IPM Scouting and Decision Making For Poinsettias

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A regular monitoring program is the basis of IPM decision making regardless of the control strategies used. By regular monitoring, a scout is able to gather current information on the identity and location of pest problems and to evaluate treatment effectiveness. The following are the basics of scouting programs in New England with growers who participate in Greenhouse IPM Programs.

Tools used in greenhouse IPM

The list of essential monitoring tools includes:

- Trained personnel
- Hand-lens with 10x power and/or optivisor (headset with magnifying glass)
- Yellow sticky cards, clothes pins, bamboo stakes
- Flagging tape or colored flags
- Record-keeping system (clipboard or small notebook and pen)
- Individual maps of all greenhouses
- Support labs for disease diagnosis and soil tests and/or solubridge if a soil-testing laboratory is not available.
- Resource information such as pesticide labels, pictures and life cycles of key pests and "common sense"

Additional monitoring tools:

- Soil thermometer
- Field microscope (30x)
- Potato slices (knife, potatoes) to monitor fungus gnat larvae
- Waterproof marker to number sticky cards

Pre-Crop Evaluation

One month prior to the introduction of a crop, evaluate the entire greenhouse, inside and out. Note the presence of weeds in and around the greenhouse, drainage problems, algae build-up, pet plants, overwintered plants such as impatients or geraniums and debris under benches. Crops growing in adjacent greenhouses or outdoors should be recorded.

Previous pest problems in the greenhouse and current pesticide application methods should be reviewed. A plan of action may then be developed to eliminate these problems prior to the arrival of the crop. Prevention of key pest problems may be more easily accomplished if the grower and scout take the time to identify, analyze and correct problems before crops are introduced. Also, consider how the variety of plants to be grown in the same area may influence ease of pesticide applications and spread of disease. For example, keep seedling and cutting geraniums separate to help minimize spreading bacterial blight. Keep propagation houses separate from other growing areas, and vegetable transplants separate from ornamentals to help reduce the incidence of Impatiens Necrotic Spot Virus when Western Flower Thrips are present. Also, most pesticides labeled for ornamentals are not labeled for vegetable crops.

Inspection of Incoming Plants

At the time of arrival or soon after, the scout should inspect one-third or more of the plants. Thoroughly examine the plants for signs of insects and diseases (see chart). Early detection and prompt action can minimize the spread of insects and diseases and save pesticide applications.

Using Sticky Cards

Yellow sticky cards are used to detect infestations of adult flying insects. Attach each card to a wire or wood stake. Glue two clothespins back-to-back. Attach one end of the clothespin to a stake and clip the card to the other clothespin. This will allow you to move the card upwards as the plant matures.

Each yellow sticky card should be numbered and placed in the greenhouse at the minimum rate of one card per 1,000 sq. ft. Space the cards equally throughout the entire range in a grid pattern. Place cards near all entryways and vents. Small greenhouses (<4,000sq.ft.) can be scouted as one unit. Larger greenhouses should be divided into 2,000 to 3,000 sq. ft. sections for ease of scouting.

Change the cards weekly, and place new cards in the same areas of the greenhouse to track pest trends. Brief, concise and accurate information is one of the best tools available to make a pest management decision. Identify and record pest numbers in a notebook. Over time, population trends will emerge and provide direction for your pest management program.

Indicator Plants

Indicator plants are chosen from pest-infested plants in a greenhouse. The scout uses these plants to make a close, ongoing examination of a pest's development through its life cycle and to monitor treatment effectiveness. Indicator plants should be marked and numbered with a colored flag or flagging tape so that the scout can identify them quickly each week.

Making Pest Management Decisions

Each week, the grower and scout should review the scouting information. Pest numbers recorded from sticky card counts and foliar inspections, the use of indicator plants, and located reservoirs of pests will help to prioritize a pest-management strategy.

Early detection will result in better pest management than a pest population that has become "out of control". If problems are detected early, better pesticide coverage may be achieved due to a smaller canopy, and problem areas can be identified and treated, reducing the need for blanket pesticide applications. In addition, "green pesticides" and biologicals may be more successfully incor-

Monitoring Key Insect Pests of Poinsettia

Key pest	How to monitor	Where to look
Whiteflies (Bemisia tabaci, Trialeurodes vaporariorum)	Rely on plant inspection to detect immature stages, especially on cutting and young plants. if using insect growth regulators, use indicator plants to assess treatment effectiveness. Use sticky cards to monitor adults.	Older (3rd and 4th instar) immatures are found on the lowermost leaves. Egg laying adults are found on the uppermost leaves. Inspect and remove weeds and "pet plants."
Fungus gnats and shoreflies	Use sticky cards to monitor for adults. Place cards just above soil surface. Horizontal placement will attract more adults. Use potato slices (1"" long by 1") to monitor for larvae especially during cool, moist weather. Examine daily.	A high emergence of adults may occur after watering dry pots. Favorable habitats include areas with standing pools of water, muddy floors, and weeds.
Western flower thrips	Rely on sticky card counts for population trends and to evaluate treatments. Use cards at floor level to detect overwintering thrips beginning in February. Place cards at bench level, just above crop in March before plant damage occurs (April-September). Cards placed at HB level, and in mist propagation areas will detect fewer thrips.	Inspect incoming plant material for adult and larvae by tapping tender new growth and flowers over a white sheet of paper. Keep plants isolated for 4-5 days to detect emerging eggs and pupae. Inspect and control weeds outside of the greenhouse in early spring, especially white clover.

porated into the pest management program. Over time, growers will determine their individual threshold for a given pest. One grower may accept 10-15 thrips per sticky card per week, while another grower with a history of Impatiens Necrotic Spot Virus will not accept 5 thrips per sticky card per week.

At the end of each season, the grower and scout should examine their records to identify trends in pest populations and to review their management strategies. The weekly scouting reports and action taken is the basis for decisions about current and future pest management strategies and for judging the efficacy and cost of any management action.