personnel
- Youth

**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>	30000	0	1500	0
<b>Actual</b>	48646	523600	1359	5900

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

Year: 2010  
 Plan: 3  
 Actual: 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
Plan	3	5	
Actual	10	14	24

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

**Output Target**

**Output #1**

**Output Measure**

- Class/course

Year	Target	Actual
2010	8	20

**Output #2**

**Output Measure**

- Conference

Year	Target	Actual
2010	7	4

**Output #3**

**Output Measure**

- Consultation

Year	Target	Actual
2010	1100	1699

**Output #4**

**Output Measure**

- Consumer Publication

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	15	16

**Output #5**

**Output Measure**

- Demonstration

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	20	40

**Output #6**

**Output Measure**

- Discussion group

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	5	40

**Output #7**

**Output Measure**

- Educational/evaluation instrument

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	2	1

**Output #8**

**Output Measure**

- Electronic Communication/phone

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	500	1758

**Output #9**

**Output Measure**

- Field day/fair

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	2	6

**Output #10**

**Output Measure**

- Field site visit

Year	Target	Actual
2010	230	209

**Output #11**

**Output Measure**

- Funding request

Year	Target	Actual
2010	2	9

**Output #12**

**Output Measure**

- Presentation

Year	Target	Actual
2010	90	117

**Output #13**

**Output Measure**

- Publication - Peer Reviewed

Year	Target	Actual
2010	1	10

**Output #14**

**Output Measure**

- Publication - curriculum  
Not reporting on this Output for this Annual Report

**Output #15**

**Output Measure**

- Publication - fact sheet

Year	Target	Actual
2010	30	17

**Output #16**

**Output Measure**

- Publication - magazine article

Year	Target	Actual
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2010 5 7

**Output #17**

**Output Measure**

- Publication - manual

Year	Target	Actual
2010	1	1

**Output #18**

**Output Measure**

- Publication - newsletter

Year	Target	Actual
2010	25	89

**Output #19**

**Output Measure**

- Publication - newsprint article

Year	Target	Actual
2010	10	92

**Output #20**

**Output Measure**

- Research project

Year	Target	Actual
2010	5	7

**Output #21**

**Output Measure**

- TV segment/ATF

Year	Target	Actual
2010	3	21

**Output #22**

**Output Measure**

- Technical Publication

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	20	48

**Output #23**

**Output Measure**

- Tour(s)

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	2	2

**Output #24**

**Output Measure**

- Train the Trainer trainings  
Not reporting on this Output for this Annual Report

**Output #25**

**Output Measure**

- Website development and updates

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	30	55

**Output #26**

**Output Measure**

- Workshop - series

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	50	12

**Output #27**

**Output Measure**

- Workshop - single session

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	70	90

**Output #28**

**Output Measure**

- Trainee delivered programming

<b>Year</b>	<b>Target</b>	<b>Actual</b>
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2010 {No Data Entered} 42

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

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

O. No.	OUTCOME NAME
1	Increase the number of farmers who implement at least one cropping practice to improve crop and soil productivity and water quality
2	Increase the number of participants passing the required applicators licensing test
3	Increase the number of forest owners who plan for woodlands in their estates
4	Increase in collaboration with agency and industry personnel to address farm safety
5	Increase in number of program participants who make informed decisions about crop insurance
6	Increase in number of tax school participants stating improved accuracy of tax reporting for their clients
7	Increase in number of tax schools participants understanding federal and state tax laws and requirements
8	Increase in number of farmers that develop a nutrient management plan for their farm
9	Increase the number of farmers who implement at least one change in nutrient management plan practices
10	Increase the number of legislators and key decision makers who increase understanding of current local agricultural issues
11	Decrease in number of beach pilot areas who reduce the number of days of beach closures
12	Increased delivery of organic dairy information to dairy farmers across the nation that is accessible, reliable, credible and up-to-date.
13	Number of retail lawn and garden centers providing information on low input/no phosphorous lawn care options to customers
14	Increase in number of Master Gardener participants earning certification
15	Increase in number of educators demonstrating knowledge of watersheds and new teaching tools and techniques
16	Number of residential households adopting low input/no phosphorus lawn/garden care practices
17	increase in the number of farmers who improve pasture management practices

18	Increase the number of student interns teaching backyard composting
19	Increase in number of equine owners who use information to change behaviors in land and manure management of business practices to improve safety, animal health, and/or profitability of equine businesses and clientele
20	Increase in number of forest owners, managers and users who make better decisions about forests using stumpage data
21	Increase in the number of forest owners saving money through use of written contracts for timber sales
22	Number of enterprises (already using recommended practices) that use Extension consultation to assess/inform business decisions
23	Decrease in number of households using lawn care inputs in designated no-input buffer zones
24	Increase the number of farmers who will make a change by learning how to: grow and produce energy crops and transform into energy products
25	Increase the number of farmers who will produce energy crops and/or implement the use of renewable energy
26	Number of bioengineering for erosion control demonstration sites
27	Number of clientele who have adopted one or more IPM practices that increase environmental sustainability
28	Number of commercial lawn care firms using low input/ no phosphorous lawn care practices
29	Number of enterprises that adopt a recommended practice resulting in increased revenues and/or reduced costs
30	Number of individuals who change their gardening practices to protect natural resources (e.g. water, air, soil)
31	Number of individuals who change their gardening practices to reduce gardening inputs
32	Number of lakeshore residential properties planting buffer strips or maintaining native vegetation as a buffer to decrease erosion and sedimentation
33	Number of lakeshore residents changing residential practices to reduce impact on water quality
34	Number of middle and high school youth demonstrating knowledge of watersheds and their role as watershed stewards
35	Number of municipal officials have an increased understanding of and need for natural resource based planning and stormwater management at the municipal level
36	Number of municipalities integrating natural resource protection and Low Impact Development strategies in town plans and ordinances

37	Number of non-residential properties (business, institutional residential commons) under one or more low input/ no phosphorous lawn care practices
38	Requests for technical assistance for educational watershed stewardship projects or implementation of water quality improvement projects increase due to increased awareness of benefits
39	Number of schools that demonstrate an increase in, or institutionalization of, integrated watershed education into returning educators curriculum
40	Number of service learning high school or undergraduate college students conducting or participating in watershed stewardship projects
41	Number of sites using Low Impact Development practices to decrease stormwater runoff
42	Number of towns/municipalities and watershed organizations conducting outreach activities and participating in outcome oriented water quality education
43	Number of towns/municipalities using one or more bioengineering methods for shoreline stabilization to decrease erosion and sedimentation
44	Number of undergraduate students in the development, planning, and implementation of middle and high school watershed education programs
45	Participants will have gained knowledge on how to grow organic crops (e.g. apples, grains)
46	increase in the number of farmers who implement at least one change as outlined in the water quality protection plan
47	Number of homes where there is a greater variety of produce at home
48	Number of farms or individuals that plan for and incorporate biosecurity, safety, and preventative measures
49	Effect of shortages of domestic farm labor
50	Ecological and evolutionary aspects of the colonization of the Colorado potato beetle.
51	Increase value-added and agri-tourism economic opportunities for cold climate winegrape production

**Outcome #1**

**1. Outcome Measures**

Increase the number of farmers who implement at least one cropping practice to improve crop and soil productivity and water quality

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	50	26

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

**Issue (Who cares and Why)**

**What has been done**

**Results**

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
601	Economics of Agricultural Production and Farm Management

**Outcome #2**

**1. Outcome Measures**

Increase the number of participants passing the required applicators licensing test

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	40	32

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

**Issue (Who cares and Why)**

To apply restricted use pesticides, Vermonters must attain a certified pesticide applicator license. This requires studying a large manual with chapters on all topics of pesticide application and safety. The Manual can be daunting for some and a deterrent to becoming legally able to apply pesticides in their work.

**What has been done**

The UVM Pesticide Education and Safety Program offers an all day training to go over materials covered in the Pesticide Manual followed by the Core pesticide test the same day.

**Results**

After taking the class, the participants show a much higher success rate (75% of the class) of passing the test, and therefore are better able to apply pesticides legally and safely in Vermont.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
216	Integrated Pest Management Systems

**Outcome #3**

**1. Outcome Measures**

Increase the number of forest owners who plan for woodlands in their estates

Not Reporting on this Outcome Measure

**Outcome #4**

**1. Outcome Measures**

Increase in collaboration with agency and industry personnel to address farm safety

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	10	9

**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>
723	Hazards to Human Health and Safety
903	Communication, Education, and Information Delivery

**Outcome #5**

**1. Outcome Measures**

Increase in number of program participants who make informed decisions about crop insurance

Not Reporting on this Outcome Measure

**Outcome #6**

**1. Outcome Measures**

Increase in number of tax school participants stating improved accuracy of tax reporting for their clients

Not Reporting on this Outcome Measure

**Outcome #7**

**1. Outcome Measures**

Increase in number of tax schools participants understanding federal and state tax laws and requirements

Not Reporting on this Outcome Measure

**Outcome #8**

**1. Outcome Measures**

Increase in number of farmers that develop a nutrient management plan for their farm

**2. Associated Institution Types**

- 1862 Extension

### 3a. Outcome Type:

Change in Action Outcome Measure

### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	25	28

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

The water quality of Lake Champlain and its related watersheds is impaired. Agriculture has played a role in the decline of water quality. Farmers are encouraged to implement nutrient management practices to minimize their impact on water quality.

#### What has been done

In 2009, the Farmers Nutrient Management Course was developed into an applied nutrient management curriculum. The course book was published and made available online for farmers and service providers. In 2010, two college classrooms asked permission to utilize the training curriculum in their soils fertility classes. Two Nutrient Management courses were offered to farmers in 2010. All participants completed the course with perfect attendance.

#### Results

28 farms completed Nutrient Management plans (NMP) that met both state and federal standards. One college professor commented that that the course book was both scientific and practical. It will help students learn the soil science as well as real work applications for the information. They will be completing a NMP for their University farm.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation

### Outcome #9

#### 1. Outcome Measures

Increase the number of farmers who implement at least one change in nutrient management plan practices

#### 2. Associated Institution Types

- 1862 Extension

### 3a. Outcome Type:

Change in Action Outcome Measure

### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	95	46

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Agricultural practices can have a negative impact on water quality. Farmers are encouraged to implement nutrient management practices (NMP) to minimize their impact on water quality.

#### What has been done

Site visits are done with farms completing the NMP course and subsequent NM Plans. In addition, with a USDA-NRCS Conservation Innovation Grant, we proposed to work with 5 farms to implement reduced tillage to reduce the chances of runoff and erosion of nutrients/sediment. We exceeded our goal of working with 5 farmers by 200% and had to turn some farmers away because the demand was too great.

#### Results

There is already a waiting list to use the reduced tillage equipment for next year. As a result of this one NMP project, 480 acres of corn and soybeans were planted to reduced tillage with our equipment. We have calculated that these farms have saved \$25,000 of fuel, labor and equipment costs by reducing the number of passes on a field. Farmers are saving an average \$50/ acre. We also estimate based on slope, past management considerations and field locations using the Revised Universal Soil Loss Equation that 2,000,000 pounds of soil loss was prevented from entering Vermont's surface waters.

## 4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
601	Economics of Agricultural Production and Farm Management

## **Outcome #10**

### **1. Outcome Measures**

Increase the number of legislators and key decision makers who increase understanding of current local agricultural issues

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

- 1862 Extension

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	10	5

### **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
602	Business Management, Finance, and Taxation

## **Outcome #11**

### **1. Outcome Measures**

Decrease in number of beach pilot areas who reduce the number of days of beach closures

Not Reporting on this Outcome Measure

## **Outcome #12**

### **1. Outcome Measures**

Increased delivery of organic dairy information to dairy farmers across the nation that is accessible, reliable, credible and up-to-date.

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

- 1862 Extension

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	1100	234

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

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

There is a need for access to reliable, credible and up-to-date organic dairy information.

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

Through eXtension a project is on-going to develop eOrganic.edu. Several evaluation tools using focus groups and web surveys are being developed and used as the site is being developed. Several webinars have been hosted through eOrganic focusing on the newly released USDA NOP "Pasture Rule." The webinars were designed to get farmers and service providers to implement the rule.

#### **Results**

Eighty-eight percent reported that the webinar improved their understanding "significantly" or "moderately". Eighty-six percent reported that they intended to apply the knowledge they gained in their work "a lot" or "somewhat". Eighty-seven percent reported that the information was at a technical level that was "just right." When asked if they would recommend the webinar to others, 94 percent said "yes", 6 percent said "maybe". Eighty-four percent of participants found accessing the webinar "very easy" and 10% found it to be "somewhat easy". Open-ended survey question response are being used to plan topics and improve the delivery of future webinars.

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

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

### **Outcome #13**

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

Number of retail lawn and garden centers providing information on low input/no phosphorous lawn care options to customers

Not Reporting on this Outcome Measure

### **Outcome #14**

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

Increase in number of Master Gardener participants earning certification

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

- 1862 Extension

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

Change in Action Outcome Measure

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

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	100	203

#### **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>
216	Integrated Pest Management Systems

**Outcome #15**

**1. Outcome Measures**

Increase in number of educators demonstrating knowledge of watersheds and new teaching tools and techniques

Not Reporting on this Outcome Measure

**Outcome #16**

**1. Outcome Measures**

Number of residential households adopting low input/no phosphorus lawn/garden care practices

Not Reporting on this Outcome Measure

**Outcome #17**

**1. Outcome Measures**

increase in the number of farmers who improve pasture management practices

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	130	172

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

**Issue (Who cares and Why)**

Farmers are challenged by rising costs and market issues. Proper grazing management can reduce the costs of production and provide a healthy, marketable product.

**What has been done**

Through on-farm visits, informational packets, and educational activities such as the VT Grazing conference and Pasture Walks, farmers have adopted and implemented practices to improve their on-farm management.

### **Results**

Farmers have chosen practices related to improved pasture management by reconfiguring paddock layout, adding more fence to more appropriately size paddocks, moving herds more frequently. Also, with the caps in milk production farmers have chosen to reduce the grain and supplemental feed they provide their herds with several farmers completely cutting out grain. All farmers have noticed that the reduced grain has not led to reduced income.

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

<b>KA Code</b>	<b>Knowledge Area</b>
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

### **Outcome #18**

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

Increase the number of student interns teaching backyard composting

Not Reporting on this Outcome Measure

### **Outcome #19**

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

Increase in number of equine owners who use information to change behaviors in land and manure management of business practices to improve safety, animal health, and/or profitability of equine businesses and clientele

Not Reporting on this Outcome Measure

### **Outcome #20**

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

Increase in number of forest owners, managers and users who make better decisions about forests using stumpage data

Not Reporting on this Outcome Measure

### **Outcome #21**

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

Increase in the number of forest owners saving money through use of written contracts for timber sales

Not Reporting on this Outcome Measure

### **Outcome #22**

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

Number of enterprises (already using recommended practices)that use Extension consultation to assess/inform business decisions

Not Reporting on this Outcome Measure

### **Outcome #23**

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

Decrease in number of households using lawn care inputs in designated no-input buffer zones

Not Reporting on this Outcome Measure

### **Outcome #24**

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

Increase the number of farmers who will make a change by learning how to: grow and produce energy crops and transform into energy products

#### **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	75	52

#### **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 #25**

**1. Outcome Measures**

Increase the number of farmers who will produce energy crops and/or implement the use of renewable energy

**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	25	111

**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 #26**

### **1. Outcome Measures**

Number of bioengineering for erosion control demonstration sites

Not Reporting on this Outcome Measure

## **Outcome #27**

### **1. Outcome Measures**

Number of clientele who have adopted one or more IPM practices that increase environmental sustainability

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

- 1862 Extension

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

Change in Action Outcome Measure

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

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	650	164

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

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

Bedding plants and other greenhouse ornamentals are a key revenue source for small scale farmers and vegetable growers. However, these plants are plagued with insect pests, and chemical pesticides are often used for control. Growers seek information on how to adopt more sustainable practices. Plant-mediated systems using marigolds as trap plants show promise for IPM. UVM Scientists have been conducting research on this, and have presented results to growers.

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

Greenhouse IPM workshops are held annually in Maine, New Hampshire and Vermont to present information on how to manage pests using IPM. One subject that has been covered over multiple years is the use of plant-mediated IPM systems.

#### **Results**

Based on evaluations from workshop attendees in 2010, 53% used a plant-mediated system in the last year, compared with 41% the year before. Considering that our workshop is often the only educational event growers attend, this high rate of adoption demonstrates their impact.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems

#### Outcome #28

##### 1. Outcome Measures

Number of commercial lawn care firms using low input/ no phosphorous lawn care practices

Not Reporting on this Outcome Measure

#### Outcome #29

##### 1. Outcome Measures

Number of enterprises that adopt a recommended practice resulting in increased revenues and/or reduced costs

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	775	1017

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

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

Over 95% of farms in the U.S. earn less than \$500,000 in annual sales but they only account for 26% of the value of agricultural products sold. To ensure the long-term viability of small farms, support is needed to help farms capture more revenues for products and services while managing expenses and being environmentally responsible.

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

Conferences, workshops, consultations and other educational offerings were offered on agri-tourism, web marketing, many commodity focused offerings, organic production, pasture management, cropping alternatives and energy options such as raising energy crops and renewable energy.

###### **Results**

Over 1000 farmers have increased revenues or reduced costs as a result of adopting one of the practices offered in Extension's educational offerings. The economic impact of one project, the Greenhouse Biomass Furnace project whose goal is to help Vermont's greenhouse vegetable growers adopt clean burning bio-mass furnaces is saving greenhouse growers \$2589 per year per farm. The net carbon dioxide emissions avoided by this substitution of fuel is estimated to be 110 cumulative tons. By adopting science based practices, economic and environmental benefits can be achieved together.

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

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources
205	Plant Management Systems
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices
605	Natural Resource and Environmental Economics

#### **Outcome #30**

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

Number of individuals who change their gardening practices to protect natural resources (e.g. water, air, soil)

Not Reporting on this Outcome Measure

#### **Outcome #31**

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

Number of individuals who change their gardening practices to reduce gardening inputs

Not Reporting on this Outcome Measure

#### **Outcome #32**

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

Number of lakeshore residential properties planting buffer strips or maintaining native vegetation as a buffer to decrease erosion and sedimentation

Not Reporting on this Outcome Measure

**Outcome #33**

**1. Outcome Measures**

Number of lakeshore residents changing residential practices to reduce impact on water quality

Not Reporting on this Outcome Measure

**Outcome #34**

**1. Outcome Measures**

Number of middle and high school youth demonstrating knowledge of watersheds and their role as watershed stewards

Not Reporting on this Outcome Measure

**Outcome #35**

**1. Outcome Measures**

Number of municipal officials have an increased understanding of and need for natural resource based planning and stormwater management at the municipal level

Not Reporting on this Outcome Measure

**Outcome #36**

**1. Outcome Measures**

Number of municipalities integrating natural resource protection and Low Impact Development strategies in town plans and ordinances

Not Reporting on this Outcome Measure

**Outcome #37**

**1. Outcome Measures**

Number of non-residential properties (business, institutional residential commons) under one or more low input/ no phosphorous lawn care practices

Not Reporting on this Outcome Measure

**Outcome #38**

**1. Outcome Measures**

Requests for technical assistance for educational watershed stewardship projects or implementation of water quality improvement projects increase due to increased awareness of benefits

Not Reporting on this Outcome Measure

**Outcome #39**

**1. Outcome Measures**

Number of schools that demonstrate an increase in, or institutionalization of, integrated watershed education into returning educators curriculum

Not Reporting on this Outcome Measure

**Outcome #40**

**1. Outcome Measures**

Number of service learning high school or undergraduate college students conducting or participating in watershed stewardship projects

Not Reporting on this Outcome Measure

**Outcome #41**

**1. Outcome Measures**

Number of sites using Low Impact Development practices to decrease stormwater runoff

Not Reporting on this Outcome Measure

**Outcome #42**

**1. Outcome Measures**

Number of towns/municipalities and watershed organizations conducting outreach activities and participating in outcome oriented water quality education

Not Reporting on this Outcome Measure

### **Outcome #43**

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

Number of towns/municipalities using one or more bioengineering methods for shoreline stabilization to decrease erosion and sedimentation

Not Reporting on this Outcome Measure

### **Outcome #44**

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

Number of undergraduate students in the development, planning, and implementation of middle and high school watershed education programs

Not Reporting on this Outcome Measure

### **Outcome #45**

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

Participants will have gained knowledge on how to grow organic crops (e.g. apples, grains)

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

- 1862 Extension

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

Change in Knowledge Outcome Measure

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

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	150	80

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

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

Organic grain is the major expense on most organic dairy farmers. In some cases it make up more than 40% of total operating costs. Many farms struggle to keep purchases down. A strategy to reduce grain costs is to provide high yield and quality homegrown forage. Ultimately this would decrease a farm's costs and improve viability of many farms.

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

An Organic Grain conference, workshops, on farm consultations and newsletters were conducted for farmers. A post conference survey was conducted with 62% of the attendees feeling they had

gained sufficient knowledge to implement a change on their farm.

### **Results**

Through a farmer-led research grant we worked with one farm to develop a rotation with cereal grains. He couldn't afford to purchase organic grain and remain in business. With this grain crop the farm would not have to purchase any new equipment, insuring he would not have to invest money in new infrastructure for the different crop. The farm fed the grain crop over the winter months maintaining milk production and body condition. The farm has eliminated the grain bill improving overall farm viability. He plans on doubling their organic grain acreage next year.

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

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

### **Outcome #46**

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

increase in the number of farmers who implement at least one change as outlined in the water quality protection plan

Not Reporting on this Outcome Measure

### **Outcome #47**

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

Number of homes where there is a greater variety of produce at home

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

- 1862 Extension

#### **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}	940

#### **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>
604	Marketing and Distribution Practices

**Outcome #48**

**1. Outcome Measures**

Number of farms or individuals that plan for and incorporate biosecurity, safety, and preventative measures

**2. Associated Institution Types**

- 1862 Extension

**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}	24

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

**Issue (Who cares and Why)**

Farmers are eight times more likely to die on the job than the average worker.

**What has been done**

The "Vermont Farm Safety Program" provided safety training for 6 dairy farmers in 2009, and 8 in 2010. The initial pilot program was developed during 2004, with the curriculum improved and taught in 2007, 2009 and 2010. Each farm is required to develop and implement a training program, create a Farm Safety Plan, correct hazards identified during their farm safety audit and provide follow up details to the planning committee at 6 and 12 months post-training. Also in 2009 and 2010 a VT Farmedic course was taught to 20 fire-fighters/EMTs.

**Results**

Several farms have received significant reductions in their workers' compensation insurance premiums as a result. Two dairy farms were nominated for the Vermont Governor's Workplace Safety Awards. One received the first ever Agriculture Award, the other was a finalist.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
723	Hazards to Human Health and Safety

#### Outcome #49

##### 1. Outcome Measures

Effect of shortages of domestic farm labor

##### 2. Associated Institution Types

- 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)**

Dairy farming in Vermont is fundamental to the state's economic future both directly through the production of milk and indirectly by maintaining the working Vermont landscape.

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

Characterize current agricultural laborers on Vermont farms through face-to-face interviews. Use key informant interviews and document analysis describing existing and emerging social and institutional structures. Final phase considers institutional and non-institutional policies that support a sustainable supply of farm labor.

###### **Results**

78% of farmers survey believed there is a shortage of domestic labor. 58% have hired Hispanic workers. Collectively respondents employed 443 workers, of whom 33% were Hispanic workers. Five years ago, 86% of all employees were from the US and 14% were Hispanic. Today that number has decreased to 69% and 31% hispanic. 91% of Hispanic workers are primarily employed as milkers. 90% of respondents in both groups reported that they were treated well. Hispanic workers put in 70 hours per week compared to US workers 50. Greatest challenge for Hispanic workers is isolation (34%). 72% of Vermont residents are aware of farm labor issues. Most farmers believe 80% that undocumented farm workers are filling jobs that Vermonters don't want.

#### 4. Associated Knowledge Areas

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

#### Outcome #50

##### 1. Outcome Measures

Ecological and evolutionary aspects of the colonization of the Colorado potato beetle.

##### 2. Associated Institution Types

- 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)**

The expansion and establishment of insect pest species within agroecosystems is an important consideration for the development of sustainable agricultural systems. Understanding the evolutionary conditions that allow for the adaptation of pest populations and their subsequent expansion is an integral part of predicting future expansions.

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

During six week sampling field trip we identified numerous wild non-pest populations of CPB feeding on ancestral hosts. Individuals were sampled for both genetic and phenotypic studies. For the population genetic portion of the study beetles were collected from Mexico and five US states. First generation lab-reared beetles were exposed to simulated fall conditions to induce diapause.

###### **Results**

Vermont and Maryland diapausing individuals exhibited lower supercooling points as compared with Mexican beetles indicating a greater tolerance for freezing temperatures. Minimum soil temperatures measured at the UVM Horticultural Research Complex fell within the range of SCPs for sampled populations (10cm=6C, 20cm=4C, 40cm=2C, 100cm=1C) indicating that soil temperature may be a significant selective force for overwintering beetles within Vermont.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants

### **Outcome #51**

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

Increase value-added and agri-tourism economic opportunities for cold climate winegrape production

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

- 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}	2

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

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

Cold climate winegrape production is an emerging "new" crop in the diversification of agriculture in Vermont and northern New England offering economic opportunities.

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

A key challenge to this young industry is the selection of winegrape cultivars which will consistently produce high quality fruit under our variable environmental conditions. The UVM Vineyard is a research/demonstration site that has eight winegrape varieties. The winegrape varieties are part of a national evaluation of winegrape varieties (a joint USDA NE1020 Project with the Viticulture Consortium-East), an EPA Pesticide Environmental Stewardship Program Project, and a UVM Agric. Exp. Station Research Project. It was planted in 2007, using a randomized complete block experimental design of six blocks with four-vine plots of each winegrape variety per block. The vines are being trained to a high-wire cordon system; the soil is a well-drained Windsor loamy sand.

##### **Results**

In 2010, disease and arthropod data were collected at various times during the growing season. Research was presented at an international winegrape disease conference. Phenological stages were recorded for the different grape varieties and posted on the Cold Climate Grape website at <http://pss.uvm.edu/grape/UVMvineyard/2010UVMphenology.html>. Yield and juice data were collected at harvest for the eight wine grape varieties. An Open House and Tour of the Vineyard was conducted in 2010 and was attended by 115 people.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

#### 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

##### Brief Explanation

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

##### 1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- Case Study
- null

##### Evaluation Results

{No Data Entered}

##### Key Items of Evaluation

{No Data Entered}