



News & Views

for New Hampshire's Green Industry

April-June, 2005

Biology and Control of the Lily Leaf Beetle

The Lily Leaf Beetle (LLB) was first discovered in New England in 1992 in Cambridge, MA. It probably arrived from Europe in bulbs. It is a strong flyer and has spread north to New Hampshire and Maine. The adult has a brilliant red body, black head is about 3/8 in long. The LLB larvae are slug-like and vary in color but usually are orange, or yellowish, with black heads. What's most unusual about them is they carry their black excrement on their back. The excrement provides them with protection from predators.

The adult beetle emerges from the soil in early spring, mates, and begins to lay yellow eggs under the leaves of young lily plants. A single female can lay over 400 eggs and may live 2 years. The larvae do the most damage and feed on the leaves for 16-24 days. After feeding, the larvae drop to the soil and pupate. The adults will emerge from the soil in about 2-3 weeks and feed until fall. They overwinter in protected areas near the host plant. The adults may feed on a variety of plants but the larvae will only survive on *Lilium* and *Fritillaria* species. They do not feed on daylilies.

The best non-chemical control is to crush the eggs or handpick the larvae from the plants. To be successful you must monitor the plants every week after they start emerging. The larvae can be conveniently controlled with chemicals. When you purchase a chemical, check the label carefully. The label should state the product is registered for "beetles" or "leaf beetles" and outdoor "ornamentals" or "flowers". Some products which

are acceptable are malathion, Sevin (carbaryl), Deltagard (deltamethrin), Azatin, neem, and Bayer Advanced Rose and Flower Insect Killer (cyfluthrin plus Merit). The Bayer Advanced product and neem is readily available to the homeowner. Neem is a plant extract that acts as an insect growth regulator and adult repellent. However, it may require several applications to totally control the beetle larvae. There is some hope of achieving biological control as described below by Alan Eaton.

For more information, see the UNHCE Fact Sheet on Lily Leaf Beetle at <http://ceinfo.unh.edu/Pubs/HGPubs/LilyLeaf.pdf>.

Stan Swier

Biological Control of Lily Leaf Beetle

When dealing with an introduced pest, one option is to try "classical" bio-control. That's when you go to the native home of the pest, search for natural enemies, review the safety of introducing them here, and (if safe) release them. It takes years of careful effort, but can result in a permanent reduction of the pest population.

Dick Casagrande, Lisa Tewksbury and Marion Gold at the University of Rhode Island have worked on such a project for lily leaf beetle. It started in 1996. They recently reported on their progress, and some NH sites are now included in the work. Things look very encouraging to me.

They evaluated the risks and benefits of releasing European parasites, and received permission to begin parasite releases. Here's the news: At their initial release site in Massachusetts

(where they released parasites from 1999 to 2001), the parasites substantially reduced the lily leaf beetle population this last year! The parasite is a tiny Eulophid wasp from Europe, named *Tetrastichus setifer*. The LLB population is also starting to decline at another later release site, this one in Rhode Island. This year they also confirmed that *T. setifer* was able to overwinter at a site in Maine. It is too early to say much about

the two NH release sites (Nottingham and Hudson).

Typical bio-control projects require several releases, and several years before you begin to see pest population decreases. Some programs result in failure. Seeing the results above is very encouraging. By the way, there's more. They are also investigating resistance to LLB in hybrid lilies.

So things are looking promising regarding LLB.

Alan Eaton



Water Use Reporting: It's Required.... And It's in Our Best Interests

New Hampshire is ablessed with a temperate climate and ample water resources. The State receives between 40 and 45 inches of precipitation each year in the form of rain and snow, water that swells rivers, fills lakes and reservoirs and recharges groundwater for wells and springs. From time to time, farmers in New Hampshire have dealt with periods of drought and flood. Not having enough water meant distressed livestock and parched crops. Too much water meant flooded pastures and erosion of choice topsoil . By and large, however, such extreme circumstances have been relatively rare, and water has been a plentiful constant for farming throughout our history.

As our state enters the 21st century, this situation has shifted to some degree. While the amount of water available remains relatively constant, demands on that resource have grown. The population of the State has expanded significantly in the past three decades, concentrated in the Seacoast area and southern tier, south of

Concord. That growth in population has been accompanied by similar increases in commercial and industrial activities. All those factors - population growth and expansion in the commercial and industrial sectors - require water, and demands for water resources have risen. A complicating facet to the equation has been the environmental movement with its renewed concern for wildlife and habitat restoration. Water is no longer viewed simply as a resource for agricultural, industrial, commercial or personal use. Many today feel that maintaining flows to support fish and other aquatic life represents an equally important reasonable use of water. While no water crisis exists in New Hampshire, it is probably safe to say that we do not possess sufficient water resources (particularly in the southern portions of the State) for anyone in the State to take as much water as they like, for any reasonable use they choose, at any time they like and for as long as they like. Generally there is plenty of water to go around, for farmers and homeowners, for factories and markets, for fish and for fowl. Occasionally, however, shortages caused by drought conditions do diminish the water supply temporarily. Perhaps more important

than the reality of shortages caused by actual drought is the perceived “crisis” in water resources—many people are frightened that there is a serious problem, and perception is reality. The Water Division of the State Department of Environmental Services recognizes that water resources, both ground and surface waters, have to be technically and scientifically understood in order to be managed effectively and fairly. It has been clear for some time both inside and outside of state government that we do not have a sufficiently solid handle on the water resources of our state for effective management—we simply do not know how much water can be taken out of the system, either via ground or surface water withdrawals, without creating adverse ecological, hydrological and economic impacts. We need to proceed with the basic technical efforts of building gauging stations, drilling monitor wells, collecting stream and groundwater data, conducting watershed surveys, evaluating and synthesizing the data. When we know what we have, we can better figure out what to do with it. A major component of that hydrologic understanding comes from an accounting of how much water is used within a given watershed or basin. Water use reporting is vital to that effort, as important as knowing the discharge of a river or the seasonal fluctuation of the water table. Without information regarding how much water is being used, our understanding of the hydrology of the State will remain incomplete. Reporting of water use over 20,000 gallons per day averaged over a seven day period has been required since 1987. Permit requirements for minor groundwater withdrawals above a constant 20 gallons per minute (57,000 gallons per day) and for major groundwater withdrawals over 144,000 gallons per day (100 gallons per minute) have also been in effect since that date. Currently, out of over 200 reporting entities in the State database, only eight are farms. It is probably safe to say that there are many farms and growers that are not reporting that should be, either due to ignorance of the law or perhaps because they simply haven’t gotten around to it. A new legislative bill (HB215) has been moving through the legislative process this session to provide the Water Division of DES enforcement power to compel the reporting that has been required for 18 years.

New Hampshire farmers and growers need to

report their water use—and obtain needed permits, if appropriate—if they fall into those categories. We need to do so for three reasons.

First, it’s the law, and it has been so for a long time. If we as a group expect to have a say in future decisions on water resources in the State, we have no choice but to obey the laws on the books. If we elect to ignore the reporting and permitting requirements, we essentially give up our “seat at the table”.

Second, reporting benefits to farmers and growers directly, as it effectively documents our water use. Water law in New Hampshire is an amalgam of legal systems and opinions, and is very much in a state of flux. As the saying goes, “possession is nine-tenths of the law”, and so too is documented water use a commanding force in establishing a right to use water. A farmer who has documented over time that he or she has used a certain amount of water for their agricultural endeavors establishes a powerful precedent, one that will be very, very difficult to take away. If, on the other hand, all that can be mustered is simply speculation on what has been used, continued future use could be in jeopardy, particularly in situations of drought and severe competition for available water from other users who have documented. Finally, reporting provides us all with the information we need to be able to make consistent, intelligent decisions on water resources on the basis of sound science and solid data. Without it, we are simply making educated guesses. With it, we have an opportunity to formulate and shape the processes for equitably allocating water to ensure consistent and reliable access to water in the future. If you are a water user that should be registered, you can contact Deb McDonnell of DES at 271-4068 in order to obtain the forms needed to register your water use. Jim Griswold and his wife Lou Ann farm 58 acres at Velvet Pastures Elk Ranch in Lee. They have a herd of 30 Rocky Mountain elk raised for local grocery markets, restaurants, farmers’ markets and farm stand sales. Jim works as Senior Hydrogeologist with the Manchester firm Haley and Aldrich, Inc. He has over 20 years of experience in water resource exploration and protection. Jim serves on the Strafford County Farm Bureau Board of Directors and represents New Hampshire Farm Bureau on the SB 155 ground water withdrawal legislative study commission.

“Soil Testing Remains Available - Forms Online”

DURHAM – UNH Cooperative Extension will continue to provide soil testing and recommendations to New Hampshire farmers and home gardeners.

Following an announcement from the UNH College of Life Sciences and Agriculture that it will close its testing lab by May 1, New Hampshire farmers and home gardeners will still get their soil recommendations from UNH Cooperative Extension based on laboratory analyses.

Logistically, nothing will change for gardeners and farmers. Sampling and mailing procedures remain the same. Costs won't change. After April 1, when growers send samples to UNH, Extension staff will forward them to a state-of-the-art facility at Pennsylvania State University for analysis.

Not only will Cooperative Extension continue making soil recommendations, an improved reporting system reflects new research findings, including the latest research on environmental risks from nitrogen and phosphorus movement. All reports will contain the results of a lead screening test, with guidelines for minimizing risks to children.

UNH Cooperative Extension staff also improved the readability of the new reporting format. Each report refers clients to the latest fact sheets related to the crops produced.

Another plus for farmers and home gardeners is the option of receiving their lab reports and recommendations by email. Those who don't wish to receive their results online or who don't have access to a computer can continue receiving their results by direct mail.

To access a soil test form on the web with instructions for taking and mailing soil samples, go to <http://ceadmin.unh.edu/soils/form/index.cfm>. The samples will be mailed to the Plant Biology Department at UNH according to the instructions on the form.

If you don't have computer access and you wish to receive a form, stop by or call your local county UNH Cooperative Extension office.

For more information, contact Cheryl Estabrooke, Administrative Assistant in Plant Biology, UNH Cooperative Extension, at 603-862-3200 or by email at cheryl.estabrooke@unh.edu.

UNH Cooperative Extension is helping you put knowledge and research to work.

This newsletter is a cooperative effort of the Ornamentals Extension Educators and Specialists at the University of New Hampshire. It is published quarterly. Its purpose is to inform and update industry members on issues and research relevant to the production, use and maintenance of ornamentals and turf in New Hampshire. Contributors for this issue:

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