Cornell Cooperative Extension’s Natural Resource Opportunities

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Abstract
Cornell Cooperative Extension Association of Essex County is an educational system that enables people to improve their lives and communities through partnerships that put experience and research knowledge to work. We are a local link to Cornell University and other Land Grant Colleges for information on research and recommendations regarding a wide variety of issues. We also provide community input back to the university as to the needs of our local communities. Each County’s Extension organization has expertise in different areas that have been identified by their community leaders.

Background
Cornell University was established as the Land Grant College for New York State (NYS) in 1865. The first extension educational outreach began in 1869. In 1914, NYS signed a cooperative agreement with the Federal Government under the Smith-Lever Act to provide for extension agents in rural New York to disseminate research-tested agricultural information developed at the College. Eventually, extension grew until every county in the state established an office to provide educational opportunities for youth and adults in their communities. The Essex County office opened in 1916 as Essex County Farm Bureau. In 1956 Farm Bureau and Extension split with Farm Bureau taking on a lobbying effort and Extension taking on the educational mission. “The Cornell Cooperative Extension educational system enables people to improve their lives and communities through partnerships that put experience and research knowledge to work.”

Cooperative Extension exists in all States. In some states the extension staff is hired and supervised from the Land Grant University. However, in New York the counties have independent associations that contract with their County and with Cornell University to provide educational programs that are chosen locally and delivered locally. Local boards of directors decide which programs will be offered, how the limited funds will be spent and who will be hired to support those efforts.

Statewide, Cornell Cooperative Extension has an incredibly wide array of opportunities for educational programs. However, every county cannot offer every program. Some programs are offered on a regional basis and some are provided by staff located within the county. Frequently, counties will offer regional programs or share expertise to minimize costs and to maximize impact. All programs are available to everyone. Usually, a county will have a newsletter that lets their community know about the locally available programs and upcoming programs will be listed in the newspapers.

Educational Programs
In Essex County we offer youth programs that include 4-H club activities such as livestock, horses, cooking, sewing, photography, rabbits, dog obedience, leadership development and in-school programs such as Advantage After School Program. The goals of 4-H are to develop life skills, teach responsibility, and build self-esteem. Our family programming is primarily focused on nutrition education for low-income and at-risk homemakers. We also have adult programs geared toward farmers, small businesses, community leaders, consumers, and rural landowners. The educational programs and resources offered include Agriculture, Horticulture, Commercial Forestry, Urban Forestry (trees in town or on lawns), Master Forest Owner, Master Gardener, Wildlife Damage Control, Wildlife Habitat Enhancement, Fish Habitat Enhancement, Stream Bank Protection, Water Quality Protection, and Drinking Water and Septic Systems. We often offer programs that are of current interest such as West Nile Virus Issues, Bioengineering or Total Maximum Daily Loading (TMDL) Requirements and Farmers.

In Essex County, we have two newsletters. The Town and Country offers information on County-wide 4-H programs; Eat Smart NY; small farm agriculture; and gardening, yard care, and household pests. The North Adirondack Agricultural News is for commercial farmers. The newsletters are available free to residents of Essex County.

Agricultural Programs
Farmer education is one of the mainstays for Cooperative Extension systems. The goal is to implement research-tested agricultural practices on farms to ensure a safe, plentiful, and affordable food supply. Increasingly there has been a greater
emphasize on protecting the environment as well. The new Federal Concentrated Animal Feeding Operation (CAFO) law has provided an impetus for farmers to reduce soil erosion, nutrient runoff, and pesticide losses.

Since many pollutants bind to soil particles, erosion prevention reduces other pollution as well. Erosion is accelerated through tillage as plant roots are broken up and new crops are planted. Therefore, crop rotations that increase annual crops and row crops such as corn or soybeans increase erosion. Forages such as grass or alfalfa add stability to the soil. One way to convert grasses to a useful food for humans is by raising ruminants such as cows, sheep, or goats. These animals can convert grasses to meat or milk. Pigs and chickens are simple stomach animals that typically eat more grains than grasses; therefore they are associated with more erosion. Conservation tillage and utilizing the flattest ground for corn or soybeans are other important strategies to reduce erosion and protect the environment.

Comprehensive Nutrient Management Planning (CNMP) is another important program for farmers. CNMP planners test the soil to see how much phosphorus, potassium, and micronutrients are available. They then schedule manure applications to provide many of the nutrients the crop will need. Additional fertilizer purchases can be minimized, thus saving the farmer money and reducing pollution at the same time. Manure will be applied to the fields that need it the most, as determined by the soil test.

Many farmers are installing manure storage. These storages allow the manure to be applied in the spring and summer at the time the crop needs and uses the most nutrients. It is very difficult to spread manure in the winter and to keep runoff from polluting the environment. Unfortunately, manure that is stored in a pit will activate nitrogen and sulfur to cause a very unpleasant smell. Since the best time to apply manure is in the summer (when people are outside), and since our recommendations call for putting manure on fields that need more nutrients (such as those that have not had manure before and may be farther from the barn and closer to neighbors), conflicts with neighbors are increasing. It is important for those who enjoy living in rural areas to understand that new environmental protection practices may be exacerbating some of these smells. If you are planning a special summer event, it is wise to contact your neighboring farmers well ahead of time to let them know, so that they will not spread manure on that day. Many farmers use a commercial manure applicator service to get the job done in 2 or 3 days.

Pesticide Applicator training is another major environmental educational program of Cornell Cooperative Extension. To protect the environment the applicator can implement a program called Integrated Pest Management (IPM). This concept includes monitoring of pests and waiting to treat until numbers are high enough to cause economic damage. Farmers are also taught to select the most benign product to protect their crop and to use several management practices that can reduce pest problems such as crop rotation to break the pest’s life cycle, or growing plants that need fewer pesticides. The Champlain Valley apple industry is a shining example of farmers who have reduced their use of pesticides through IPM.

Perhaps the greatest risk to humans from agriculture is the potential for pathogens that might cause illness. Fortunately, there are not very many pathogens that transfer from livestock to humans. However, farmers are taking expensive steps to prevent any transmission. The three primary diseases that we worry about are E. coli H157, Giardia and Cryptosporidium. These may be transmitted through manure. Prevention of manure runoff and long term storage of manure are the primary strategies to protect drinking water resources.

We also have an active Buy Local campaign called the Adirondack Harvest. Did you know that the average mouthful of food has traveled 1300 miles before it is eaten? By buying local you get fresher food, support your local economy, and decrease the amount of fossil fuel used to deliver your food.

Watershed Programs

Our goal is to encourage communication and actions that will enhance the quality of life in our communities. One way to do this is to assist environmental groups who are working to reduce pollution or improve a water resource. So far, we have coordinated the formation of two watershed groups: the Boquet River Association and the Ausable River Association. These groups work in a variety of towns with streambank stabilization, tree planting, landowner education projects, and school projects such as ‘Trout in the Classroom.’ We remain ex-officio advisors to these groups assisting with the community educational programs as needed. It is possible to help more communities that would like to implement a watershed advocacy group in Essex County.

Cornell Cooperative Extension also works closely with the Towns, the Soil and Water Conservation Districts, the Department of Environmental Conservation, and the Adirondack Park Agency to help community leaders learn their role in protecting the environment. We offer strategies for implementing various projects. We are currently offering training called LEAPE for town planning boards to teach them the best management practices recommended for community development. The training is divided into laws, such as your septic system must be 100’ feet from wells and surface water; and best management practices or recommendations. There is also a Geographic Information System section that allows communities to view maps of their community’s growth and resources over time.
Another example of working with communities is a recent training program for highway superintendents where the installation of sediment traps was demonstrated. Sediment traps in road ditches collect sand and debris. Then the debris can be easily cleaned out preventing clogging of culverts and protecting streams. Sediment traps also control grade on steep slopes thus reducing erosion in ditches. Another role for sediment traps is to allow a cleaning spot along rip-rapped ditches thus extending the life of the rip-rap protection. In the past year, 12 sediment traps have been installed in Essex County by attendees at this program.

Cornell Research in the Adirondacks

In Essex County we are fortunate to have several Cornell research facilities that incorporate environmental protection studies. The Uihlein Potato Research Farm raises virus-free potatoes in a controlled atmosphere. They also conduct a variety of studies to incorporate insect or disease resistance into new potato varieties. Potatoes started at this facility are distributed up and down the entire east coast and provide potato growers with a high quality virus-free potato.

The Cornell Uihlein Maple Research station has several experiments designed to reduce energy usage during syrup production. Tubing systems reduce fossil fuel use in the collection of syrup. Preheaters, reverse osmosis, and vapor compression evaporators reduce the energy needed to evaporate the water from the sap. A super sweet tree variety trial can be found along the Military Turnpike Road in Lake Placid. A tree that produces 4% sugar sap will need half the energy for evaporation that a 2% sugar sap tree requires. This variety trial has produced some excellent results. However, if you look, you will see that several of the super sweet tree varieties were not winter hardy in the Adirondacks.

The Willboro Research Farm studies crop responses in Northern Climates. There are several crop variety trials located in Willboro. It is also one of the premier research locations in the nation for studying the movement of nutrients and pesticides through the soil. In addition, protocols for growing certified organic wheat, soybeans, sweet corn, and clover hay are being developed. We have found that wheat works especially well in an organic rotation for weed control. This is because there is a fallow period that allows for repeated disking prior to planting, and the crop grows through the winter protecting the soil from spring runoff. The winter growing season disrupts many weed life cycles. The organic wheat project also helps supply an organic grain mill in Westport.

There are special drainage systems that collect sub-surface water and irrigation systems that simulate various weather conditions. The Willboro Research Farm was a leader in identifying the potential for ground water pollution in clays due to macro-pores and prism faces. Previously, it was believed that water would move faster through sands. However, we now know that clays under certain conditions can move water very rapidly as well. When the clays crack or have worm holes the water movement will be very rapid.

The Willboro Research Farm also quantified the amount of nitrogen available for crop growth that is released after a sod is plowed down. In late June and July a previously plowed sod will release so much nitrogen that plant growth cannot take up enough to prevent ground water pollution. The release of organic nitrogen from plant roots breaking down is dependent upon bacteria in the soil, so temperature, moisture, and soil oxygen levels are very important. However in nearly all instances, a high yielding corn crop can get all of its nitrogen needs from a plowed down sod. Only a starter fertilizer will be needed to initiate early growth in the spring when the soil is cold and the bacteria are not active yet. This is a money and environment saving finding because the farmer now knows that he need not apply very much nitrogen fertilizer in the first year following a sod.

Another interesting research project that is being implemented by Cornell Cooperative Extension is a study of insects that eat the aquatic weed, milfoil. Lincoin Pond has been the site for the release of several milfoil eating moths to try to establish a breeding population. We had a major success with a late fall release. The milfoil in the study plot had half of the biomass and plant length of the control areas. However, pan fish are eating many of the caterpillars as fast as we release them. We are still working on successful release strategies for introducing and protecting the insects.

Home Owner Programs

The Master Gardener Program emphasizes environmentally sound gardening practices. Our 40 Master Gardener volunteers have been trained to teach homeowners how to reduce their use of fertilizer and pesticides. They write articles for newspapers, work with their neighbors to solve gardening problems, and provide displays throughout the county to increase awareness of these environmentally friendly techniques such as making your own compost from table scraps and leaves to use as mulch that provides nutrients, organic matter, and weed control in your gardens; selecting the best most pest-resistant plant for your site and growing conditions; mowing your lawn higher to thicken it up to crowd out weeds instead of using an herbicide; correctly identifying a pest, finding out if it is destructive, and considering other control options before deciding to spray chemicals in your home; and growing your own food and flowers for personal enjoyment.

We welcome phone calls from the public and have a corps of Master
Gardener volunteers to answer questions. Our newsletter, *Town and Country*, has several gardening articles in each issue. In addition, Amy Ivy writes a column for several newspapers and speaks on local radio programs.

**Commercial Lawn and Landscape Management**

Our commercial horticulture program trains people in the industry to manage their grounds and lawns using environmentally sound practices. Integrated Pest Management is the central focus of our educational efforts, where we teach how to grow healthy plants and avoid pest problems and alternative steps to take when there is a problem. Public parks, schools, community tree planting and beautification projects, and independent businesses participate in these educational programs.

**4-H and Youth Development**  
There are more than 150 projects available at Cornell Cooperative Extension for youth to participate in and for caring adults to learn about. It takes four children between the ages of 5 and 18 to make a club. However, youth may participate as independent members if their parent is willing to help them. We also have several programs in schools such as bike safety, incubation embryology, and Environmental Field Days. Four-H projects that are related to the environment include Pond and Stream Safari, Butterflies and Moths, Insects Around Us, Tree Identification, Birds in Your Backyard, Bluebirds in New York, Water World, Composting; Waste to Resources, Wildlife in Today's Landscapes, Wildlife Discovery, Field Guides Made Easy, and Let's Go Fishing. We offer adult training for leaders and parents who then take the programs to the youth.

One of the main goals of 4-H is to develop youth who are excited about their role in their community and have the skills to provide leadership in the future. These skills are integrally wrapped into each training module. In addition, the club experience teaches leadership through roles such as president, secretary and treasurer. The Public Presentation experience allows youth to speak in front of small, less intimidating groups with progressive responsibilities.

This is just the tip of the iceberg as far as Cornell Cooperative Extension educational programs go. To learn more about specific programs in your community contact your local office and get on their mailing list. To learn more contact the CCE in Essex County, at PO Box 388 (or 3 Sisco St, on the Fairgrounds) in Westport NY 12993, (518) 962-4810 (voice), fax (518) 962-8241 (fax), or email ald6@cornell.edu.