Report for 2001NY1921B: Best Management: Transforming Principles into Practice in New York Greenhouses

- Other Publications:
  - NYS IPM Program, Cornell Cooperative Extension, December 2001, Protecting your business and the environment with Best Management Practices, Cornell University

Report Follows:

Problem and Research Objectives:

Many of the 1100 commercial greenhouse operations in New York State discharge wastewater directly to the ground surface or through drains to surface water. Greenhouse wastewaters are likely to contain some contamination from the legal and appropriate use of pesticides and fertilizers in the greenhouses. In a number of counties in New York, the protection of groundwater from agricultural pollution is a key issue. The goal of this project was to increase awareness and implementation of best management practices for minimizing the discharge of nutrient- and pesticide-contaminated wastewaters from commercial greenhouses in New York State. The target audience includes extension educators, horticultural students, and commercial greenhouse owner/operators. The objectives were to develop Best Management Practices for commercial greenhouses in New York, to teach students and CCE educators how to evaluate current practices, and to reach industry leaders to enlist their support to increase adoption of BMP principles.

Methodology:

The first step in approaching commercial greenhouse BMPs was to establish the collaboration with Jeff TenEyck of the Agricultural Environmental Management (AEM) program. Once the PIs understood the way in which the project fit into the AEM Program context, terms, and organization, the next stage was to determine the environmental issues of concern to the industry stakeholders. The PIs worked with Cooperative Extension Educators in the Southern Tier (Walter Nelson) and Western (Karen Hall) regions of the state to locate greenhouse and nursery cooperators. Tom Weiler introduced his horticulture class to the principles of greenhouse BMPs., and three students selected an independent study with greenhouse BMPs. Twenty site visits to commercial greenhouse growers were conducted by a team including a CCE educator, one of the principal investigators, and one or more students. After discussions on key environmental issues, a brochure was produced to introduce the concepts of BMPs to greenhouse operators. The first AEM worksheet was created to ascertain the interests and local issues of each greenhouse operation. The concepts of greenhouse BMPs were presented to several audiences across the state and to IPM workshops outside New York.

Principal Findings and Significance:

The growers we met on site were interested in protecting their businesses from public concerns. They thought of themselves as good corporate citizens, and were very interested in pursuing how better they might steward environmental, worker, and public well-being. The students appreciated their opportunity to become informed about practical problems and environmental issues at real greenhouse businesses, beyond theoretical or classroom greenhouse situations.

Subjects identified as hot topics where education is needed included:
- water quality before, during, and after plant production
- excess fertility provided to plants leaching into the soil
- pesticide storage facilities, inventory management, safely obtaining small quantities of chemicals from large quantities, and disposal of hazardous waste
- human safety and liability issues, including customers and employees:
    - pesticide storage in worker or public spaces-inhaled fumes, etc.
    - pesticide exposures via items like aprons stored in the greenhouse
- pesticide and fertilizer knowledge: awareness of toxicology, water solubility, and modes of action

Greenhouse and nursery operators clearly were interested in the concept of continuous improvement in BMPs including: 1) risk identification and assessment (seeing themselves through the eyes of the community, neighbors, employees, the DEC, etc.), 2) prioritization of actions to improve (based on risk as well as time and financial resources available for improvement), 3) employee training, 4) inspection and record-keeping, 5) preventative maintenance, and 6) good housekeeping.