

2010 University of Vermont Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted Date Accepted: 05/26/2011

I. Report Overview

1. Executive Summary

Among our many priority areas this year, we are especially proud of our work in the area of food systems. For example, we have individuals with programs that help people with diabetes dine healthfully and a national leader in research showing that Americans' skyrocketing consumption of added sugars has led not only to diabetes, but also to obesity, heart disease, high cholesterol and high blood pressure. Another faculty's food systems research grant goes directly to Vermont communities, while their Food System Research Collaborative links community organizations with UVM researchers. The University, under the leadership of Extension and Research has provided leadership to the all-out, university-wide effort, dubbed the "UVM food systems spire of excellence." Whether we're tackling America's nutrition, food safety and health issues or the complexities of dairy farming, whether we're tracking and anticipating the extreme effects of global climate change or finding new ways to restore water quality, we look for opportunities in the midst of challenge and change. We look for ways that UVM Extension and the Vermont Agricultural Experiment Station are collaborating closely for the good of science and the benefit of Vermonters. Our annual report is located at

<http://www.uvm.edu/extension/publications/annualreport/annualreport2010.pdf>

Total Actual Amount of professional FTEs/SYs for this State

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	53.7	0.0	13.8	0.0
Actual	57.0	0.0	39.5	0.0

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

2. Brief Explanation

No Merit Review was completed during this year. Plans are in process to continue the cooperative agreement with the four states, Vermont, Maine, New Hampshire and Massachusetts to rotate a merit review process. Maine has asked to be reviewed this year.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of the general public

Brief explanation.

Participants at events are asked for input and a plan is in place following suggestions from our Civil Rights review to expand our request for members through media. Funders, citizen members and participants are currently targeted for feedback.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use Surveys

Brief explanation.

{NO DATA ENTERED}

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Survey of the general public
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public

Brief explanation.

{NO DATA ENTERED}

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

Nearly all program efforts ask participants if the programming meets their expectations and asks them for input to be considered for future programming. In one program, Urban Non Point Source Pollution used survey feedback to design fact sheets and consumer rack cards, as well as the design and delivery of workshops. In our Beginning Farmer Classes participants recommended more time in the workshops to include more hands-on time to practice skills. Greenhouse growers requested posters describing their IPM efforts. They felt it important that consumers know they were working with University of Vermont to improve their production practices and decrease their reliance on pesticides. Growers were shown draft posters and they were revised based on grower input. These are just a few examples of how stakeholders feedback is incorporated into programming.

Brief Explanation of what you learned from your Stakeholders

Participant input is critical to matching program efforts with participant needs. One such example is a program in our Watershed Education project that takes youth out of the traditional classroom routine. Student were taken out on Lake Champlain to use technology and apply the classroom learning. This was an unforgettable experience for these students. One teacher stated, "I think it also provided an academic confidence boost to know that they were working with UVM professionals and that few others have had the opportunity to participate in anything similar." This feedback informs our youth education efforts directly.

For new program efforts such as Rollover Tractor Protection (ROPS) and Good Agricultural Practices (GAP) build relationships with agencies and organizations of similar interest to gather input on needs in the community as well as resources. These relationships are important to building new efforts in an efficient, effective manner. Established program efforts have a network of relationships they continue to draw upon informing both outreach and research directions.

Technology is playing a role in programming. Feedback on the web has been very positive with more consumers going to the web for information. Webinars are growing in programs and have been received very positively. Extension professionals are learning from each other to address this form of access for our clients. Social media is being explored with program specific Facebook pages doing well. A blog has been used with Farm Safety efforts gaining a strong following. Based on user preference for program access programming will use technology more in the future.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1801151	0	1652074	0

2. Totaled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	1519924	0	1617240	0
Actual Matching	4475874	0	1996913	0
Actual All Other	2690937	0	247896	0
Total Actual Expended	8686735	0	3862049	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	333675	0	0	0

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Community Development and the Personal and Intellectual Development of Youth
2	Health
3	Global Food Security and Hunger
4	Urban Non Point Source Pollution
5	Sustainable Energy
6	Childhood Obesity
7	Food Safety
8	Climate Change

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Community Development and the Personal and Intellectual Development of Youth

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
124	Urban Forestry	2%		0%	
608	Community Resource Planning and Development	17%		0%	
723	Hazards to Human Health and Safety	7%		0%	
802	Human Development and Family Well-Being	11%		0%	
805	Community Institutions, Health, and Social Services	21%		0%	
806	Youth Development	41%		0%	
903	Communication, Education, and Information Delivery	1%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	26.3	0.0	1.6	0.0
Actual	26.0	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
542872	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1598649	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
908689	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

•4-H Lifeskills Development Program: Help youth acquire Life Skills in the following areas: Decision Making; Critical Thinking; Problem-Solving; Communication; Goal-Setting; and Skills for Everyday Living to succeed as adults. Delivery Methods: 6-8 sequential learning hours using experiential learning techniques for in- school, afterschool, or out-of-school settings.

Operation Military Kids (OMK): Exists to educate Vermont communities on the unique experiences and challenges of military life and its impact on families, while providing positive opportunities for youth. Ready, Set, Go! Operation: Military Kids Vermont OMK-VT aims to establish community partnerships that will connect and educate people by: creating community support, delivering opportunities to youth and families, supporting military kids, collaborating with community partners, educating the public, including the education community, and incorporating military families into existing community resources.

•S.E.T. Activities: 4-H SET will begin to show how science and engineering issues affect youths' lives and prepare a future generation of scientists and engineers. The 4-H SET program will present 4-H with a new opportunity to connect to the LGU's SET research community and integrate with current youth workforce development initiatives.

•Downtown Business District Analysis: This program provides the community with analytical techniques that can be put to work immediately in economic revitalization efforts. The process requires input from local residents so that recommendations reflect both market conditions as well as the preferences of the community.

•Community Leadership: Assessing, addressing and expanding community capacity through leadership and public policy education efforts including building--and education members and clientele of--coalitions and collaboratives.

•Coping with Separation and Divorce (COPE): Parent education for parents of minor children who have filed for separation, divorce, dissolving of a civil union, parentage, changes in rights and responsibilities concerning their children. This is a court mandated program.

•Migrant Education Recruitment Program (MEP): To ensure that children of migrant farm workers, and qualifying youth under age 22, are aware of the educational support services available to them.

- Vermont AgrAbility Project: To make recommendations that can be used by farmers with disabilities to maintain employment, through development of accommodations.
- Rural and Agricultural VocRehab Program: To assist individuals with disabilities living in rural areas and those in agricultural professions or self-employed by providing them with a variety of services tailored to their needs in order to maintain or obtain their selected employment outcome.
- Take Charge (TC/RC): Helping community adult members to gain the skills necessary to be confident enough to take part in town government by ultimately competing for town government leadership positions..

- Vermont Urban and Community Forestry program :A joint initiative between the University of Vermont Extension and the Department of Forests, Parks and Recreation. The mission of the program is to promote the stewardship of the urban and rural landscapes to enhance the quality of life in Vermont communities. The program provides educational, technical and financial assistance in the management of trees and forests, in and around the built landscape.

2. Brief description of the target audience

- 4-H: Adult Volunteers
- 4-H: Camp Counselors
- 4-H: Youth
- 4-H: Youth Volunteers
- Adults
- Age 1 - 5 Pre-School
- Age 13 - 18 Youth
- Age 19 - 24 Young Adult
- Age 25 - 45 Adult
- Age 25 - 60 Adult
- Age 46 - 65 Adult
- Age 6 - 12 School Age
- Age 8 - 18 Youth
- Agriculture/Natural Resources: Watershed Based Organizations
- Agriculture: Beef Producers
- Agriculture: Crop Producers
- Agriculture: Dairy Processors
- Agriculture: Dairy Producers
- Agriculture: Farm Employees
- Agriculture: Farm Families
- Agriculture: Farm Managers
- Agriculture: Farmers
- Agriculture: Farmers w/disabilities
- Agriculture: Goat & Sheep Producers
- Agriculture: Industry Professionals
- Agriculture: Maple Sugar Producers
- Agriculture: Non-Dairy Producers
- Agriculture: Nursery operators
- Agriculture: Produce Growers
- Agriculture: Service Providers

- Agriculture: Small Fruit & Vegetable Growers
- Agriculture: Government Agency Personnel
- Communities: Cities and Towns
- Communities: Community Action Agencies
- Communities: Educators
- Communities: Local Officials/Leaders
- Communities: Non-Governmental Organizations
- Communities: Schools
- Communities: Town Health Officers
- Community leaders and citizens
- Environmental Professionals: Environmental Managers
- Extension: Advisors
- Extension: Faculty/Staff
- Family Court personnel
- Food Industry: Food Service Workers
- Food Industry: Producers
- Forestry: Landscape Industry
- Forestry: Loggers
- Forestry: Wood Processors
- Funders
- Migrant In School Youth
- Migrant Out of School Youth
- Policy Makers: Legislators
- Public: Age 13-18 (Youth)
- Public: Age 3-21
- Public: Age 55+
- Public: Age 6-12 (Children)
- Public: Age 65+ (Seniors)
- Public: Childcare Workers
- Public: College Students
- Public: Daycare Providers
- Public: Families
- Public: Families with Limited Resources
- Public: General
- Public: Homeowners
- Public: Master Gardeners
- Public: Master Trainers
- Public: Media Outlets
- Public: Nonprofit Organizations
- Public: Parents
- Public: People with Limited Resources
- Public: Small Business Owners/Entrepreneurs
- Public: Volunteers
- Public: VT SOUL Tree Stewards
- Public: Women and Minorities
- School Grade: 1
- School Grade: 4
- School Grade: 5
- School Grade: 6
- School Grade: 7
- School Grade: 8
- Train-the-Trainer recipients: adults

- 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
Actual	10104	127300	5808	11800

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

Patent Applications Submitted

Year: 2010
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 4-H Afterschool

Year **Actual**
 2010 17

Output #2

Output Measure

- 4-H Club

Year **Actual**
 2010 386

Output #3

Output Measure

- 4-H Day Camp
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- 4-H Overnight camp

Year	Actual
2010	3

Output #5

Output Measure

- 4-H School enrichment

Year	Actual
2010	32

Output #6

Output Measure

- 4-H Short-term/special interest

Year	Actual
2010	214

Output #7

Output Measure

- Class/course

Year	Actual
2010	7

Output #8

Output Measure

- Conference

Year	Actual
2010	7

Output #9

Output Measure

- Consultations

Year	Actual
2010	950

Output #10

Output Measure

- Discussion group

Year	Actual
2010	105

Output #11

Output Measure

- Field site visit

Year	Actual
2010	499

Output #12

Output Measure

- Funding request

Year	Actual
2010	4

Output #13

Output Measure

- Presentations

Year	Actual
2010	136

Output #14

Output Measure

- Publication - fact sheet

Year	Actual
2010	2

Output #15

Output Measure

- Publication - newsletter

Year	Actual
2010	93

Output #16

Output Measure

- Publication - newsprint article

Year	Actual
2010	2

Output #17

Output Measure

- Radio Spots/program (educational

Year	Actual
2010	2

Output #18

Output Measure

- TV segment/ATF

Year	Actual
2010	19

Output #19

Output Measure

- Train the Trainer sessions

Year	Actual
2010	16

Output #20

Output Measure

- Web Page
Not reporting on this Output for this Annual Report

Output #21

Output Measure

- Workshop - series
Not reporting on this Output for this Annual Report

Output #22

Output Measure

- Workshop - single session

Year	Actual
2010	94

Output #23

Output Measure

- Trainee delivered programming

Year	Actual
2010	117

Output #24

Output Measure

- Web page/Internet site updating

Year	Actual
2010	56

Output #25

Output Measure

- Display or exhibit

Year	Actual
2010	190

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	85% of Certificate of Eligibility reviewed by the Dept. of Education will be 100% accurate and reflect eligible migrant students
2	Increase number of programs led or supported by trained volunteer Staff
3	Increase number of youth serving as Foundation trustees who indicate a positive experience
4	increase number of Take Charge/ReCharge participants are satisfied with the process used as a means meeting community planning needs
5	Increase number of communities establishing or expanding community tree program
6	increase in number of farm and rural residents with disabilities successfully served (ie case is closed) which is defined as having increased satisfaction with actual or potential employment and maintained or increased income
7	Increase number of 4-H club members who participate as pages in state level government, as a result of their 4-H experiences.
8	Increase in number of TOEC participants who report increased skills in leadership and decision making.
9	Increase number of 4-H staff self-reporting an increase in their ability to work with youth and adults to implement 4-H lifeskill development opportunities
10	Number of Migrant Education eligible students enrolled
11	Increase the number of committee members implementing or enhancing broad-based decision-making skills
12	Increase the number of program participants serving as leaders on Committees
13	Increase the number of schools that offer financial literacy education
14	Increase the number of volunteers self reporting an increase in their ability to implement a 4-H lifeskill development for youth
15	Increase the number of youth who set and reach goals identified at the beginning of the 4-H year
16	Increase the number of clubs doing at least 6 hours of community service
17	Youth have greater opportunities to access and learn financial planning skills

18	increase in number of youth reached with positive youth development programming self reporting an increase in mastery for targeted life skills, including: Decision making; wise use of resources; communication; accepting differences; leadership; useful/marketable skills; healthy lifestyle choices; and/or self-responsibility
19	Increase in number of youths involved in Urban Community Forestry
20	Increase number of clubs with SET related projects
21	Number of individuals (youth and volunteers) increasing knowledge and/or skills in content and careers (across subject areas ranging from animal science to environmental science to technology)
22	Increase the number of apprentices who achieve preset professional development goals within 3 years
23	Increase the number of apprentices who plan and implement a program evaluation.
24	Increase the number of apprentices who report the results of their program evaluation.
25	Number of individuals applying science process skills, including incorporation of science learning in community service, enrollment in SET-related post-secondary education, and/or entrepreneurship/career success
26	Number of individuals demonstrating improved behavior in science learning, such as effective participation in school classes, independent study, career exploration, or volunteer experiences
27	increase the number of participants who self report increase of skills in leadership and decision making.
28	increasing number of elected/appointed village, town or city officials that use information gained at TOEC in leadership and decision making
29	Increase the number of parents understanding family transition through parentage, divorce or separation who understand the impact of these changes on their children.
30	Number of dollars of in-kind and cash contributions in support of programming
31	Number of participants report using skills learned in community setting

Outcome #1

1. Outcome Measures

85% of Certificate of Eligibility reviewed by the Dept. of Education will be 100% accurate and reflect eligible migrant students

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Increase number of programs led or supported by trained volunteer Staff

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Increase number of youth serving as Foundation trustees who indicate a positive experience

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

increase number of Take Charge/ReCharge participants are satisfied with the process used as a means meeting community planning needs

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Increase number of communities establishing or expanding community tree program

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

increase in number of farm and rural residents with disabilities successfully served (ie case is closed) which is defined as having increased satisfaction with actual or potential employment and maintained or increased income

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	55	66

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Farm and rural residents who experience health issues or disabilities that interfere with employment benefit from services to make it possible for them to maintain or obtain employment and/or self-employment.

What has been done

The Rural Agriculture Voc ReHab (RAVR) program working closely with VT AgrAbility field staff and partners statewide worked in a variety of high quality outreach projects to provide a creative and helpful array of counseling and guidance, work and home site modifications, health restoration, and support services to Vermonters living and working with disabilities on farms.

Results

A case that has been closed means an individual is satisfied with how their employment situation is sustaining themselves and their families. Each year RAVR closes about 75 cases. This program has been delivering services in Vermont since 1968.

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services

Outcome #7

1. Outcome Measures

Increase number of 4-H club members who participate as pages in state level government, as a result of their 4-H experiences.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Increase in number of TOEC participants who report increased skills in leadership and decision making.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Increase number of 4-H staff self-reporting an increase in their ability to work with youth and adults to implement 4-H lifeskill development opportunities

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	11	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #10

1. Outcome Measures

Number of Migrant Education eligible students enrolled

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	150	125

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services

Outcome #11

1. Outcome Measures

Increase the number of committee members implementing or enhancing broad-based decision-making skills

Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

Increase the number of program participants serving as leaders on Committees

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
903	Communication, Education, and Information Delivery

Outcome #13

1. Outcome Measures

Increase the number of schools that offer financial literacy education

Not Reporting on this Outcome Measure

Outcome #14

1. Outcome Measures

Increase the number of volunteers self reporting an increase in their ability to implement a 4-H lifeskill development for youth

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	540	266

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #15

1. Outcome Measures

Increase the number of youth who set and reach goals identified at the beginning of the 4-H year

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	900	640

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Setting and reaching goals is an important life skill. Volunteers who have the skills and tools to work with youth are an important component to successfully supporting youth in developing those skills.

What has been done

4-H leaders have been given the training and tools to help their members prepare their record books. Members are encouraged to set goals at the start of the 4-H year. Check-ins throughout the year help the members see if they are on track to meet their goals. Life skills are identified and incorporated at the club level.

Results

640 members set goals at the start of the 4-H year and documented in their record books when they achieved those goals. Members demonstrated a better understanding of goal setting and life skills gained.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #16

1. Outcome Measures

Increase the number of clubs doing at least 6 hours of community service

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	125	76

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #17

1. Outcome Measures

Youth have greater opportunities to access and learn financial planning skills

Not Reporting on this Outcome Measure

Outcome #18

1. Outcome Measures

increase in number of youth reached with positive youth development programming self reporting an increase in mastery for targeted life skills, including: Decision making; wise use of resources; communication; accepting differences; leadership; useful/marketable skills; healthy lifestyle choices; and/or self-responsibility

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	3800	1789

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Personal mastery of Life Skills (Targeting Life Skills Model, 1998) is important for both Positive Youth and Family Development. The goal is to provide developmentally appropriate opportunities for youth and adults to experience life skills, to practice them until they are learned, and be able to use them as necessary throughout a lifetime.

What has been done

Record books are submitted by 4-H members. Leaders are trained by 4-H educators on how to work with their members on the importance and completion of the record books in part to help members set goals and track their progress. This is one methodology for leaders to evaluate the learning and skill building of 4-H members.

Results

Reading 4-H record books is a moving experience as one learns from the members 4-H stories a bit about how 4-H has impacted them. The quotes below capture some of what is repeated many times in the various 4-H stories. "4-H is about friendship and teamwork..." " My favorite part of 4-H is having a fun group of people to hang out with while learning new things..." " 4-H allows me to be who I am... helping to make me a kinder tolerant more well rounded citizen." " 4-H means learning new and helpful skills, improving skills, and facing challenges." " Since I've been in 4-H I can talk without being afraid." " 4-H has helped me with keeping records and being organized." "To me this is what 4-H is about; learning, growing, changing, going through times and experiences that will change who we are inside..."

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #19

1. Outcome Measures

Increase in number of youths involved in Urban Community Forestry

Not Reporting on this Outcome Measure

Outcome #20

1. Outcome Measures

Increase number of clubs with SET related projects

Not Reporting on this Outcome Measure

Outcome #21

1. Outcome Measures

Number of individuals (youth and volunteers) increasing knowledge and/or skills in content and careers (across subject areas ranging from animal science to environmental science to technology)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2400	3837

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #22

1. Outcome Measures

Increase the number of apprentices who achieve preset professional development goals within 3 years

Not Reporting on this Outcome Measure

Outcome #23

1. Outcome Measures

Increase the number of apprentices who plan and implement a program evaluation.

Not Reporting on this Outcome Measure

Outcome #24

1. Outcome Measures

Increase the number of apprentices who report the results of their program evaluation.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done

{No Data Entered}

Results

{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
903	Communication, Education, and Information Delivery

Outcome #25

1. Outcome Measures

Number of individuals applying science process skills, including incorporation of science learning in community service, enrollment in SET-related post-secondary education, and/or entrepreneurship/career success

Not Reporting on this Outcome Measure

Outcome #26

1. Outcome Measures

Number of individuals demonstrating improved behavior in science learning, such as effective participation in school classes, independent study, career exploration, or volunteer experiences

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2880	132

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #27

1. Outcome Measures

increase the number of participants who self report increase of skills in leadership and decision making.

Not Reporting on this Outcome Measure

Outcome #28

1. Outcome Measures

increasing number of elected/appointed village, town or city officials that use information gained at TOEC in leadership and decision making

Not Reporting on this Outcome Measure

Outcome #29

1. Outcome Measures

Increase the number of parents understanding family transition through parentage, divorce or separation who understand the impact of these changes on their children.

Not Reporting on this Outcome Measure

Outcome #30

1. Outcome Measures

Number of dollars of in-kind and cash contributions in support of programming

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	1000	29624

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Vermont is a state with no permanent base or military installation; yet, we are experiencing the largest single deployment of service members since World War II. When they deploy, it is their home communities that must step up to support their children and families, becoming the homefront unit for building resilient children. To do this, local communities and schools must go from limited awareness of military life, values, and challenges to full involvement, awareness, and empathy.

What has been done

As a team of statewide partners OMK has hosted Ready, Set, Go! trainings throughout the state and on Across the Fence, appeared as a selected program in the UVM Extension annual report, spoken to school groups and volunteer groups, and worked with colleagues and community members to gather donations and make local deliveries of Hero Packs to children. We have open discussions about the impacts of deployment on children and families, making this issue more mainstream and Main Street.

Results

To date, we have 225 families registered to receive updates from OMK about kids' events and activities. We have trained 35 organizations and over 1000 participants on the impacts of deployment. We now share information with our military partners and participate in their training and support programs. Survey data shows that increased awareness by community members has led 72% of respondents to speak to others about the need to support kids during deployment and has led to direct involvement by soliciting donations, hosting events, volunteering, etc. This will help OMK work with families, schools, and communities to build resilient kids who can grow through the experience of deployment and strengthen their connections to their local communities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
802	Human Development and Family Well-Being
806	Youth Development
903	Communication, Education, and Information Delivery

Outcome #31

1. Outcome Measures

Number of participants report using skills learned in community setting

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	750	246

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Studies indicate a number of problems ranging from declining levels of voter participation and public apathy toward elections to decreasing interest in volunteer activities and community groups. They also document the younger generation's apparent disinterest in public affairs.

What has been done

Community program efforts range broadly building individuals skills, community collaboration and involvement to address community issues and build community assets. Activities demonstrating results in FY10: 2nd Annual Energy and Climate Action Conference (ECA)with 250 local officials/leaders attending, three Take Charge community development programs, Stewardship of the Urban Landscape (SOUL) an eight week tree steward training program; and Speak Out for Military Kids (SOMK) involving 132 youth met, trained and worked together.

Results

Addressing specific Vermont and community needs individuals in three communities engaged in Take Charge efforts resulting in exceeding participation goals, revitalizing a downtown, and taking another committees recommendations to work; 79% of the respondents to a 6 month post survey from the ECA conference indicated their community had started at least one new project related to energy efficiency; 52 SOUL graduates completed over 1,040 hours managing Vermont's urban and community forests; SOMK has 132 youth speakers in the community leading to 72% of the community respondents stating they were moved to speak to others about supporting kids during deployment. The number of communities affected by these individuals is not known but many have benefited through the awareness and skills of the community members.

4. Associated Knowledge Areas

KA Code	Knowledge Area
124	Urban Forestry
608	Community Resource Planning and Development
806	Youth Development
903	Communication, Education, and Information Delivery

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

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

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Health

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies				
502	New and Improved Food Products				
503	Quality Maintenance in Storing and Marketing Food Products				
511	New and Improved Non-Food Products and Processes				
512	Quality Maintenance in Storing and Marketing Non-Food Products				
703	Nutrition Education and Behavior				
704	Nutrition and Hunger in the Population				
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources				
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins				
802	Human Development and Family Well-Being				
806	Youth Development				
903	Communication, Education, and Information Delivery				
	Total				

V(C). Planned Program (Inputs)

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	2.4	0.0	2.0	0.0
Actual	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

Not reporting to this Planned Program

2. Brief description of the target audience

- 4-H: Adult Volunteers
- 4-H: Camp Board Directors
- 4-H: Youth Volunteers
- Adults
- Age 25 - 60 Adult
- Age 46 - 65 Adult
- Age 60 - Senior
- Community leaders and citizens
- Extension: Faculty/Staff
- Public: Adult Caregivers
- Public: Childcare Workers
- Public: Daycare Providers
- Public: Families
- Public: Families with Limited Resources
- Public: General

- Public: Nonprofit Organizations
- Public: People with Limited Resources
- Train-the-Trainer recipients:adults
- 4-H Youth
- Youth

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2010
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Class/course
 Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Consultations
Not reporting on this Output for this Annual Report

Output #3

Output Measure

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

Output #4

Output Measure

- Educational/evaluation instrument
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Field day/fair
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Field site visit
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Funding request
Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Presentations
Not reporting on this Output for this Annual Report

Output #9

Output Measure

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

Output #10

Output Measure

- Publication - newsprint article
Not reporting on this Output for this Annual Report

Output #11

Output Measure

- Radio Spots/program (educational)
Not reporting on this Output for this Annual Report

Output #12

Output Measure

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

Output #13

Output Measure

- Workshop - series
Not reporting on this Output for this Annual Report

Output #14

Output Measure

- Workshop - single session
Not reporting on this Output for this Annual Report

Output #15

Output Measure

- Conference
Not reporting on this Output for this Annual Report

Output #16

Output Measure

- Web Page
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase the number of participants who increase the quality and/or quantity of fruits and vegetables
2	Increase in number of people who expand or change their preferences for or attitudes about healthy foods
3	Increase in number of people who improve food planning and shopping behaviors.
4	Increase in number of food managers certified in food safety and sanitation (Action)
5	Increase in number of school food service workers using food safety 'best practices' when receiving, storing, handling, preparing and serving food
6	Increase in number of schools implementing Hazard Analysis Critical Control Point based food safety programs
7	Increase in number of people who show an improvement in healthful eating practices.
8	Increase the number of people who show improvement in food safety and preservation practices.
9	A greater variety of produce available at home.
10	An increased preference for at least one fruit or vegetable
11	increase in number of food service workers using food safety 'best practices' when receiving, storing, handling, preparing and serving food
12	increase in number of food managers certified in food safety and sanitation
13	Number of people who develop a plan to improve dietary practices
14	Number of people who show improvement in food safety and preservation practices
15	Number of youth or adults who self report an increase in mastery of the life skills Healthy Lifestyle Choices and Decision Making

Outcome #1

1. Outcome Measures

Increase the number of participants who increase the quality and/or quantity of fruits and vegetables

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Increase in number of people who expand or change their preferences for or attitudes about healthy foods

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Increase in number of people who improve food planning and shopping behaviors.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Increase in number of food managers certified in food safety and sanitation (Action)

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Increase in number of school food service workers using food safety 'best practices' when receiving, storing, handling, preparing and serving food

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Increase in number of schools implementing Hazard Analysis Critical Control Point based food safety programs

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Increase in number of people who show an improvement in healthful eating practices.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Increase the number of people who show improvement in food safety and preservation practices.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

A greater variety of produce available at home.

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

An increased preference for at least one fruit or vegetable

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

increase in number of food service workers using food safety 'best practices' when receiving, storing, handling, preparing and serving food

Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

increase in number of food managers certified in food safety and sanitation

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

Number of people who develop a plan to improve dietary practices

Not Reporting on this Outcome Measure

Outcome #14

1. Outcome Measures

Number of people who show improvement in food safety and preservation practices

Not Reporting on this Outcome Measure

Outcome #15

1. Outcome Measures

Number of youth or adults who self report an increase in mastery of the life skills Healthy Lifestyle Choices and Decision Making

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

{No Data Entered}

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

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

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%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	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
Actual	48646	523600	1359	5900

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

Year: 2010
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	10	14	24

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Class/course

Year	Actual
2010	20

Output #2

Output Measure

- Conference

Year	Actual
2010	4

Output #3

Output Measure

- Consultation

Year	Actual
2010	1699

Output #4

Output Measure

- Consumer Publication

Year	Actual
2010	16

Output #5

Output Measure

- Demonstration

Year	Actual
2010	40

Output #6

Output Measure

- Discussion group

Year	Actual
2010	40

Output #7

Output Measure

- Educational/evaluation instrument

Year	Actual
2010	1

Output #8

Output Measure

- Electronic Communication/phone

Year	Actual
2010	1758

Output #9

Output Measure

- Field day/fair

Year	Actual
2010	6

Output #10

Output Measure

- Field site visit

Year	Actual
2010	209

Output #11

Output Measure

- Funding request

Year	Actual
2010	9

Output #12

Output Measure

- Presentation

Year	Actual
2010	117

Output #13

Output Measure

- Publication - Peer Reviewed

Year	Actual
2010	10

Output #14

Output Measure

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

Output #15

Output Measure

- Publication - fact sheet

Year	Actual
2010	17

Output #16

Output Measure

- Publication - magazine article

Year	Actual
2010	7

Output #17

Output Measure

- Publication - manual

Year	Actual
2010	1

Output #18

Output Measure

- Publication - newsletter

Year	Actual
2010	89

Output #19

Output Measure

- Publication - newsprint article

Year	Actual
2010	92

Output #20

Output Measure

- Research project

Year	Actual
2010	7

Output #21

Output Measure

- TV segment/ATF

Year	Actual
2010	21

Output #22

Output Measure

- Technical Publication

Year	Actual
2010	48

Output #23

Output Measure

- Tour(s)

Year	Actual
2010	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

Year	Actual
2010	55

Output #26

Output Measure

- Workshop - series

Year	Actual
2010	12

Output #27

Output Measure

- Workshop - single session

Year	Actual
2010	90

Output #28

Output Measure

- Trainee delivered programming

Year	Actual
2010	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

KA Code	Knowledge Area
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

Year	Quantitative Target	Actual
2010	10	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

Year	Quantitative Target	Actual
2010	10	5

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
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

Year	Quantitative Target	Actual
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

KA Code	Knowledge Area
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

Year	Quantitative Target	Actual
2010	100	203

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

KA Code	Knowledge Area
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

Year	Quantitative Target	Actual
2010	75	52

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 #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

Year	Quantitative Target	Actual
2010	25	111

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 #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

Year	Quantitative Target	Actual
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

KA Code	Knowledge Area
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

Year	Quantitative Target	Actual
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

KA Code	Knowledge Area
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

Year	Quantitative Target	Actual
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

KA Code	Knowledge Area
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

Year	Quantitative Target	Actual
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 Farmmedic 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

KA Code	Knowledge Area
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

Year	Quantitative Target	Actual
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)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Urban Non Point Source Pollution

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	0%		12%	
112	Watershed Protection and Management	100%		33%	
133	Pollution Prevention and Mitigation	0%		15%	
402	Engineering Systems and Equipment	0%		13%	
403	Waste Disposal, Recycling, and Reuse	0%		15%	
405	Drainage and Irrigation Systems and Facilities	0%		12%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	2.2	0.0	1.4	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
14636	0	30076	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
43100	0	160863	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
102153	0	1153	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- **Urban Watershed and Water Quality:** work with towns, municipalities, community organizations with consultations, demonstrations, workshops, newsprint, presentation, youth camps
- **Watershed & Water Quality Programs:** Watershed education for educators and students, and community members with consultation, train the trainer, demonstration, field site visits
- **Healthy Coastal Ecosystems:** work with marinas and coastal businesses, consultation, field site visits
 - Assessment of P loading from non point pollution sources and the development of appropriate technologies that reduce p pollution.
 - Quantify dairy farm pathogens Escherichia coli (E. coli) and Cryptosporidium parvum (C. parvum) in barnyard and milking operations wastewater and in feed bunk and farm ditch runoff generated during precipitation events, and to assess a novel steel slag filter technology for reducing these organisms from point and non-point dairy farm effluents in a cold northern climate.

2. Brief description of the target audience

- Adults
- Age 13 - 18 Youth
- Age 19 - 24 Young Adult
- Age 25 - 45 Adult
- Age 25 - 60 Adult
- Age 6 - 12 School Age
- Age 8 - 18 Youth
- Agriculture/Natural Resources: Watershed Based Organizations
- Agriculture: Farmers
- Agriculture: Service Providers
- Communities: Local Officials/Leaders
- Communities: Non-Governmental Organizations
- Community leaders and citizens
- Environmental Professionals: Environmental Managers
- Public: Age 13-18 (Youth)
- Public: General
- Public: Homeowners
- Public: Small Business Owners/Entrepreneurs
- Youth

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	804	5300	1577	0

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

Year: 2010
 Actual: 1

Patents listed

Phosphorus removal process and method for residential and commercial wastewater treatment

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	0	1	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Consultations

Year	Actual
2010	27

Output #2

Output Measure

- Demonstrations

Year	Actual
2010	13

Output #3

Output Measure

- Field day/fair

Year	Actual
2010	2

Output #4

Output Measure

- Presentation

Year	Actual
------	--------

2010 18

Output #5

Output Measure

- Tours

Year	Actual
2010	2

Output #6

Output Measure

- Train the trainer

Year	Actual
2010	1

Output #7

Output Measure

- Web page updating

Year	Actual
2010	1

Output #8

Output Measure

- Workshop series

Year	Actual
2010	8

Output #9

Output Measure

- Workshop single session

Year	Actual
2010	32

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of households using lawn care inputs in designated no-input buffer zones; Number of properties under one or more low input/ no phosphorous lawn care practices
2	Number of commercial lawn care firms using low input/ no phosphorous lawn care practices
3	Number of lakeshore residential properties planting buffer strips or maintaining native vegetation as a buffer to decrease erosion and sedimentation
4	Number of lakeshore residents changing residential practices to reduce impact on water quality
5	Number of requests for information or technical assistance for educational watershed stewardship projects or implementation of water quality improvement projects
6	Number of retail lawn and garden centers providing information on low input/no phosphorous lawn care options to customers
7	Number of schools that demonstrate an increase in, or institutionalization of, integrated watershed education into returning educators curriculum
8	Number of towns/municipalities using one or more bioengineering methods for shoreline stabilization to decrease erosion and sedimentation
9	Vermont dairy farm reduction in farm point and non point pollution sources

Outcome #1

1. Outcome Measures

Number of households using lawn care inputs in designated no-input buffer zones; Number of properties under one or more low input/ no phosphorous lawn care practices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	19

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Urban storm water runoff is a major contributor to impairment of Mussey Brook in Rutland. We are working with watershed property owners to reduce storm water related pollution and improve water quality sufficiently to remove the brook from impaired status.

What has been done

In partnership with the city, local NGOs, VT Agency of Natural Resources and UVM Extension/Sea Grant the Moon-Mussey Brook Watershed Good Stewards project began last summer (2008), targeting business/institutional property managers for one-on-one low input lawn care training.

Results

A follow up survey in August 2009 showed all nine priority properties that adopted practices in 2008 are still using low input lawn care practices. In addition, 16 private property owners also adopted low input practices. Project is on-going so total acreage under low input care will be calculated.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Urban storm water runoff is a major contributor to impairment of Watersheds. The business community as well as private property owners benefit from a healthy watershed and can contribute to efforts to prevent and improve impairment.

What has been done

A larger business community meeting was held to discuss the impacts of having an MS4 designation placed on the Moon-Mussey watershed held in March 2010.

Results

11 small business owners agreed to participate in 2010 low input grounds care in Moon-Mussey brook watershed. They have agreed to adopt practices that a) reduce sediment inputs and b) decrease lawn care inputs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	28

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A 2007 report estimated that 46% of the nonpoint source phosphorus load to Lake Champlain is from urban land uses, even though urban/suburban developed areas account for only 3% of the basin area. Urban NPS pollutants originate from decisions by individuals on how they manage their property, be it residential, commercial or municipal property. Only when large numbers of residents, property managers, lawn care firms, municipal governments and others act together to reduce lawn inputs and storm water runoff on their property will we achieve success in control and reduction of urban NPS pollution.

What has been done

Non Point Source pollution prevention trainings were attended by lakeshore homeowners collaborating with the Centennial Brook Community group.

Results

Since 2008, 5400' of buffer plantings have been completed on 28 properties on Lake St Catherine's lakeshore and we have an extensive waiting list for future assistance.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

Outcome #4

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	56

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A 2007 report estimated that 46% of the nonpoint source phosphorus load to Lake Champlain is from urban land uses, even though urban/suburban developed areas account for only 3% of the basin area. Urban NPS pollutants originate from decisions by individuals on how they manage their property, be it residential, commercial or municipal property. Only when large numbers of residents, property managers, lawn care firms, municipal governments and others act together to reduce lawn inputs and storm water runoff on their property will we achieve success in control and reduction of urban NPS pollution.

What has been done

A presentation titled "Reduced P on Lawns" was attended by business owners and "Shoreline erosion workshops" was attended by local officials from three counties. A follow up survey was conducted to evaluate changes made.

Results

Residential surveys have demonstrated that over 31% (56/180) of lakeshore households contacted have changed practices to reduce domestic NPS pollution. Follow up surveys show that over 60% (106/180) of lakeshore households contacted are aware of the link between residential practices and coastal water quality.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

Outcome #5

1. Outcome Measures

Number of requests for information or technical assistance for educational watershed stewardship projects or implementation of water quality improvement projects

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

Outcome #6

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	57

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

Outcome #7

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Allen Brook watershed is Williston's largest and has been under increasing development pressures. Allen Brook is a tributary of the Winooski and meets with Muddy Brook. Allen Brook has been degraded from its status as a Class B Waterway due to stormwater runoff and E. coli

levels, sections have been eroding the stream-bank and it suffers from sedimentation. Additionally, both project sites have a number of invasive species.

What has been done

The UVM Watershed Alliance coordinated multiple service projects with two schools. Groups focused on improving riparian habitat along Allen Brook in Williston and the Huntington River in Huntington. 170 students worked almost 200 hours improving the habitat.

Results

The work done will stabilize the stream bank, preventing sediment from flowing downstream and provide additional food and cover for wildlife. One year later one school has returned to the site and the 5-8th grade science teacher has decided to adopt the site with his students and become permanent stewards with the support from the Watershed Alliance and Town of Williston planning department. This is not only improving the water quality but giving students the opportunity to know and experience what it means to be stewards of their watersheds.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

Outcome #8

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action 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)

Lake Champlain shoreline communities are vulnerable to erosion and shoreline destabilization. Decision makers, local officials and coastal land owners need to be aware of the hazards associated with development on Lake Champlain cliffs and near unstable stream channels. These include property loss, structural damage to public and private infrastructure, and public safety concerns.

What has been done

In collaboration with the Northwest (VT) Regional Planning Commission (NWRPC), we held workshops through 2008 and 2009 to educate town and municipal officials in the Lake Champlain basin about using bioengineered methods for shoreline stabilization and erosion control. Bioengineering uses vegetative materials for structural support for banks subject to erosion. Although an accepted erosion control practice in New England, bioengineering is little used in the Lake Champlain basin.

Results

The town of Colchester changed zoning regulations and coastal construction guidelines to require future shoreline construction to use Sea Grant-NWRPC promoted bioengineering methods.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

Outcome #9

1. Outcome Measures

Vermont dairy farm reduction in farm point and non point pollution sources

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}	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Community; steel slag filtration is very efficient in reducing both E.coli and Cryptosporidium from agricultural wastewater

What has been done

Farm wastewater samples were collected monthly at eight sampling points (barnyard settling pit, barnyard manure tank, dairy tank, feed bunk runoff, steel slag filters, constructed wetland effluent, a splitter tank/flume and Potash Brook). Samples of feed bunk runoff generated during storm and snowmelt events were also collected from four sites. Another facet of this study was the inclusion of laboratory column experiments to investigate the ability of steel slag filtration in reducing E.coli

levels from agricultural effluents. Columns filled with slag were used to investigate the effect of different hydraulic residence times on E. coli reduction performance.

Results

All samples contained E. coli, but with counts varying significantly by season. The highest E.coli concentrations were observed in a dairy tank followed by feed bunks runoff and a splitter tank flume. These results provided further evidence that feed bunks runoff can represent a significant source of E.coli contamination. The results from this study also suggest that E.coli is strongly affected by temperature fluctuations as well as farm practices that vary seasonally, such as quantity of germicidal chemicals used during winter and summer. Parasitic coccidians were not detected in any of the wastewater samples. Remarkable E. coli reduction efficiency was achieved, averaging 92 percent over 450 days. Column experiments confirmed that hydraulic residence time affects the efficiency of E. coli reduction via steel slag filters, with increasing time leading to increased efficiency. Investigations on the ability of steel slag to reduce Cryptosporidium from wastewater using Nosema microspordia showed a decrease in the number of parasites.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
402	Engineering Systems and Equipment
405	Drainage and Irrigation Systems and Facilities

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Government Regulations
- Competing Public priorities

Brief Explanation

None to note.

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

Evaluation Results

Post program survey of residents at lakes where program is active demonstrate that 31% of those contacted have changed practices to reduce domestic NPS pollution and 60% of the lakeshore households contacted are aware of the link between residential practices and coastal water quality.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Sustainable Energy

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
402	Engineering Systems and Equipment	20%		0%	
601	Economics of Agricultural Production and Farm Management	80%		60%	
604	Marketing and Distribution Practices	0%		25%	
607	Consumer Economics	0%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	0.6	0.0	1.0	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
14140	0	28338	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
41641	0	48193	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
68793	0	7495	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Analyze the economic feasibility and market potentials for Vermont farmers to grow oilseed crops and produce biodiesel with a focus on demand factors. Provide information and recommendations for promoting biodiesel as a renewable energy.

On-farm vegetable and biodiesel project: research and education for farmers on the economic advantages of on-farm biodiesel production.

2. Brief description of the target audience

- Adults
- Agriculture: Producers/Farmers
- Agriculture Service Providers
- Agriculture Government
- Agency Personnel

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	285	0	0	0

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

Patent Applications Submitted

Year: 2010

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Research projects

Year	Actual
2010	8

Output #2

Output Measure

- Workshop - single session

Year	Actual
2010	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of farmers who will produce energy crops and/or implement the use of renewable energy

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	111

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Government Regulations
- Competing Public priorities

Brief Explanation

Interest, or not in energy crops is influenced by the economic situation.

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

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Childhood Obesity

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
607	Consumer Economics	0%		4%	
609	Economic Theory and Methods	0%		4%	
703	Nutrition Education and Behavior	100%		47%	
724	Healthy Lifestyle	0%		45%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890

Actual	2.2	0.0	4.2	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
132930	0	134812	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
391452	0	193718	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
124435	0	30843	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Diabetes Education: for diabetics or those preparing food for diabetics, provides practical nutrition

information and skills development on how to prepare healthy foods.

Food, Fun, and Reading/Food, Culture, and Reading: a 1-3 hour train-the-trainer session for volunteers/teachers to implement the 6 lesson curriculum for pre-kindergarten through grade 2.

Healthy Eating: Nutrition classes designed for a wide range of people, with an emphasis on national dietary guidance.

Study will examine the effects of reducing TV viewing time on energy intake and expenditure in overweight or obese adults.

Identify activities and approaches that could be adopted in daycare settings that would increase active play for preschool children.

Examine the production of health capital as measured by a healthy weight in a sample of single headed households with children ..

Evaluate the effectiveness of a Web-based learning application for teaching middle school children about energy balance and its relationship health.

2. Brief description of the target audience

- 4-H: Youth
- Adults
- Age 13 - 18 Youth
- Age 6 - 12 School Age
- Age 8 - 18 Youth
- Communities: Educators
- Communities: Schools
- Community leaders and citizens
- Extension: Faculty/Staff
- Policy Makers: Legislators
- Public: Parents
- School Grade: 1
- School Grade: 2

College Students
Scientific Community
Single-headed households

Train-the-Trainer recipients:adults

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	584	280	356	0

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

Patent Applications Submitted

Year: 2010

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	0	4	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Class/course

Year	Actual
2010	2

Output #2

Output Measure

- Consultation

Year	Actual
2010	162

Output #3

Output Measure

- Display/exhibit

Year	Actual
------	--------

2010 1

Output #4

Output Measure

- Evaluation

Year	Actual
2010	1

Output #5

Output Measure

- Funding request

Year	Actual
2010	2

Output #6

Output Measure

- Curriculum

Year	Actual
2010	1

Output #7

Output Measure

- Publication - newsprint

Year	Actual
2010	53

Output #8

Output Measure

- Train the trainer

Year	Actual
2010	7

Output #9

Output Measure

- Healthy Eating Workshop

Year	Actual
2010	17

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of people who develop a plan to improve dietary practices.
2	Number of people who expand or change their preferences for or attitudes about healthy foods
3	Number of youth or adults who self report an increase in mastery of the life skills Healthy Lifestyle Choices and Decision Making
4	Number of people that show an improvement in healthful eating practices
5	Number of people who better balance energy expended with energy intake.
6	Production of health capital as measured by a healthy weight in a sample of single headed households for children.

Outcome #1

1. Outcome Measures

Number of people who develop a plan to improve dietary practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	83

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #2

1. Outcome Measures

Number of people who expand or change their preferences for or attitudes about healthy foods

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	45

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The average body weight of children across the nation has grown in recent years, and in response, so have the strategies to address this concern. Because overweight in children is commonly caused by a lack of physical activity, unhealthy eating patterns, or a combination of the two, strategies primarily address these behaviors.

What has been done

Concerned adults at the Milton Elementary School decided to address the problem of childhood overweight by initiating an intervention that included introduction of a salad bar in the school cafeteria, as well as nutrition and physical activity education offered to youth in grades K-2 as part of P.E. classes over a ten week period. Parents of these youth also received weekly newsletters that complemented the information taught in class so that messages could be reinforced at home.

Results

The number of children in grades K-2 who selected items from the newly introduced salad bar during a seven week period in the fall of 2009 ranged from 30-70. Children showed an increased preference for cherry tomatoes and spinach based on a survey administered before and after the salad bar was introduced. Of the 126 parents who completed a survey after the project was completed, 38% indicated that they were aware of new attitudes or behaviors that their children had adopted during or since the previous spring when the project began. The most common comments from parents were related to increased consumption of fruits and veggies, increased willingness to try new foods, increased awareness about nutrition and good health, and increased interest in physical activity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #3

1. Outcome Measures

Number of youth or adults who self report an increase in mastery of the life skills Healthy Lifestyle Choices and Decision Making

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	125

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #4

1. Outcome Measures

Number of people that show an improvement in healthful eating practices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	6466

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Overweight among children is increasing at an alarming rate, more than doubling over the past 20 years. This obesity epidemic is putting our children at risk for an array of health problems at an earlier age than ever before.

What has been done

Food, Fun, and Reading (FFR) curriculum is a preschool through grade 2 nutrition and literacy education program so young children are adapting healthy nutrition and fitness habits. The curriculum is being used by Extension nutrition and food specialists and federally funded Food Stamp or EFNEP throughout the United States. A evaluation instrument was developed, implemented and results shared.

Results

As a result of participating in FFR, children have experienced the following: 75% tasted foods they might not have previously tried; 100% children watched other children tasting foods; 41% helped make the snack during class; 50% made the snack at home; and 100% were excited about using food models and MyPyramid. By completing FFR, 75% of children can recognize healthy foods, have expanded the variety of foods in their diet and are willing to try new foods. 50% of the children are reading more books about food and also request new foods for meals and snacks.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #5

1. Outcome Measures

Number of people who better balance energy expended with energy intake.

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}	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Obesity is reaching epidemic levels. Hours spent watching TV likewise has risen. Investigators hypothesize a connection exists between TV viewing and obesity as a result of cessation of other

activities, increased food consumption and reduced resting metabolism. Previous studies have found weak, positive or no associations. This study examined the effects of reduced TV viewing on energy intake and expenditure in overweight or obese adults using principles from behavioral economics to determine the relationship.

What has been done

Adults were recruited for a 6-week randomized controlled trial. After a 3-week observation-only baseline phase, participants were stratified by MBI and randomized to an observation-only control group or an intervention group for 3 weeks. Based on viewing habits established during the observation period, each person in the intervention group was given a weekly limit of TV time. Once the limit was reached, a monitor automatically shut the TV off until the next week. The control group had no limits on TV viewing and continued to watch TV as before.

Results

The study found that watching less TV doesn't necessarily lead to more exercise or better eating habits, but it does result in subtle but meaningful changes in overall activity levels. The intervention group significantly increased energy expenditure compared with controls. Both groups reduced their EI for intervention and control group participants, although the difference was not statistically significant. The intervention group showed a greater reduction in MBA. There was no change in sleep. While the intervention group burned off an additional 120 calories a day compared with the previous three weeks, the control group became even more sedentary, moving about 100 calories less than before. The additional activity that resulted from less television time is the equivalent of walking about eight miles a week.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #6

1. Outcome Measures

Production of health capital as measured by a healthy weight in a sample of single headed households for children.

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)

Single, female headed households ages 31-50, time use patterns are related to obesity.

What has been done

Using the theory of health capital, a household production model and a combination of the American Time Use Survey, current population survey, and Consumer Expenditure Survey data, time and purchased inputs used to produce meals and energy expenditure will determine their impact on obesity estimated.

Results

For single female headed households ages 31-50 the only cluster significantly related to being overweight is the cluster characterized by an active lifestyle with fewer sedentary tie use, including screen time and non-active leisure. In addition, time spent in primary eating decreases the probability of being overweight in a normal weight sample, but increases the probability of being overweight in an overweight sample. Time spent cooking meals at home decreases the probability of being overweight in an overweight sample.

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics
609	Economic Theory and Methods
703	Nutrition Education and Behavior
724	Healthy Lifestyle

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Public Policy changes
- Government Regulations
- Competing Public priorities

Brief Explanation

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

Evaluation Results

Key Items of Evaluation

An on-line evaluation to purchasers of the curriculum, Food, Fun, and Reading (FFR) was completed. The results show that Extension Nutrition and Food specialists and federally funded Food Stamp or Expanded Food and Nutrition Education Program staff are

currently using the curriculum throughout the United States. As a result of young children participating in FFR, children have experienced the following: 75% tasted foods they might not have previously tried; 100% children watched other children tasting foods; 41% helped make the snack during class; 50% made the snack at home; and 100% were excited about using food models and MyPyramid. By completing FFR, 75% of children can recognize healthy foods, have expanded the variety of foods in their diet and are willing to try new foods. 50% of the children are reading more books about food and also request new foods for meals and snacks.

By reaching thousands of children across the United States, Food, Fun, and Reading is making a difference for young children and families. New foods are being introduced and children and families are eating healthier snacks and meals.

V(A). Planned Program (Summary)**Program # 7****1. Name of the Planned Program**

Food Safety

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	0%		2%	
124	Urban Forestry	0%		2%	
125	Agroforestry	0%		7%	
133	Pollution Prevention and Mitigation	0%		4%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		2%	
215	Biological Control of Pests Affecting Plants	0%		2%	
216	Integrated Pest Management Systems	0%		2%	
305	Animal Physiological Processes	0%		3%	
311	Animal Diseases	0%		15%	
501	New and Improved Food Processing Technologies	0%		17%	
502	New and Improved Food Products	0%		2%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		15%	
511	New and Improved Non-Food Products and Processes	0%		2%	
701	Nutrient Composition of Food	0%		7%	
703	Nutrition Education and Behavior	0%		1%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	30%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	70%		0%	
724	Healthy Lifestyle	0%		13%	
806	Youth Development	0%		4%	
	Total	100%		100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2010	Extension		Research	
	1862	1890	1862	1890

Actual	0.2	0.0	6.0	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
15628	0	313817	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
46021	0	261850	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	43238	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Food Preservation, Safety and Sanitation: knowledge of food safety and improve food handling practices
- Research proposal to increase the resilience to disasters of mobile home parks in the rural state of Vermont.
 - Effort to provide data to public concerning Vermont plants, both native and introduced.
 - Genetic profiling to assess crops for conservation and improvement
 - Analysis of distribution of genetic diversity in the fiddlehead fern; a seasonable vegetable product harvested throughout Vermont with significance to Vermont fresh network food industry
 - Examine how the current distribution of New England forests has been affected by recent climate change and predict how these forests will change in response to future climate change
 - Provide the background research necessary for Vermont's citizens and legislators to make informed decisions about VCAT (Vermont Common Assets Trust), VCAT would make the state's atmosphere, aquifers and other common assets the common property of all Vermonters.
 - Improve detection of L. monocytogenes (a foodborne disease that mainly targets people with compromised immune system) through use of improved enrichment strategies, improved sampling techniques and use of Fourier transform infrared (FT-IR) microspectroscopy.
 - Control Oomycetes, a plant disease, to crops and fruit species
 - Investigate the effect of earthworms on the distribution of soil organic matter and the mobilization of nutrients in sugar maple forests.
 - Increase understanding on the effects of different environmental conditions as well as the mechanism of the plant response
 - Examine the production of health capital as measured by a healthy weight in a sample of single headed households with children
 - Determine if multiple introductions of agronomically important strains of the grass, Phalaris arundinacea, reed canary grass have a greater potential to be aggressive and withstand climatic

fluctuations.

- Evaluate cultural management procedures for plant-parasitic nematodes in relation to their impacts on the sustainability of soil health (good soil health crucial to Vermont farming)
- Study of mammary epithelial cells, their number and state of differentiation are correlated with milk quality and yield.

The work proposed here is an expanded analysis of the distribution of genetic diversity in the fiddlehead fern (*Matteuccia struthiopteris*), a seasonable vegetable product harvested from the wild throughout Vermont with significance to the local Vermont-fresh-network food industry. The work proposed here is an expanded analysis of the distribution of genetic diversity in the fiddlehead fern (*Matteuccia struthiopteris*), a seasonable vegetable product harvested from the wild throughout Vermont with significance to the local Vermont-fresh-network food industry.

2. Brief description of the target audience

- Adults
- Age 25 - 60 Adult
- Vermont farmers
- Scientific community
- General public

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	400	0	100	0

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

Patent Applications Submitted

Year: 2010

Actual: 1

Patents listed

Whey-protein based environmentally friendly wood adhesives

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Consultation

Year	Actual
2010	116

Output #2

Output Measure

- Publication - newsprint

Year	Actual
2010	16

Output #3

Output Measure

- Food Preservation & Safety Workshop

Year	Actual
2010	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of people who show improvement in food safety and preservation practices
2	Produce human insulin in cow milk, an essential medicine for the treatment of diabetes.
3	Enhance the quality and marketing posture of cheddar cheese produced annually.

Outcome #1

1. Outcome Measures

Number of people who show improvement in food safety and preservation practices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action 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)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #2

1. Outcome Measures

Produce human insulin in cow milk, an essential medicine for the treatment of diabetes.

2. Associated Institution Types

- 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)

Biopharmaceutical proteins by the mammary glands of genetically modified transgenic cows (dairy pharming) is currently under extensive exploration because it promises to provide high quality therapeutic medicine for humans.

What has been done

Attempts have been made to clone the human insulin gene into the pBC1 vector without success and are trouble shooting the possible cause of the problem. Additionally, the bovine beta-casein gene structure has been analyzed.

Results

Project will develop innovative ways to dramatically reduce the cost associated with production of transgenic cows and with a higher success rate. Goal is to locate specific DNA sequences that confer resistance to mastitis and will allow early selection of sires to be used in subsequent breeding programs. Human insulin gene and cDNA have been successfully obtained.

4. Associated Knowledge Areas

KA Code	Knowledge Area
511	New and Improved Non-Food Products and Processes
724	Healthy Lifestyle

Outcome #3

1. Outcome Measures

Enhance the quality and marketing posture of cheddar cheese produced annually.

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)

Calcium lactate (CL) crystal formation is a widespread and costly problem for Cheddar cheesemakers in Vermont.

What has been done

Aim of project is to use a computer vision image analysis method that was recently developed in the laboratory to study the causes and mechanisms of calcium lactate crystal formation on Cheddar cheese. First objective was to systematically study various factors during cheese storage and distribution. Results indicate that these post-manufacture factors are problematic.

Results

Major finding is that post manufacture factors such as low storage temperature and loose packaging that elevate the risk of calcium lactate crystal defects on Cheddar cheese do not affect the rate at which crystals grow but do affect the number of crystals that form on the surface over time. The effects of the post-manufacture conditions have been identified as causing increased risk of crystallization will be evaluated and compared: storage temperature: 1C; 5C; 10C; Tightness of vacuum packaging film: 960mbar (extremely loose); 70 mbar(loose); 10 mbar (extremely tight);. Packaging type: vacuum packaging; CO2 gas flush packaging.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Programmatic Challenges

Brief Explanation

Extension experienced the retirement of its faculty member who conducted most of the Food Safety programming.

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

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Climate Change

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	0%		7%	
102	Soil, Plant, Water, Nutrient Relationships	0%		4%	
123	Management and Sustainability of Forest Resources	0%		6%	
125	Agroforestry	0%		1%	
136	Conservation of Biological Diversity	0%		6%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		9%	
202	Plant Genetic Resources	0%		4%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		17%	
205	Plant Management Systems	0%		2%	
206	Basic Plant Biology	0%		9%	
212	Pathogens and Nematodes Affecting Plants	0%		7%	
213	Weeds Affecting Plants	0%		2%	
216	Integrated Pest Management Systems	0%		2%	
302	Nutrient Utilization in Animals	0%		4%	
305	Animal Physiological Processes	0%		5%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		2%	
609	Economic Theory and Methods	0%		4%	
703	Nutrition Education and Behavior	0%		2%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	0%		5%	
805	Community Institutions, Health, and Social Services	0%		2%	
	Total	0%		100%	

V(C). Planned Program (Inputs)

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890

Actual	0.0	0.0	9.9	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
0	0	402420	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	391861	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	63415	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop the US National Virtual Herbarium
- Assess distribution and origins of genetic diversity in Vermont's fiddlehead fern
- Investigate the pace of regional warming on montane forests in Vermont
- Develop new strategies to control plant disease
- Protect food from contamination by pathogenic microorganisms, parasites, and naturally occurring toxins
- Study how earthworms modify the amount of organic matter in soil
- Increase our understanding on the effects of different environmental conditions as well as the mechanism of plant response
- Predict invasiveness of introduced species

2. Brief description of the target audience

- Agriculture: Maple producers
- Agriculture: Crop growers
- Agriculture: Farmers
- Greenhouse Growers

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	500	1000	0	0

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

Patent Applications Submitted

Year: 2010

Actual: 3

Patents listed

Booster Spout

Dual Spout

Method of improving maple sap yields in tubing systems

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	0	8	8

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase of regional warming on montane forests in Vermont.
2	Invasion of European and Asian earthworms to hardwood forests.
3	Effect of mid-winter high temperatures on plant survival.

Outcome #1

1. Outcome Measures

Increase of regional warming on montane forests in Vermont.

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)

General population and agricultural farming. Vegetation effects of environmental changes due to warming trends.

What has been done

Project compared the present and past tree composition of vegetation plots that were originally established in the early 1960's in order to assess changes in forests associated with regional warming trends. Research used historical aerial photographs and satellite images to determine elevational shifts in forest trees associated with regional warming trends.

Results

We detected a significant shift in forest composition and a rapid upslope shift in the ecotone between lower elevation hardwood forests and upper elevation boreal forests over the last half century. Northern hardwood trees have increased in abundance in the ecotone while boreal forests have declined. The change in forest composition and upward shift in the ecotone is consistent with regional warming trends. We have projected continuing shifts of forests to higher elevations with a general expansion of more southerly forest species and reductions in area of boreal forest.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

Outcome #2

1. Outcome Measures

Invasion of European and Asian earthworms to hardwood forests.

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)

Agricultural community; Soil fertility and plant nutrition may be affected by the action of earthworms

What has been done

A greenhouse experiment was conducted in which three earthworm treatments and one control treatment were analyzed for leached nutrients. Analyses of aggregates from these treatments are still to be carried out pending the installation of an instrument that measures the pore structure in individual soil aggregates.

Results

In a lab experiment, the common night crawler (*Lumbricus terrestris*) significantly reduces the amount of calcium leached (an element which is an essential element of lime often added to improve soil fertility). The amount of calcium leached from a treatment with a more aggressively invading worm, *Amyntas agrestis*, on the other hand maintains calcium losses at the level of the control. *Lumbricus* species, including *L. terrestris*, do not have lungs and carbon dioxide needs to be disposed of in a different form of respiration. *Lumbricus* species have the ability to fix calcium using a calciferous gland that combines calcium and carbon dioxide to make calcite, a calcium carbonate mineral that is not easily dissolved and leached. This sequesters carbon dioxide from the atmosphere into the soil. How this process changes organic matter in the soil is unknown.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
123	Management and Sustainability of Forest Resources

Outcome #3

1. Outcome Measures

Effect of mid-winter high temperatures on plant survival.

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)

Growers overwintering perennials will benefit from knowing the effect of mid-winter high temperatures and cycling on subsequent plant survival when exposed to freezing. This will enable them to save money either in plant losses, scheduling labor and covering treatments more appropriately, and saving costs and fuel in heating if not needed.

What has been done

Study examined a marginally hardy species of perennial shasta daisy (Becky) and a normally hardy selection of yarrow (Apricot Delight), both popular perennials.

Results

Result showed that in midwinter (January), even just 5 days at 16C was enough to deacclimate plants, resulting in loss in subsequent subzero soil temperatures. Returning plants to 4C during the night did not compensate for the deacclimation. There were no differences between one or two weeks held at 16C prior to subsequent freezing. Plants in a normally fluctuating greenhouse (-2 to 8C, mean 4C), continuous 4 or 2C showed no differences, all surviving similarly. This study also supported previous results that plants not sufficiently rooted had poor winter survival.

4. Associated Knowledge Areas

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Appropriations changes
- Public Policy changes

Brief Explanation

Temperature changes affect maple production. Vermont maple industry is a large economic factor. Tourism is also an important economic base for the state. The tree cover, maple and agriculture industry attracts tourists to the state.

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

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}