



The *New* American Farmer

Brian and Alice McGowan, Blue Meadow Farm Montague Center, Massachusetts

Summary of Operation

- *Retail nursery on three-acre farm*
- *600 varieties of perennials (60,000 to 70,000 plants per year)*
- *500 varieties of annuals and “tender” perennials (hundreds of thousands) each year*
- *Small number of trees and shrubs*

Problem Addressed

Reducing pesticides. Brian and Alice McGowan decided early on that they wanted to use natural controls to combat diseases and insect pests in their Blue Meadow Farm nursery operation near Montague Center, Mass. They didn’t want to expose themselves and their workers to chemical pesticides inside their four greenhouses.

Background

When the McGowans purchased their small farm near Montague in 1982, they were determined to operate a wholesale vegetable business. “There are a lot of vegetables grown in this valley,” says Brian McGowan. “This is a very fertile river valley and offers some of the best land in the region. It was pretty hard to compete by growing wholesale vegetables on a small scale.”

Five years later, they discontinued growing vegetables and concentrated on ornamental plants, which they had been slowly introducing into their business. “We quickly discovered that people really value plants,” says McGowan. “If you grow a quality plant, people will recognize it, and there’s more profit than in vegetables.”

The McGowans created a multi-faceted system that includes biocontrols as well as beneficial predators and parasites. While the use of predators and parasites increases the time and complexity of managing pests and costs as much or more than chemical pesticides, the McGowans are convinced that, in the long run, they and their employees benefit.

The McGowans built their annual and perennial business slowly over more than 13 years. Nonetheless, their retail nursery remains small compared to other commercial nurseries. They grow about 600 varieties of perennials totaling between 60,000 to 70,000 plants per year, with 99 percent propagated at the nursery. They raise another 500 varieties of annuals and tender perennials each year numbering in the hundreds of thousands. They also grow a limited number of trees and shrubs.

Focal Point of Operation — Pest control

Blue Meadow Farm is divided into three distinct growing environments, including four greenhouses, 16,000 square feet each; eight cold frames, 18,200 square feet each; and about an acre of display gardens. They grow out annuals and tender perennials in the greenhouses, hardier perennials, many started from greenhouse cuttings, in cold frames. The display gardens are a combination of permanent

plantings of perennials with annuals added each spring.

They specialize in annuals and “tender” perennials, such as tropical plants and salvias, that do not over-winter in many climates. To propagate, they take cuttings beginning in January with the peak cutting time in March. They propagate perennial plants all year from cuttings and divisions.

The McGowans have turned their nursery into a showplace. Surrounding the sales area, gardens grow in different conditions — shade, arid gravel and direct sun. The gardens have matured over the years and feature woody trees and shrubs mixed with the plants. “Early on, we started planting gardens because a lot of the plants we are growing are unusual and unfamiliar to many customers,” says McGowan. “We also wanted to learn about the plants and show our customers how they are grown.”

Throughout every aspect of the nursery, the McGowans make pest and disease control a major consideration in producing quality plants. They always have used environmen-

tal factors to control disease, such as air circulation, proper temperature and well-drained soil mixes. “We have never in the history of our greenhouse business used a chemical fungicide,” he says. “Years ago, we decided we didn’t want to work in an environment where pesticides were heavily used. In a greenhouse, you’re talking about an enclosed space, and whatever chemical you spray may remain active for a long time.”

That philosophy is why in 1987 the McGowans introduced beneficial predators and parasites into their nursery to control insects. It is a lot more complex to use predators and parasites for insect control than a chemical spray, McGowan admits. A sprayer full of chemicals may kill the insects in 30 seconds, while there is a lag time with the predators and parasites.

The greenhouses pose the largest problem for insect control. Out in the perennial pots, insect problems are minimal, says McGowan. There are mainly two insect pests that need to be controlled in the perennials, and for those, McGowan uses a

parasitic nematode or *Bacillus thuringiensis*. Destructive nematodes can infest plant leaves and roots and cause damage. But the parasitic nematodes used by the McGowans infect the grub stage of a type of weevil. Homeowners can buy similar parasitic nematodes to control Japanese beetle grubs in lawns.

They also buy predator mites that eat their plant-damaging kin. McGowan buys the predator mites in bottles of 5,000 to 10,000 mixed with bran, and shakes them around in the greenhouse. While some of the predators and parasites will reproduce, others must be released on a regular schedule, sometimes as often as once a week.

“There’s a real ‘faith’ factor, because you’re sprinkling these things out and you really have to build your confidence,” McGowan says. However, once a system of insect control is underway, he says, it can be as — or more — effective as a chemical program. Sometimes, the beneficials establish themselves and achieve a balance so McGowan no longer has to purchase and release them. “But it is unpredictable,” he says. “It is critical to constantly monitor and assess your individual situations.”

This monitoring is something you also have to do with chemical controls, according to McGowan, and more than likely chemical controls also have to be repeated. Pests develop resistance, and eventually the pesticide may end up not working at all.

Economics and Profitability

The McGowans spend about \$500 each year buying predators and parasites, compared to about \$300 if they were to use insecticides. “The initial cost of the predators and parasites is more, but in the long run, I don’t believe the total cost is necessarily more,” says McGowan. If the system works well, he says, it controls pests better



The McGowans release beneficial insects to prey on nursery crop pests rather than using pesticides.

because beneficials don't develop resistance, thus the eradication time can be faster.

"It's pretty amazing once you get into to the field of natural pest control," says McGowan. Five years ago, few suppliers of predatory insects existed. Now, they're starting to be used in conventional farms. "That may be because of the cost of registering pesticides," he says. "It's starting to become economical."

Turning their nursery into a display garden also has helped draw customers, many of whom buy plants after touring the site. Customers show just a modicum of interest in their "green" pest control program, McGowan says, but the couple continues both because they expect more questions about pest control and because they feel strongly it's the right way to grow.

Brian and Alice went from both working part time off the farm to working entirely at the nursery. Later, one of their two daughters joined them. They hire eight employees during the peak season in the spring and summer. Two of the employees continue at the nursery throughout the year at reduced hours.

Environmental Benefits

The McGowans' use of beneficial predators and parasites improves the environment of their nursery for themselves, their employees and their customers. The practice also protects beneficial insects that might otherwise die when exposed to chemical pesticides.

"The public needs to be educated and their tolerance of insects needs to be raised," says McGowan. "Most people see an insect or a couple of aphids and immediately think they have to kill them. In reality, a few insects are not a problem. You have to have those insects to have a balance."

The McGowans continue to seek other practices at their nursery to help protect the environment. McGowan believes nurseries were probably more sustainable years ago when operators used clay pots and recycled them. While the McGowans use plastic pots to grow their perennials, they reuse them several times and only dispose of them when they are deteriorated beyond use. The McGowans also call on suppliers for biodegradable containers and flats for annuals.

Community and Quality of Life Benefits

When the McGowans first decided years ago not to use chemicals in their greenhouse, the decision rested heavily on health and quality of life issues. If you are using a chemical pesticide, you first have to apply it. The McGowans wished to avoid contact both during spraying and the residual period following spraying.

"We made a decision years ago that it was a pretty high value to us to have an environment without chemicals," McGowan says. He has extended that interest in the environment and a good quality of life beyond the nursery. For about 10 years, he has been a member of a local conservation commission, which focuses on the protection of wetlands.

Transition Advice

McGowan believes it would be a difficult, but feasible, task to transition a traditionally operated nursery using chemical pesticides to a natural system with beneficial predators and parasites. One of the biggest challenges is handling chemical residues, which are as toxic or more to the predators as they are to the pests. When predators and parasites are released, they may all die due to the residual effects.

McGowan says it is important to somehow manage the insects while giving the environ-

ment time to rid itself of the toxic chemicals. Some sprays, such as biorational oils and fungi sprays, offer relatively non-toxic alternatives to fighting pests.

Newcomers to the system also must expect a steep learning curve to effectively use predators and parasites, McGowan says. It is still a relatively new science and there is not always a lot of guidance available, although McGowan suggests contacting local extension offices as a place to begin.

Ironically, the transition may require extra adjustment for growers who already use integrated pest management. McGowan says people using IPM are trained to wait until there is a certain amount of visible crop damage before spraying. With the use of beneficial predators and parasites, that may be too late. "If you're going to switch to predators and parasites, you have to have an idea of what is going to be your problem in advance," says McGowan. "You have to have your plan all mapped out and start before there is a problem."

The Future

The McGowans plan to add new and unusual plants to their nursery each year and continually learn about the plants and their culture.

They also will continue their use of beneficial predators and parasites to control insect damage at their nursery. It is one of their missions to educate their visitors and customers about predators and parasites and to encourage more tolerance for insects in the environment.

■ *Mary Friesen*

For more information:

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