Fantastic Field Days by Steve Gilman

If you want to guarantee temperatures in the upper 90’s, just host a NEON Focal Farm Field Day. At least that’s what transpired this season on Aug. 14th at the 1300 acre farm of Klaas and Mary-Howell Martens in Penn Yan, NY and again on Sept. 9th at the Harlow brothers farms in Westminster, VT.

~Penn Yan, NY

The Martens and neighboring farmers hosted the NEON event, co-sponsored by the Northeast Organic Farming Association of NY (NOFA–NY) and New York Certified Organic (NYCO) along with Cornell’s Soil Health Program Work Team and the Small Farms Program Work Team. The Field Day Team was coordinated by Brian Caldwell.

The day began at the local fairgrounds, with 150+ participants attending the morning session with sponsor presentations and a farmer panel. At noon, the local 4H put together a tasty walk-around organic lunch in the midst of the trade show. Afterwards, as the temperatures climbed into the humid upper 90’s, Field Day goers boarded buses (planned to avoid vehicle compaction and extra traffic at the sites) for a series of field stops.

A pest management session featuring Cornell entomologists Tony Shelton and Abby Seaman along with NEON field coordinator, Steve Vanek was held under a tent next to a 15 acre cabbage field.

Soil health was addressed by farmer Mary-Howell Martens along with regional vegetable specialist Carol MacNeil and Bob Schindelbeck from the Cornell Crop and Soils Dept. at another stop at the other end of the field.

At a steamy site overlooking Lake Seneca, organic weed management was covered by weed ecologist Chuck Mohler and Klaas Martens and neighboring farmers showed some of their specialty cultivation equipment. At the end of the Tour, the buses swung by the recently purchased Agway grain processing plant now serving area organic grain growers.

Clearly, something pretty amazing is going on in Yates County, with over 8,000 acres now in certified organic production. As the conventional infrastructure continues to decline, a strong organic presence is on the rise and a palpable sense of community among the diverse group of neighboring farmers was apparent throughout the event.

~Westminster, VT

The Harlow brothers are third generation farmers in Vermont’s lush Connecticut River Valley. Tom and Paul grow vegetables for the wholesale trade and for their extensive retail farm stand and greenhouse business, managed by Dan and other family members. Tom’s Kestrel Farm, a few miles down the road, is one of 11 Focal Farms NEON is studying in the NE.

Consisting of tours and presentations at the Harlow farms and farmstand, the NEON Field Day also included a morning tour of the Northeast Cooperatives Warehouse in nearby Brattleboro.

The event was produced by NEONites Chris Cousins and Sue Ellen Johnson from the New England Small Farm Institute in conjunction with Vern Grubinger from the University of VT Coop Extension. UMASS entomologist Ruth Hazzard also gave a presentation about the development of the “Zealator” Bt oil-injecting devise invented to control corn earworm organically.

The September heat wave aside, participants were treated to a highly informative Field Day. Future tours are planned on focal farms in NJ & PA in 2003. Just don’t forget your sunscreen.
Searching for More Effective Methods of Controlling Insects
by Tony Shelton, Professor of Entomology, Cornell University/NYSAES and Kim Stoner, Associate Scientist, Connecticut Agricultural Experiment Station

In organic farming, as elsewhere in life, it is much better to anticipate and prevent a problem, if possible, than to try to rescue the situation once a problem becomes serious. To prevent insects from reaching damaging levels on crop plants, growers can time their plantings to avoid early season populations, diversify their crop mix, remove overwintering sites, or use row covers as barriers to infestation. These tactics are "preventive" pest management tools and should be used whenever possible. However, they may not be 100% effective at reducing pest populations to the level required. "Rescue" treatments are sometimes also needed, and they can take various forms – vacuuming insect pests, releasing beneficial insects, or spraying something onto the plant that will either kill or repel the pest insect. All of these tactics are really some form of "insecticide", a term derived from its Latin roots meaning to kill an insect.

~Rescue remedies

A common form of a rescue treatment is to spray or dust some product onto the plant. The organic community has chosen to use only products that are not synthesized by artificial means. This regulation does allow the use of products that are extracted from plants (such as pyrethrum, neem, or rotenone) or bacteria (e.g. Bacillus thuringiensis (Bt)). Generally, the products derived from plants have a broad spectrum of activity, will affect non-target insects (parasites, predators, pollinators, and other insects in the area) and may have some level of health concern to humans, other mammals and the environment. For good pest management it is essential that predators and parasites be conserved so they can reduce the overall population level of the pest. Therefore, the trick is to utilize rescue treatments that control the pest while having minimal impact on the natural enemy population.

~Bt

Bt is a product used by organic and conventional growers. Bt is most commonly used to control caterpillars, but there are other strains used to control Colorado potato beetles, mosquitoes, and other insects. These different strains or species of Bt differ in the types of proteins they produce. When a susceptible insect eats this Bt protein, it binds to the insect gut and causes the insect to stop feeding and eventually die. Because the insect must ingest the protein in order to die, parasites are not directly affected. Predators are also not affected since they do not feed on the Bt spray deposit on the leaf surface. While this is the good side, there is also a downside to Bt. The largest selling Bt products affect only caterpillars and not the broad range of other insect pests, such as thrips, beetles and sucking insects. So, the search goes on for additional insecticides that organic growers may use.

~Spinosad

One product that is just coming on the organic market (but whose active ingredient has been used for a few years as a non-organic product) may overcome some of the limitations of Bt and other rescue treatments. This product has an unusual background. As part of a program to search for rare and unique bacteria, a scientist from Lilly Research Laboratories collected a soil sample from an abandoned rum facility in the Caribbean. Microorganisms from the soil were isolated, purified and sorted and then each bacterial culture underwent small-scale fermentation. The products resulting from the fermentation were examined for biological activity, including activity against several classes of insects. The results were surprising since one product (spinosad) affected many major pest caterpillar species, beetles (like the Colorado potato beetle), leafmining flies, thrips and termites. Even more surprising, it was relatively soft on natural enemies with a very low mammalian spectrum insecticides, whether they be conventional or organic, and even bug vacs and other non-selective control practices (e.g. oils and organic dusts) will affect natural enemy populations. Are there alternatives?
toxicity. Both these characteristics make it unlike many other natural or synthetic insecticides. Up until now spinosad, the active ingredient produced by this bacterium, has been formulated with additives that do not meet organic standards, but the manufacturer (Dow) has recently produced an organic product. It may soon become available to organic growers as a rescue treatment for several types of insects not controlled by Bt or other alternative insecticides, as well as to control several important caterpillar pests.

Plant-derived and microorganism-derived products serve as the basis for most of our medicines and many insecticides. As we discover the multitude of new organisms, even those in abandoned rum facilities, perhaps more novel compounds can be discovered that will help manage agricultural and human health pests in more environmentally sustainable ways. However, they should be used as only part of an overall approach that first relies on preventive pest management tactics.

Organic Crop Rotation Planner
by Chuck Mohler, Cornell Weed Ecologist

One of NEON's major projects is the development of a tool for planning organic crop rotations. Crop rotation is a critical feature of all organic cropping systems. It provides the principal mechanism for building healthy soils: interspersing green manure cover crops between cash crops allows input of large quantities of organic material to build soil tilth and mobilize nutrients for succeeding cash crops. Crop rotation is also critical for organic pest control. By alternating biologically very different crops the grower can starve some potential pests out of the fields. Alteration of different crops also allows a wider variety of approaches for weed management.

~Management challenges

Although crop rotation has numerous advantages, it also poses substantial management challenges. The large number of crops grown on diversified organic farms creates a huge number of potential crop sequences from which to choose. Differences in the desired acreage of various crops and variation in field properties further complicates rotation planning at the farm scale.

~The planner

The purpose of the planner is to assist the farmer in plotting a course through the maze of decision-making involved in planning crop rotations. The idea is not to provide a list of do's and don'ts, but rather to provide the grower with a wealth of information upon which to base decisions, plus some procedures for efficiently sorting out those crop sequences that work well on a particular farm.

Development of the planner began with an intensive three-day workshop sponsored by the New England Small Farm Institute in which the crop rotation expertise of 12 highly experienced organic farmers was captured on paper through a systematic process. Based on that work, a series of rotation planning procedures are being developed. Relatively simple, single field planning procedures will be included in a manual along with example rotations, and a summary of the crop rotation wisdom of the expert growers. A series of tables will identify problems associated with particular crop sequences, rules of thumb for companion planting, and properties of pests and weeds that relate to their management by crop rotation. More complex, whole farm rotation planning will be computerized using Excel spreadsheets.

Editor's note: The Rotational Planner is currently in the design stage. After testing by farmers, it is expected to be available through the NEON website in early 2004. S.G.

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NEON is an innovative consortium of farmers, researchers, extension educators and organic farming organizations working together to conduct on-farm studies and improve organic farmers’ access to research and technological support. NEON is funded by a USDA Initiative for Future Agriculture and Food Systems grant.

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NEON Cover Crop Screening Trials

This past August, 42 organic farms in the Northeast received boxes with samples of cover crop seeds, courtesy of the NEON project. The seeds were sent out by Dr. Marianne Sarrantonio of the University of Maine in a dual-purpose effort to test some promising new cover crops under real-farm conditions in a variety of climates, as well as to introduce growers to some types of cover crops that may be new to them. Organically-certified farmers from Maine, New Jersey, New York and parts of Pennsylvania were invited to participate via mail and e-mail. Those responding receive enough seed and appropriate inoculants to plant 500 ft\(^2\) of several species of vetches, peas and clover, along with cereal rye, oats and two types of brassicas. Growers had no restrictions as to how, when or where they were planted. They were asked to rate the growth of the various covers and return the information to Sarrantonio in the spring. Any organic grower who would like to participate in the 2003 trials can contact Sarrantonio at mariann2@maine.edu or at 102 Deering Hall, University of Maine, Orono, ME 04469