Benefits Of Sweet Corn IPM Valued In The Millions

UNIVERSITY PARK (Centre Co.) — In just one year, Pennsylvania vegetable growers realized more than $13 million in economic and environmental benefits by using integrated pest management tactics in their sweet corn crops, a recent study estimates.

Integrated pest management, or IPM, aims to manage pests — such as insects, diseases, weeds and animals — by combining physical, biological and chemical tactics that are safe, profitable and environmentally compatible.

The study, conducted by Jason Beddow, a graduate student at Virginia Polytechnic Institute and State University, found that IPM in Pennsylvania sweet corn crops produced economic benefits of about $6.7 million and environmental benefits valued at about $6.8 million in one growing season.

"This research makes it clear that IPM provides significant economic and environmental benefits to the state," said Ed Rajotte, Pennsylvania IPM coordinator and Penn State professor of entomology, who served on Beddow's advisory committee.

The study was designed to help develop a uniform set of techniques for evaluating the economic and environmental effectiveness of state IPM programs. The research used Pennsylvania and Massachusetts sweet corn IPM programs as case studies.

Pennsylvania growers plant more than 20,000 acres of sweet corn annually, ranking the state among the top ten nationally in sweet corn production. But this $25 million crop is at risk to such devastating pests as the corn earworm, fall armyworm and European corn borer.

As part of the project, Beddow surveyed sweet corn growers to collect data on the growers' use of selected production practices, with an emphasis on pesticide use.

Respondents included both large and small farms, ranging in size from 2.5 to 2,500 acres. The results of the survey indicate that the majority of respondents use several IPM tactics in their sweet corn operation. Ninety-two percent of respondents reported rotating at least some of their sweet corn with other crops, while 77 percent and 91 percent, respectively, said they scouted for insects and weeds before deciding to apply insecticides and post-emergent herbicides.

More than 60 percent of the growers cultivated sweet corn fields to control weeds. When the practice was used, it was employed on an average of 51 percent of sweet corn acreage. Overall, the technique was used on 26 percent of acreage.

An important component of the Pennsylvania sweet corn IPM program is a telephone hotline (800-PENN-IPM) and related Website (http://pestwatch.cas.psu.edu) that provide statewide scouting information for important sweet corn insect pests. Exactly half of the respondents reported calling the hotline. Users of the service made an average of 4.7 calls to the toll-free number over the course of the growing season.

According to Beddow, the adoption of IPM practices may result in a combination of cost increases and decreases. For example, IPM adoption is expected to decrease the cost of chemical pesticides as non-chemical controls are substituted for pesticides. However, implementation of IPM practices will increase some information-gathering costs, such as labor costs for scouting. IPM adoption may influence returns via price premiums or changes in yields.

"Adopters spent less on chemicals and chemical applications and spent more on scouting and trapping when compared with non-adopters," Beddow said. "Overall, adopters in the sample spent $100 less than non-adopters per acre of sweet corn. Assuming a constant price of $2.25 per dozen ears, per-acre total revenue for adopters in the sample was $279 greater than that of non-adopters. The difference in net revenue between adopters and non-adopters was $295."

Beddow's research can be viewed on the Web at http://scholar.lib.vt.edu//theses available/etd-09272000-14340016/.

Plant Germplasm Center Steadily Builds Collection

COLUMBUS, Ohio — The Ohio State University Ornamental Plant Germplasm Center has come a long way since its grand opening a little more than a year ago.

The center, whose main purpose is to save, assess and promote the use of ornamental plant germplasm for industry and researcher use, is home to over 1,100 accessions from 62 genera, and the list continues to grow.

"Our primary function is to conserve, evaluate and distribute germplasm that would be important to the researcher or to the industry," said David Lay, director of the Ornamental Plant Germplasm Center. "It all goes back to conserving a plant species because you don't know where the next cure for cancer will come from. We need to take advantage of plants that have traits like disease resistance, stress tolerance, or carry pharmaceutical and neutraceutical compounds."

Germplasm is currently being collected from the following priority genera: *Aglaonema, Alstroemeria, Anthurium, Aquilegia, Aster, Baptista, Begonia, Campanula, Chrysanthemum, Dianthus, Dieffenbacha, Euphorbia, Geranium, Hemerocallis, Impatiens, Iris, Lilium, Narcissus, Pelargonium, Petunia, Phalaenopsis, Philodendron, Phlox, Rudbeckia, Salvia, Spathiphyllum, Tagetes, Verbena, Veronica and Viola.*

Researchers at the center are using insects, mainly honeybees and bumblebees, as pollination tools to aid in their germplasm collection. The insects, said curator Susan Stieve, are quicker and more efficient than hand pollination, and also allow year-round germplasm seed production in the greenhouse.

"Hand pollination takes time and is expensive, but honeybees are cheap at $40 a colony. An average colony holds 20,000 bees and they can work for several weeks pollinating as long as there are flowers available," said Stieve. "They are also perennial, which means they can overwinter and live year to year."

One drawback Stieve has found working with honeybees is that the insects tend to dislike restricted areas, such as greenhouses.

Bumblebees, on the other hand, are content to working in contained spaces. But they are more expensive ($100 for a colony of 75-100 bees) and they only live for three to four months.