

# ANNUAL REPORT

for the Fiscal Year 2006





George Cook

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**FRONT COVER**

John Williamson of State Line Farm in Shaftsbury successfully grew sunflowers in 2006 as part of new UVM Extension/Center for Sustainable Agriculture field trials assessing the potential of oil crops for on-farm biodiesel production. Photo by Vern Grubinger. Center top photo: 4-H Club member Ashley Severy of Cornwall won top awards at the '06 Addison County Field Days. Photo by Cheryl Dorschner. Other photos appear inside.

**THIS PAGE**

George Cook boils maple sap at this sugarhouse in Hyde Park. Vermont's rite of spring starts earlier each year, say researchers.

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For a full summary of this annual report visit

# Dean & Directors' Message



Cheryl Dorschner

VT-AES Dean and Director Rachel Johnson (center) and UVM Extension Director Douglas Lantagne appeared with “Across the Fence” television program host Judy Simpson, March 26, 2007 to explain this Annual Report.

**The year 2006 may go down in history** as one of Vermont agriculture’s most difficult after a triad of incessant rainfall, low milk prices and high fossil-fuel prices conspired to spell “disaster.”

With 20 some inches of rainfall tallied by mid June, many field crop seedlings washed away—up to three times for those farmers who replanted.

When Vermont’s governor called a dairy crisis summit in mid June, he estimated that farmers had already lost up to \$20 million.

By the end of the month the U.S. Department of Agriculture secretary declared the whole state a natural disaster area.

In July the state promised five installments of aid to farmers—\$8.6 million of the state’s tax surplus to compensate for lost crops and cropland. Some farmers also qualified for low-interest federal loans.

As the growing season progressed, hay and corn crops—commodities that affect the success of dairy and nondairy farmers—averaged a yield of about 50 percent normal. Apple growers in Grand Isle County reported heavy losses. And

production was down on long-season vegetables such as the pumpkins and squash that color the autumn farmstands, and oil crops such as sunflowers.

Then Vermonters were blessed with an unexpectedly long autumn. Some might say it lasted well into December. But was it a blessing? Reports of buds swelling in winter had fruit growers wondering how their trees would fair in April. Before those record snowfalls in February, Vermont boasted another record—a fifth-generation sugarmaker tapped then boiled up 1,800 gallons of syrup as early as November—or would that be late? Record snows, a March deep freeze—seasons are topsy-turvy.

Among the many lessons of 2006, Vermonters saw vividly that what happens in the field touches all of our lives many ways. Everyone witnessed how fragile and interdependent our relationship is with the land and each other. No one saw this more than the people at the University of Vermont (UVM)

**WE ARE A UNIVERSITY-STATE-FEDERAL PARTNERSHIP CREATED TO SERVE VERMONTERS VIA RESEARCH AND OUTREACH.**



Cheryl Dorschner



Cheryl Dorschner

**TOP:** Marie Audet and her family at Blue Spruce Farm in Bridport used methane from 950 milking cows to produce 1.3 million kilowatt hours of electricity in 2006. **BELOW:** Flooding was just one problem farmers faced last spring that led Vermont to be declared a disaster area and receive aid. In late May, the Winooski River washed away cornfields.



Glenn Rogers helps logger Richard Lavigne of Milton pour a biodiesel oil mix into his skidder. By encouraging Vermont's biodiesel industry, UVM Extension helps Vermonters cut costs and reduce environmental damage.

statewide perspective, VT-AES and UVM Extension specialists were often sought by government officials and the media as they made decisions and prepared reports.

UVM Extension completed 20 Farm Viability Program business plans with Vermont farmers during 2006—plans that will guide them toward recovery from this year's challenges and the unforeseen conditions that are hallmarks of agriculture.

VT-AES researchers and UVM Extension faculty members also collaborate with businesses on the economics of alternative enterprises. Just one example, UVM Extension and Vermont Butter & Cheese Company of Websterville are literally "writing the book" on the feasibility of large-operation goat farming.

This year, more than ever, our annual report speaks to the relevancy and urgency of VT-AES and UVM Extension's work. These pages are our accounting to the State Legislature, our constituents, research funders and our citizens. Here we highlight important government-funded research and outreach programs whose outcomes improve Vermonters' lives. Although our projects are wide ranging, we summarize them by the categories: agriculture, nutrition and food safety, environment and economic opportunity. In 2006, VT-AES conducted 110 research projects representing more than \$12.6 million. Extension's nearly \$9.7 million budget reached more than 81,000 direct contacts through offices and staff in 11 counties. In addition, both organizations reached people at statewide fairs and shows, events and on the "Across the Fence" television show.

## SIX RESEARCH AREAS STOOD OUT

Several research and outreach projects demonstrate how VT-AES and UVM Extension lead in making Vermont agricultural practices environmentally and economically sound.

- Lorraine Berkett's research could change the landscape of fruit production in Vermont. She evaluates the field per-

formance of apple rootstocks, and the cold hardiness and insect tolerance of wine grape cultivars. She tests methods of turning orchards to organic production and working with other fruit crops as well.

formance of apple rootstocks, and the cold hardiness and insect tolerance of wine grape cultivars. She tests methods of turning orchards to organic production and working with other fruit crops as well.

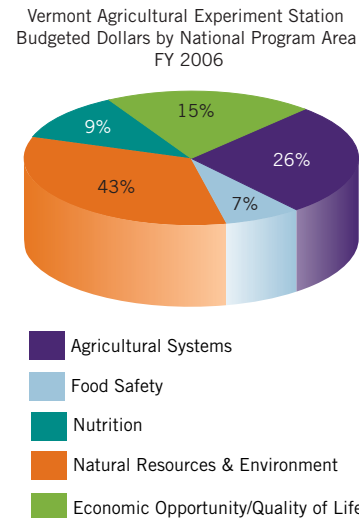
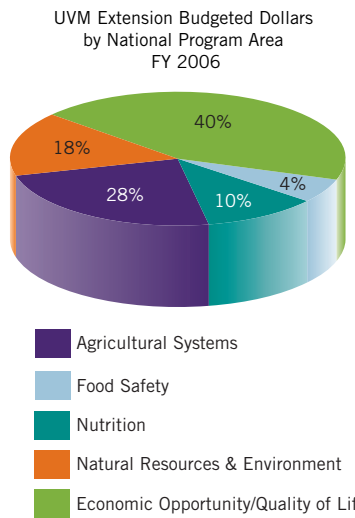
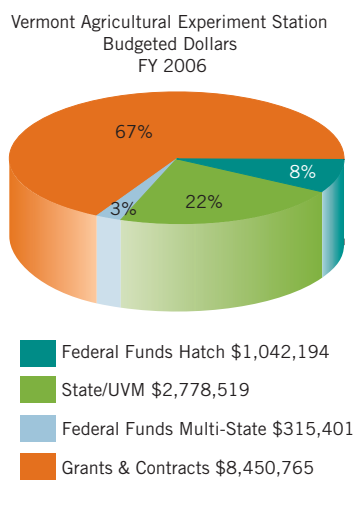
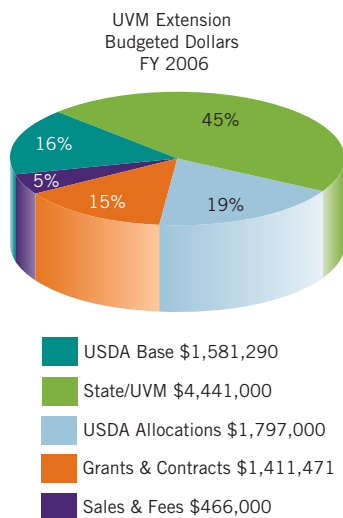
- Vermont's most famous tree product, maple syrup, is the subject of intensive study and high-profile public attention. Adding a new research building with high-tech, dual evaporators in 2006, Timothy Perkins and colleagues at UVM's Proctor Maple Research Center now track the effects of air injection on maple chemistry and flavor. In 2006, important long-term evaluation of the impact of global climate change on maple sugaring was completed. Studies indicate that the sugaring season begins nearly three weeks earlier than it did a quarter century ago. Scientists continue to monitor the health of forests and determine the impacts of air pollution on maple trees.

Additional studies focus on ways to maximize sap production while maintaining pure, high quality maple syrup.

- Others' work signals global change needed at the fuel tank. In 2006, Vern Grubinger and Heather Darby's field trials on some two dozen acres in Shaftsbury and Alburgh, concluded that seed oil crops could be successfully grown in both southern and northern Vermont for on-farm biodiesel production. Meanwhile, Glenn Rogers educates Vermonters via a website on alternative energy sources.
- Agriculture's role in improving water quality is another major area where VT-AES and UVM Extension join hands. Don Ross and Aleksandra Drizo's work continues at UVM's Paul Miller Research Center Constructed Wetlands. They perfect plant and filter systems to remove nutrients from agricultural effluents, and they perform related research. Many water quality projects and scientific studies also proceed under the umbrella organization, the UVM Watershed Alliance. Heather Darby, Jeffrey Carter, Sid Bosworth and colleagues work on farm profitability through nutrient management plans that combine soil improvement, environmental sustainability and use of alternative forages.
- "Obesity epidemic" became a household phrase and a Statehouse topic this year, but on a more optimistic note "localvore" was a new word on the lips of many Vermonters, as several groups sprung up to extol the health, environ-



The economic impact of maple in Vermont is over \$226 million annually. Proctor Maple Research Center's Brian Stowe evaluates the March '06 syrup.



mental and economic benefits of eating local food whenever possible. Many programs aim to improve Vermonters' eating habits. Jean Harvey-Berino and colleagues' VTrim Internet dieting programs boast waiting lists. Amy Trubek's research correlates cooking skills with healthy nutrition practices in order to ward off obesity. Diane Mincher, Dale Steen and Dianne Lamb hold workshops with people who have diabetes to show them ways to improve their diet and their health. Several UVM Extension programs bring healthy eating to schools and families as well.

- UVM's plant biologists had unprecedented grant funding success in 2006, totaling nearly \$1.2 million, in a year when the overall federal funding rate was about eight percent. Mary Tierney and Jeanne Harris put National Science Foundation grants to use. At the microscopic level, Tierney explores the mechanisms through which proteins determine cells' form and function during plant development. Harris studies the molecular signals between legumes and nitrogen-fixing bacteria that trigger plants to form nodules. With a USDA-NRI competitive research program grant, Jane Molofsky's work continues on the genetic, ecological and evolutionary traits in plants that impart invasiveness. She also looks at the impact of global climate change on spread of invasive species. And David Barrington's National Geographic expedition to China to study the holly fern informed scientific understanding of what is and what is not a species.

All of these accomplishments occurred during another year of level funding from the federal government and tight fiscal budgets. UVM Extension and VT-AES receive federal funding from the USDA, which is matched, by state funding. In fiscal year 2006 (which runs from October 1, 2005 through September 30, 2006), 45 percent of Extension expenditures were funded by the state and 35 percent were supported by federal Smith-Lever funding. Additional grants and contracts brought in more than \$1,411,000.

During that same period, 22 percent of Vermont Agricultural Experiment Station expenditures were supported by the state and 11 percent were covered by federal Hatch and multi-state funds. To make up for frugal government allocations, VT-AES researchers garnered 67 percent of the budget in grants and contracts. That's nearly \$8.5 million. Our scientists continue to do cutting-edge research because of their success in landing grants and contracts in competition with the top universities in the nation.

Our success depends upon our U.S. and state representatives and senators who work on our behalf. Our work is also guided and evaluated by dedicated citizen advisors who meet with us regularly. Their names appear on page 4. Finally, we seek feedback at public events and via surveys and statewide polls. We meet with University, local, state and national opinion leaders and policy makers to review our research and outreach portfolio and direction. We thank them all for their active voices in our work.



Gov. James Douglas chose the UVM Proctor Maple Research Center for his ceremonial sugar maple tree tapping March 24.

*Rachel K. Johnson*

Rachel K. Johnson  
Dean and Director  
Vermont Agricultural  
Experiment Station

*Douglas O. Lantagne*

Douglas O. Lantagne  
Director  
University of Vermont  
Extension

**MORE THAN 100  
VERMONT LEADERS  
AND CITIZENS GUIDE  
OUR DECISIONMAKING.**

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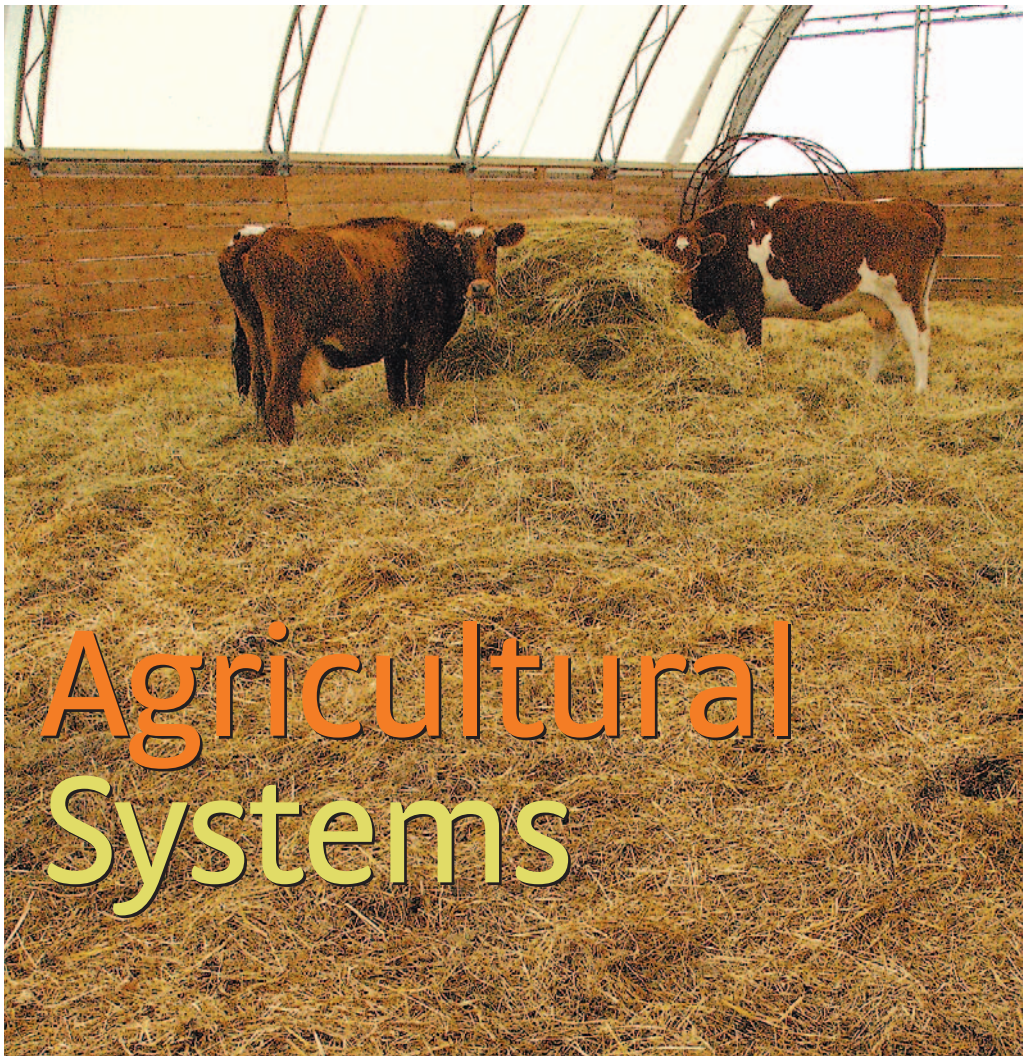
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# Agricultural Systems

Cheryl Borschner

A pair of Guernseys at Steve and Karen Getz's Bridport farm graze indoors and out and use home-grown bedded pack. The organic herd's milk becomes "Dancing Cow Farmstead Cheese." UVM's Center for Sustainable Agriculture helps farmers who choose grass pasturing.

## DAIRY

**Fifteen Projects led by ten agricultural specialists, among them some of the nation's top animal scientists:**

- quantify the direct and indirect effects of antibiotic-based control programs targeting subclinical mastitis.
- increase the application of management skills by dairy farmers to optimize health, nutritional status and productivity of animals.
- work with dairy farmers to increase forage quality.
- evaluate the effectiveness of treating subclinical mastitis in lactation as a way of reducing disease incidence.
- examine dairy breed differences in the immune response to *E. coli* mastitis.
- determine if production of new antibacterial enzymes in the mammary gland can protect against mastitis.
- identify the factors that contribute to the severity of coliform mastitis.
- examine the regulation of gene activity in mammary cells in

response to infection.

- conduct the Vermont Large Dairy Farm Conference and present information to assist in management decisions needed for a profitable and sustainable business.
- develop milking management techniques that will increase milk production efficiency.
- determine the mechanisms of hormone regulation in bovine mammary gland development.
- improve calf health through enhanced nutrition to increase the profitability of dairy farms.
- study the role of sugar uptake in bovine tissues in supporting milk production.

EVERY DAY AN AVERAGE  
HOLSTEIN EATS 100 LBS. OF  
FEED, DRINKS 100 LBS. OF  
WATER, PRODUCES 78 LBS. OF  
MILK AND 200 LBS. OF MANURE.

— NORTH WILLISTON  
CATTLE COMPANY



Carol Delaney



uvmphoto

**TOP:** Enosburg Falls veterinarian Amy Bartholomew helped lead a UVM Center for Sustainable Agriculture/Small Ruminant Dairy Project discussion group on goats held at Doe's Leap Farm in Bakersfield in July.

**BELOW:** ZhongZong Pan (right) and graduate student Sivashankar Ramakrishnan's research findings in mammary gland biology have applications both in lactation physiology of dairy cows and to breast cancer in humans.

## MAPLE

### **Six Projects at the University of Vermont Proctor Maple Research Center in Underhill and at other locations:**

- conduct group and individual educational programs for the Vermont maple industry.
- determine the effects of air injection during evaporation upon maple syrup chemistry and flavor.
- develop optimal strategies for high sap yield from maple stands.
- recommend practices that improve syrup quality and increase overall system efficiency for maple producers.
- develop forest management strategies to reduce damage to sugar maples by insect pests.
- develop forest management strategies and use of biological control for suppression of insect pests in sugar maple stands.



Cheryl Dorschner

In an all-new research building outfitted with four large-scale evaporators, UVM Proctor Maple Research Center scientists evaluate the effects of air injectors on maple flavor and chemistry.

## LIVESTOCK

### **Five Projects highlight innovation in nondairy husbandry and health as they:**

- assess the effect of estrogen hormones on pork meat quality.
- teach life skills and biosecurity in schools through the 4-H Embryology Program.
- test the feasibility of wool to prevent soil erosion.
- assess the economics of pasture-based lamb production.
- work with beef farmers who report an increased net profit from participating in consignment sales and value-added beef markets.



Martha Manning

A mother and daughter study live eggs in the 4-H Embryology Project.

## FARMING

### **Eleven Projects led by three researchers and outreach specialists concentrate on sustainability and grass-based practices. They:**

- connect beginning and experienced farmers of grass-based farms with technical resources, prospective customers and peers to improve farm stability, environmental quality and the working landscape.
- implement new strategies for sustainable agricultural practices.

- provide continuing education to livestock producers in the areas of animal health, crops, soils, marketing and energy to improve profitability and sustainability.
- improve biosecurity and safety measures at fairs and field days, and on farms by incorporating assessment and implementation of practical safeguards.
- provide farmers with practical alternatives and solutions to save fuel during planting and harvesting.

## FRUITS AND VEGETABLES

### **Five Projects explore diversity in Vermont food production as scientists:**

- explore opportunities for organic management of apple production.
- evaluate wine grape cultivars for cold tolerance and insect disease resistance.
- work to increase the number of Vermont vegetable and berry growers implementing changes in production, pest control and/or management practices.
- evaluate the field performance of apple rootstocks under Vermont conditions.



Cheryl Dorschner

Lorraine Berkett researches the possibilities for organic apple production and evaluates cold-hardy and insect resistant grape cultivars and apple rootstocks.

## HORTICULTURE

### **Eight Projects test USDA Zone 3 and 4 hardiness during changing climactic conditions and explore options that may help growers and ultimately home gardeners, as researchers and outreach specialists:**

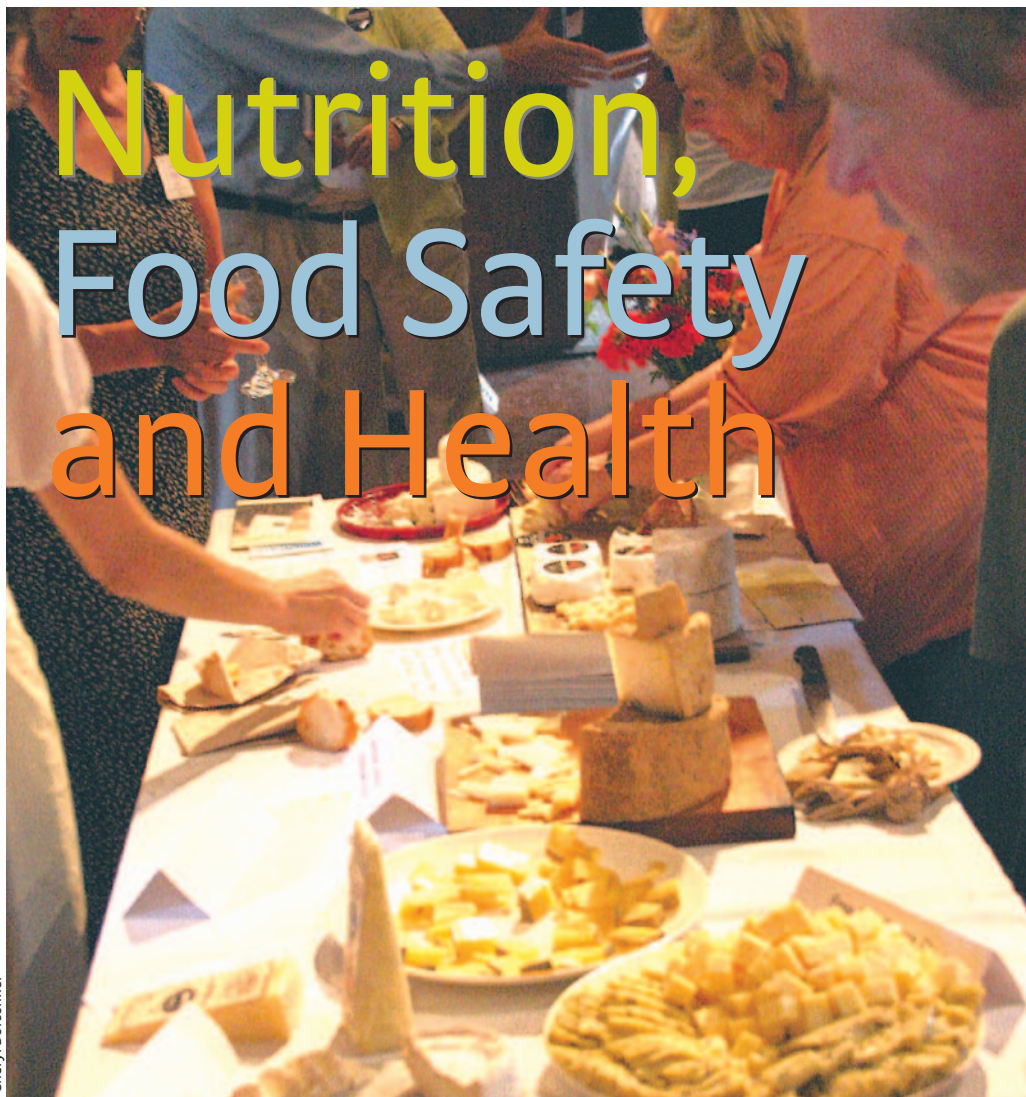
- develop strategies for composting home and garden waste.
- evaluate cold hardiness of herbaceous perennials.
- assess economics of the New England horticulture industry.
- assess American and hybrid elms for resistance to fungal disease and insect pests.
- evaluate the effectiveness of different mulches as a top-dressing to control growth of weeds.
- evaluate sugar maples grafted onto sycamore maple rootstock for salt tolerance.



Nancy Hulet

The Master Composter Program teaches composting techniques to home gardeners. Compost specialist Vicky Viens (in cap) led a workshop on how to set up a demonstration model.





Cheryl Dorschner

**“DUE TO OBESITY, TODAY’S GENERATION OF CHILDREN WILL LIKELY NOT LIVE AS LONG AS THEIR PARENTS DID.”**

—RACHEL JOHNSON,  
VT-AES DIRECTOR



Cheryl Dorschner



uvmpphoto

VT-AES helps Vermont cheesemakers improve the quality, flavor and safety of raw-milk, farmstead cheeses. Vermont leads New England in farmstead cheese production.

## CHEESE SCIENCE

**Five Projects help Vermont lead the way as the farmstead cheesemaking Mecca of New England—science leads the craft as researchers:**

- provide technical assistance to Vermont artisan cheesemakers to improve product safety, consistency and quality.
- identify causes and prevent growth of undesirable crystals on Cheddar cheese.
- develop a sensory evaluation process for mozzarella cheese produced from water buffalo milk.

## NUTRITION

**Fifteen projects offer Vermonters help with food and income problems that stem from our nation’s food distribution systems. Outreach specialists:**

- empower limited-resource Vermonters to eat more healthfully on a tight budget.
- evaluate the impact of providing locally produced food to

school districts to improve the nutrition of low-income students.

- provide information regarding optimal physical activity and nutrition resources in order to support public health initiatives in Vermont.
- promote nutritious local foods to stem obesity in Vermont and the United States.
- develop and test an interactive, multimedia Web-based learning environment for teaching food safety to middle school children.
- improve healthy lifestyles of youth through garden and nutrition projects.
- provide fresh produce and nutrition education to underserved Vermonters, increasing their food security and providing economic support to small-scale farmers.

TOP: Addison County Field Days in mid-August bestowed many blue ribbons on Vermont farm products, among them Golden Russet Farm of Shoreham. BELOW: Amy Trubek works to correlate cooking skills with healthy nutrition practices and warding off obesity.

- educate Vermonters about healthy eating and exercise to reduce diabetes.
- determine what nutrition information in restaurants promotes healthier food choices.
- create an early education nutrition program that uses picture books to teach about food and different cultures.
- create a Web-based, energy-balance, interactive learning tool for young adults.

## FOOD SAFETY

**Six Projects** are science at work on the very issues that were underscored in national media this year as foodborne illnesses traveled quickly through the food system. UVM Extension and Vermont Agricultural Experiment Station scientists:

- evaluate procedures to improve safe production of raw milk artisan cheeses.
- develop improved sampling and detection strategies of *Listeria monocytogenes* to improve safety in ready-to-eat foods and other food systems.
- train institutional food service employees for implementation of Hazard Analysis and Critical Control Point (HACCP), and train gardeners to integrate food safety principles to reduce risk of contamination of fresh fruits and vegetables.
- work to increase number of child/adult care center managers passing food safety certification exam.



Dale Steen

A Hardwick Elementary School food service employee checks the dates on canned goods after attending a 10-hour food safety course taught by Dale Steen, UVM Extension food safety specialist in St. Johnsbury.



uvmphoto

While Feng-Qi Zhao and undergraduate Pamela Bentley's research in mammary gland biology mainly informs milk production goals in dairy farming, his work on the genetic factors that lead to tumor development have possible implications for causes of and cures for breast cancer.

## HEALTH

**Eight Projects** address top health issues for Vermonters through scientific inquiry and information dissemination as they:

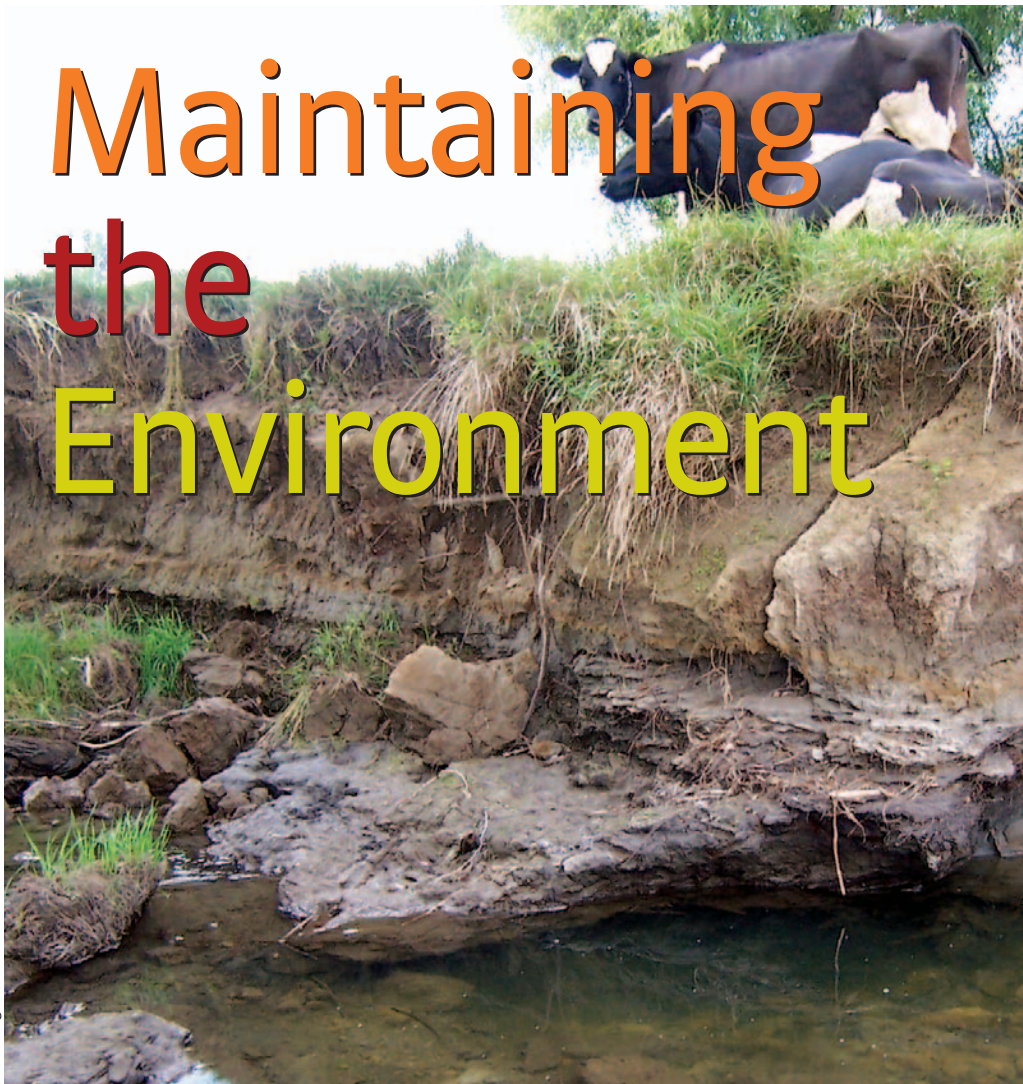
- determine effects of hormones on normal and abnormal mammary gland development as part of breast cancer inquiry.
- develop information on arthritis symptom management for the farm community.
- assess importance of physical activity in daycare centers to prevent obesity in preschool children.
- develop an Internet-based weight loss intervention to modify eating behavior and prevent obesity.
- correlate cooking skills and knowledge with healthy nutrition and combatting obesity.
- assess genetic factors that influence tumor development in mammary glands.



uvmphoto

Diane Mincher, an Extension nutrition and food specialist leads a "Dining With Diabetes" class at Franklin County Senior Center in St. Albans, to help people make healthy, nutritious choices.

# Maintaining the Environment



Eric Young

Plant and Soil Science Research Professor Don Ross's work mapping and sampling Lake Champlain Basin streams may lead to improved farming practices in floodplains with high phosphorous levels. This eroded farmland is a section of Rugg Brook near St. Albans.

## ENVIRONMENT

**Eleven Projects demonstrate out-of-the-box thinking and urgency in tackling environmental problems when scientists:**

- use whey to produce an environmentally safe road de-icer.
- assign social and economic responsibility for conservation of publicly held natural resources.
- develop a genetic modeling system to provide predictive tools for effective ecosystem management.
- determine the genetic characteristics that impart invasive plant behavior.
- understand the genetic traits that lead to aggressive spread of invasive plant species.
- assess the impact of global climate change on spread of invasive plant species.
- investigate the effects of nitrogen deposition on northeastern forest ecosystem health.
- identify calcium forms in forest soils, and use them to predict

- possible depletion caused by acid rain.
- determine the fate of nitrogen compounds in acidic deposition on Vermont forest ecosystems.

## PEST MANAGEMENT

**Twenty-two Projects test naturally occurring fungi, integrated pest management and other nontoxic methods to thwart the onslaught of invasive pests. For example entomologists and diagnosticians:**

- use indicator plants to time applications of thrip pesticides.
- assess the cold temperature tolerance of natural predators in hope of controlling infestation by hemlock woolly adelgid.

**ACRES OF VERMONT WOODLAND  
IN 2006: 3.6 MILLION OR  
78%. IN 1860 (ESTIMATED)  
1.1 MILLION OR 25%.**

—THOMAS McEVOY,  
UVM FOREST RESOURCES  
SPECIALIST



Aleksandra Drizo



Paul Weston/Cornell University/Insectimages.org

TOP: David Weber (G'06), who studied under Aleksandra Drizo, led a tour in May of UVM's Constructed Wetlands during the Northeast Region Nonpoint Source Pollution Conference. The Wetlands is a research center investigating on-farm treatment of dairy effluent. BELOW: *Viburnum* leaf beetles are one of the latest in an increasing number of invasive insects showing up in Vermont. Researchers strategize ways to prevent its spread.

- assess chemical control strategies to prevent the spread of the invasive viburnum leaf beetle.
- develop a standardized detection and monitoring plan to determine spread of hemlock woolly adelgid.
- develop and participate in a nationwide network of plant diagnostic clinics to facilitate rapid diagnosis of important pests and diseases and limit their spread.
- limit the spread of exotic pests in tree fruit crops.
- assess the effect of genetically modified corn on soil insect communities.
- develop fungal biocontrol agents to address insect pests of worldwide importance.
- promote use of integrated pest management strategies.
- investigate the potential of biological control of the Asian longhorned beetle, an invasive pest threatening the Northern hardwood forests.
- Revise and reproduce a guide to the Asian longhorned beetle.

## ENVIRONMENTAL MANAGEMENT

**Eleven Projects concentrate on plant and soil science in the face of rapid climate change and on methods of measuring ecosystem impact. Researchers:**

- assess nutrient availability by evaluating soil animal community diversity.
- determine the effect of global climate change on nutrient availability in arid lands.
- study the evolutionary migration of plant groups and uncover geography-based species development to provide insight into the sources and patterns of evolutionary diversity.
- learn the ecological, geographic and edaphic context of a diverse plant genus through travel, collection and genome study, in order to understand what disruption does to this genus and perhaps others.



Michael Sundue

Global climate change is at the heart of David Barrington's study of a diverse genus of ferns in order to understand what disruption does to that genus and perhaps others.



Caroline Alves

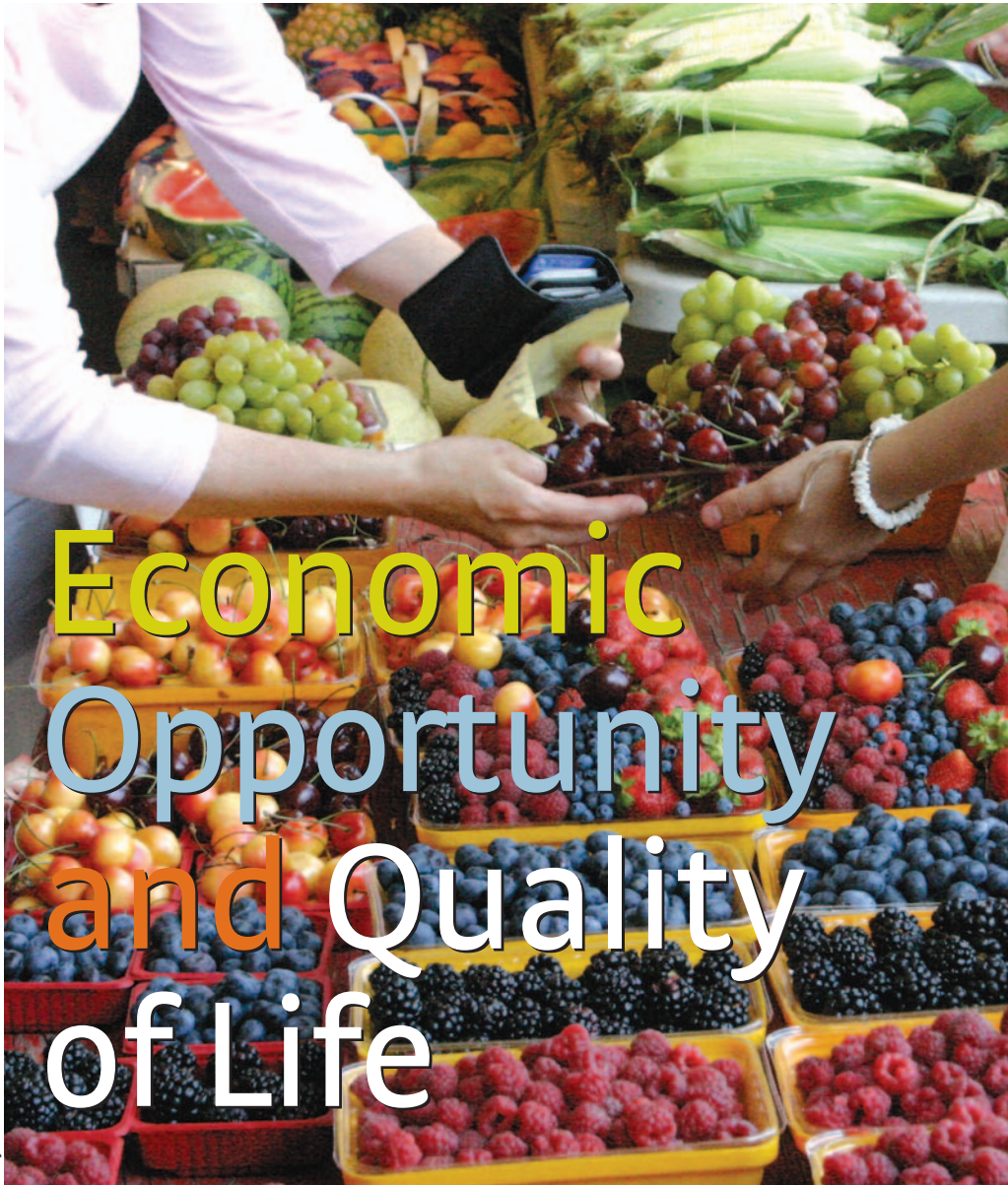
Eric Young samples stream bank soils for phosphorus content. Several research projects aim to minimize phosphorous loss and agricultural runoff with better management strategies.

- evaluate the effects of polluted soils on soil animal communities.
- model the long-term movement of phosphorus through Vermont watersheds.
- measure the effect of global climate change on photosynthetic performance of plants.
- understand the role of cell wall proteins in patterns of plant development.
- understand the genetic, molecular and physiological interactions between legume plants and soil bacteria to improve soil quality without use of commercial fertilizers.

## WATER QUALITY

**Nine Projects aim to address agricultural and stormwater runoff through science-based inquiry as VT-AES and UVM Extension team up to:**

- evaluate management practices to minimize phosphorus loss and surface runoff.
- develop on-farm projects to promote nutrient management strategies to improve water quality.
- use iron slag to reduce phosphorus and suspended solids from agricultural runoff.
- develop water quality protection plans with farmers to keep phosphorus and other pollutants from contaminating watersheds.
- design a nutrient management course for farmers to reduce farm nutrient pollution.
- test alternative cropping systems to reduce accumulation of phosphorus load in agricultural soils.
- assist business managers and local officials with urban pollution education programs.
- use rain gardens in public and private settings to reduce storm water impact.
- develop incentives for making farm management decisions that reduce environmental impacts.



Cheryl Dorschner

# Economic Opportunity and Quality of Life

Farmer's markets gained a burst of popularity in 2006 with increased publicity of eating fresh, local and regional foods. VT-AES studies measure interest in and marketing ideas for local foods and document the impact of Vermont products on the overall economy,

## FARM & FOREST PROFITABILITY

**Twelve Projects help farmers, especially organic farmers, in uncertain times with risk-management strategies, business plans and the like—research-based scientific survey and analysis. For example they:**

- document the impact of local sales of Vermont products on the overall economy.
- analyze farmers' perceptions of organic practices.
- conduct economic analysis of organic dairy farms in the U.S.
- train Vermont farmers on the use of crop insurance as a risk management tool.
- provide farmers with education and assistance on farm business succession.
- survey forest-owning families that have developed effective

intergenerational plans for passing on forestlands.

- educate women farm entrepreneurs on the development of risk-management skills.
- assess consumer preference, retail attitudes and marketing strategies for promoting locally grown food.
- provide business analysis tools to farmers who create and implement business plans to improve their management decisionmaking.
- work to increase the number of farms that implement business plans resulting in increased profitability.

TOTAL VERMONT FARMS IN 2006: 6,300. VERMONT DAIRY FARMS: 1,130. CERTIFIED ORGANIC DAIRIES: 122.

— NATIONAL AGRICULTURAL STATISTICS SERVICE/NOFA



George Cook



Cheryl Dorschner

**TOP:** Despite a 1998 accident that injured his legs, Jean-Pierre Roberge continues to farm, thanks to his own ingenuity and efforts of the UVM Extension Rural & Agricultural VocRehab Program. He customized the tractor at his Newport Center farm. **BELOW:** UVM Extension's Master Gardener program is directed by Nancy Hulett (left).



Extension agronomist Heather Darby speaks to farmers at a Borderview Farm field day about growing canola as a seed oil product. Oil crops could increase farmers' energy independence and profitability.

## ECONOMICS

**Six Projects focus on underserved members of the community and business management, as experts:**

- provide resources and employment skills for rehabilitation of agricultural and rural Vermonters with disabilities.
- develop business district analysis to support economic expansion in Vermont's downtowns.
- develop sound business management programs that help women farmers improve profitability.
- provide education for tax practitioners on the latest federal/state income tax law.

## DEVELOPING COMMUNITIES AND CITIZENS

**Nineteen Projects demonstrate the wide breadth of community involvement of researchers and specialists, as they:**

- teach life skills to youth through horticultural training, enabling them to become contributing citizens and potential future leaders.
- provide education, training and networking to support tourism and recreation as a positive contributor to economic and community development.
- grow crops for on-farm biodiesel production to enhance energy independence and farm profitability.
- evaluate the impact of lead paint safety training on low-income micro-business owners.
- evaluate the impact of access to capital for development of entrepreneurship opportunities in Vermont.
- inform policymakers about the demographic trends of young adults in Vermont.
- work with community planners to collect data to support the local decisionmaking process.
- develop the capacity of Vermont farm women to affect agricultural policy.



Extension associate professor and economist Robert Parsons (center) advises farmers on profitability, business management and diversification. Here he listens to Karen and Steve Getz of Bridport tell the story of their farm.

- develop the capacity of locally elected and appointed officials to improve the effectiveness and efficiency of local government.
- provide technical assistance on information technology to assist local governments in responsible decisionmaking regarding community planning.
- create and support resources to empower local entrepreneurs in rural communities.

## FAMILY RELATIONS

**Four Projects help Vermonters of all ages with life skills and:**

- provide hands-on basic outdoor skills and experiences for Vermont families.
- determine impact of the Child Care Business Initiative in Vermont.
- provide educational assistance to youth from migrant farm families in Vermont communities.
- teach leadership, citizenship and life skills through 4-H education to aid in the development of caring and contributing members of communities.



Shelby Biasini of Green Mountain Movers 4-H in Morrisville brings home the prize at Lamoille County Field Days last summer.

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**UVM EXTENSION  
FACULTY/STAFF: 110  
PEOPLE IN 11 COUNTIES.  
VT-AES RESEARCHERS  
WORK FROM MANY OF  
UVM'S DISCIPLINES.**



Cheryl Dorschner

In 2006, some 30,000 people visited the UVM Morgan Horse Farm in Weybridge.

## BACK COVER PHOTOS

**TOP:** University of Vermont Extension 4-H exhibits highlight Addison County Field days each August. Photo by Cheryl Dorschner.

**BELOW LEFT:** UVM's director of Watershed Alliance Caitrin Noel helps Edmunds Middle School eighth graders study stormwater erosion and sedimentation in Englesby Brook in Burlington. Photo by Jurij Homziak. **BELOW RIGHT:** Steve Davis, director of the UVM Morgan Horse Farm, introduces members of the Society of Environmental Journalists (SEJ) to the Morgan breed, during the UVM-sponsored SEJ conference in October '06. Photo by Cheryl Dorschner.

\*Toll-free telephone number



# ANNUAL REPORT

for the Fiscal Year 2006

 The UNIVERSITY of VERMONT  
EXTENSION

**AES**  
Vermont  
Agricultural Experiment Station