

So Much to Do... So Little Time!

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Integrated pest management (IPM) is a multi-faceted approach for managing pests to maximize suppression while reducing growers' reliance on chemical pesticides. The Northern New England Greenhouse IPM Implementation Program, a tri-state research/education initiative between Maine, New Hampshire and Vermont, was started in 1995 with support from the U.S. Dept. of Agriculture. The long-term goal of this program is to encourage growers to use IPM for production of greenhouse ornamentals, helping them to improve pest management efficiency and reduce chemical pesticide use. A Research Advisory Group was established, made up of researchers, extension specialists and growers from the three states to guide grower outreach activities. The group's first accomplishment was a survey of current IPM practices and pesticide use.

Summary of Survey Results

PEST PROBLEMS. Growers were asked to rank the severity of their pest problems over the past three years. Among the insects, fungus gnats and aphids were rated highest—as extreme or major pests by 15-17% of the growers. Seven percent considered thrips to be a major or extreme problem and 4% ranked whiteflies in these categories. All of the insects listed were rated at least as minor pests by 17% of the growers. In contrast, less than 3% of the growers considered diseases to be extreme problems. Botrytis, damping off, and powdery mildew were rated as moderate problems by about 15% of the growers and about 19% considered virus a minor problem.

SCOUTING. Most growers (96%) indicated that they try to identify their pest problems. About half use a hand lens and obtain assistance with identification from Extension or state experts. When asked which pests their scouts could identify, over 60% could identify the adult stages of all major pests on the plant, but less than 50% could recognize the immatures. Less than 50% could identify the pests on a sticky card. Between 60-70% of the growers could not identify bacterial diseases, virus, nutrient deficiencies, or salt toxicity.

Almost 50% of the growers said they scout their

plants daily for pests, and 30% scout weekly. About half use yellow sticky cards, and 31% check them daily; 19% weekly. Though traps were commonly inspected, most growers only checked for pest presence or absence. Though many growers scout their crops, only about 10% maintain records of what was found. About 60% use information from scouting or sticky cards all or most of the time when making management decisions; 10% never use such information.

USE OF IPM. The table below lists IPM practices currently used by growers. The most commonly used practices (by over 50% of growers) include: scouting, sticky cards, inspecting plant shipments, chemical pesticides, spot pesticide treatments, disinfection of growing area, using new or clean containers, and weed control. About 14% felt the greatest factor limiting adoption of IPM was a lack of knowledge on the subject and 8% couldn't risk the economic loss. When asked why implementing IPM was important, about 23% listed that it was cost-effective in the long run and reduced the risk of environmental pollution.

PESTICIDES AND BIOLOGICAL CONTROL. Most growers (76%) use hand-operated pump sprayers; a few use motorized hydraulic or electrostatic sprayers. When deciding what pesticides to use, most growers (74%) rely on past experience. Less commonly, they use recommendations by Extension or state specialists or other growers, the New England Greenhouse Pest Management Guide, grower magazines, or advice of a company rep. Many growers (51%) evaluate the effectiveness of pesticide applications based on routine scouting; 13% inspect flagged plants before and after application. Forty-seven percent of the growers noted that in the past three years, chemical pesticides failed to achieve satisfactory control sometimes; 17% said chemical pesticides had never failed them. Low consumer tolerance for damage or insect infestation was the most important factor limiting the reduction in chemical pesticide use. Fourteen percent cited a lack of knowledge about alternatives as the most important factor and 11% felt the risk of economic loss as the most important.

About 72% of the growers have never used any form

of biological control; 20% have used it sometimes. Of those who have used biological control, 8% indicated that this method failed about half the time to achieve satisfactory control. About 3% of the growers felt that biological control failed most of the time; which was the same percentage of growers who felt chemical pesticides failed them most of the time. Seventeen percent of the growers cited a lack of knowledge on how to use biologicals as the major factor limiting their use of this management approach.

GROWER NEEDS. When asked how Extension or state departments of agriculture could best help growers implement IPM, 26% listed the preparation of pest fact sheets as the most important, 14% cited organizing educational programs, and 13% selected establishment of a professional IPM advising service. Biological control was listed as the most important area of research needed to help growers implement IPM by 15% of the growers. Research on development of local guidelines for IPM and resistant cultivars were considered the most important research needed by about 12% of the growers. The compatibility of pesticides and biological control agents was listed as the second most important area of research by 16% of the growers.

What Does the Future Hold?

A high proportion of the growers said a lack of knowl-

edge about IPM limits their implementation of this approach. Thus education and training must be the primary focus of our program. Based on grower responses, hands-on training given to small groups in half- or full-day sessions is the best educational method. Planning is underway now for Greenhouse IPM workshops for growers in the three states to be held in February. These hands-on workshops will cover basic IPM techniques, including scouting, identification of pest (diseases and insects) and beneficial organisms, how to USE biological control, and what's hot for new chemical pesticides. In addition, production of a practical guide to IPM for growers of greenhouse ornamentals and bedding plants is also planned.

What Can Growers Do?

Participate in the upcoming workshops! The goal of this Greenhouse IPM Program is to meet the needs of growers in their efforts to produce plants more efficiently with less chemical pesticides. Suggestions to help us achieve this is most appreciated. Growers are encouraged to communicate ideas to the authors.

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IPM ACTIVITIES USED REGULARLY BY GROWERS IN 1995

IPM Activities	No (% of growers)	Yes (% of growers)
Scouting	9.0	89.8
Sticky cards	41.6	57.2
Inspection of plant shipments	23.5	75.3
Plant washing	75.3	23.5
Professional pest identification	77.1	21.7
Indicator plants	69.9	28.9
Water recycling	94.6	4.2
Drip irrigation	79.5	19.3
Chemical insecticides	46.4	52.4
Spot pesticide treatment	39.8	59.0
Natural enemies	74.7	24.1
Pesticide with short residual activity	57.2	41.6
Pesticides least toxic to biologicals	72.3	26.5
Disinfection of growing areas	41.6	57.2
New or clean containers	24.7	74.1
Rotation of pesticide classes	62.7	36.1
Biological pesticides	75.9	22.9
Fallow crop space	90.4	8.4
Crop rotation	86.7	12.0
Soil testing	82.5	16.3
Foliar testing	91.0	7.8
Water testing	77.7	21.1
Pest resistant cultivars	86.7	12.0
Screening over vents	88.0	10.8
Weed control	27.1	71.7

