

**Integrated Pest Management (IPM)
Bedding Plant Planning Project**

Do you grow bedding plants? **(Please circle your answer.)**

1. Yes
2. No

If you circled **YES**, please complete the rest of the survey.

If you circled **NO**, there is no need to go any further. Please return the blank survey in the self-addressed stamped envelope in order to avoid getting follow-up mailings from us--thank you!

This study will help bedding plant IPM programs throughout the Northeast to better understand how you manage your bedding plant production. We will use this information to plan our future research and Extension activities in bedding plant IPM.

The survey should be completed by the person most responsible for greenhouse management decisions on your farm. There is room on the last page for more lengthy comments, and you should also feel free to comment in the margins or in the space below. Thank you very much for your help.

Survey Coordinators
Department of Entomology West
Agricultural Engineering Building
University of Massachusetts
Amherst, MA 01003

GREENHOUSE MANAGEMENT AND CULTURAL PRACTICES

The first few questions ask about greenhouse and plant nutrient management. Please circle the number of your answer.

- A2)** Do you leave any of your growing space empty or “fallow” during the year? **(Please circle one.)**
1. Yes
 2. No
- A3)** Do you remove “pet plants” inside and outside the greenhouse at least one month before introducing the crop?
1. Always
 2. Sometimes
 3. Never
- A4)** How often do you calibrate your fertilizer injector during an average spring production cycle?
1. never
 2. once
 3. more than once
- A5)** How often are soil tests performed for your bedding plant crops, during an average spring production cycle?
1. never
 2. once
 3. 2-4 times
 4. more than 4 times
- A6)** Below is a list of practices used in bedding plant nutrient management. **(Please circle any that you use.)**
1. controlled-release fertilizers
 2. adjustment of fertilizer rates based on soil test results
 3. other (please specify: _____)
 4. none of the above
- A7)** Below is a list of irrigation systems used in bedding plant management. **(Please circle any that you use.)**
1. drip irrigation system
 2. ebb & flood system
 3. trough irrigation system
 4. saucers to catch and hold leachate
 5. other (please specify: _____)
 6. none of the above

PESTICIDE APPLICATION AND RECORDS

The next few questions ask about pesticide and sprayer use and record-keeping.

- B1)** Do you tank mix (mix 2 or more together) pesticides? **(Please circle one.)**
1. always
 2. sometimes
 3. never
- B2)** Do you rotate classes of pesticides after one to two generations of insects (for example, changing from organophosphates (eg. Orthene, Duraguard) to pyrethroids (eg. Telstar, Decathalon))? **(Please circle one.)**
1. always
 2. sometimes
 3. never

B7) Please indicate how important EACH of the following are to you in choosing a pesticide. **(Please circle your responses.)**

(How IMPORTANT is this aspect?)

1. cost not somewhat..... very
2. effectiveness based on your previous experience not somewhat..... very
3. toxicity to greenhouse workers..... not somewhat..... very
4. re-entry time on pesticide label not somewhat..... very
5. other (please specify: _____)..... not somewhat..... very

B8) Which, if any, of the following methods do you use to maintain and evaluate the effectiveness and accuracy of your sprayer? **(Please circle all that apply.)**

1. Calibrate pesticide application equipment for **rate** at least once during the bedding plant season.
2. Calibrate pesticide application equipment for **droplet size** at least once during the bedding plant season.
3. Replace worn nozzles on application equipment
4. Use water/oil sensitive cards during calibration to test sprayer coverage of leaf surface.
5. Identify and mark (eg. with flagging tape) a small number of infested plants and observe them over time.
6. Other (please specify: _____)
7. None of the above

B9) Please circle the type(s) of pesticide application machinery or method that you use for pests on bedding plants. **(Circle all that apply.)**

1. Electrostatic Sprayer (ESS)
2. Hydraulic Sprayer
3. Fogger
4. Aerosol Bombs
5. Smoke Generator
6. Granules
7. Mist Blower or Electric Mist Machine
8. Other (please specify: _____)

B10) Do you maintain records of pesticide applications?

1. Yes
2. No → → → If no, skip to question C1)

B11) If yes, how do you use these records? Please circle all that apply.

1. To assist in management decisions the following year.
2. For state requirements.
3. To help make pest management decisions on current crop.
4. Other (please specify: _____)

PEST MANAGEMENT

C1) If IPM practices such as insect trapping or plant monitoring are used in your greenhouse, **WHO MOST OFTEN** does them? **(Please circle one. If these practices are not used, go on to the next question.)**

1. you
2. independant crop consultant
3. hired employee
4. Extension agent or Extension program scout
5. other (please specify: _____)

The next questions concern practices related to greenhouse pest management. Please tell us how these activities are done in your greenhouse, even if you don't do them yourself. In other words, if a consultant or employee gathers information about pests and reports it to you, please tell us how they get the information (for example, by trapping).

C2) Please circle any of the following MONITORING TECHNIQUES you use on bedding plants. (You may circle more than one.)

1. An optivisor, hand lens or microscope is used to inspect plants.
2. Plants are randomly selected and foliage is examined each week for signs of problems.
3. Indicator plants, such as petunias or fava beans, are used to detect thrips feeding and for signs of Impatiens Necrotic Spot Virus.
4. Potato plugs are used to monitor for fungus gnat larvae.
5. Sticky cards are used to monitor insects.
6. Other (please specify: _____)
7. None of the above.

C3) If monitoring plants for pest problems is done in your greenhouse(s), do you MAINTAIN RECORDS of pest monitoring? (Please circle one. If monitoring is not done, go on to question C5)

1. Yes
2. No → → → If no, skip to question C5)

C4) If yes, how do you use the information from these records? Please circle all that apply.

1. To monitor the effectiveness of a treatment.
2. To help decide if a treatment is needed.
3. Other (please specify: _____)

The next few questions have to do with INSECT MANAGEMENT.

C5) Which, if any, of the following practices or materials do you use? (Please circle all that apply.)

1. Insecticidal soaps
2. Horticultural oils
3. Insect growth regulators (ie. Enstar II, Precision)
4. Beneficial nematodes (ie. X-Gnat)
5. Other biological control agents (please specify: _____)
6. None of the above.

C6) Which, if any, of the following practices do you use to manage incoming plants? (Circle all that apply.)

1. Request and record pesticide use information from the suppliers of incoming plants.
2. Inspect incoming plants and/or cuttings immediately upon arrival for insects, diseases and other problems.
3. Isolate incoming plants in a quarantine area until visual inspection can be completed.
4. Use sticky cards to monitor for insects on incoming plants/cuttings.
5. Other (please specify: _____)
6. None of the above.

C7) In how many of your greenhouses, if any, have you installed screening to prevent insects from entering the greenhouses where bedding plants are grown? (Please circle one.)

1. In none of my greenhouses
2. In some of my greenhouses
3. In all of my greenhouses

The next question concerns WEED MANAGEMENT.

C8) Which, if any, of the following techniques do you use for weed management in and around greenhouses? (Please circle any that you use.)

1. Eliminate all weeds inside the greenhouse before the crop is introduced.
2. Eliminate grassed areas and weeds within 10 - 20 foot buffer zone outside the greenhouse.
3. Use mechanical or physical weed control methods such as fiber cloth inside greenhouses.
4. Use herbicides to manage weeds inside the greenhouse.
5. Use herbicides to manage weeds outside the greenhouse.
6. Other (please specify: _____)
7. None of the above.

The next few questions concern DISEASE MANAGEMENT.

C9) Below is a list of techniques used to monitor plants for disease problems. (Please circle any that you use.)

1. Bedding plants are observed weekly for disease symptoms.
2. Agdia test kits are used on-site to detect diseases such as Impatiens Necrotic Spot Virus.
3. Other (please specify: _____)
4. None of the above.

C10) Do you use horizontal air flow in your greenhouse(s)?

1. yes, in all my greenhouses
2. yes, in some of my greenhouses
3. no

C11) Do you sanitize greenhouse floors, benches and greenhouse structures?

1. Always
2. Sometimes
3. Never

SOURCES OF INFORMATION

This question concerns where you obtain information about greenhouse production and how useful it is to you.

D1) Please indicate how important each of the following sources of information are to you in learning about bedding plant pest and crop management.

(How IMPORTANT is this source of information?)

1. Other growers not somewhat..... very
2. Extension specialist(s) not somewhat..... very
3. Extension newsletter not somewhat..... very
4. Private crop consultant not somewhat..... very
5. Trade magazines not somewhat..... very
6. Salespeople not somewhat..... very
7. *New Eng. Greenhouse Floricultural Crop Pest Management and Growth Regulation Guide* not somewhat..... very
8. Other (please specify: _____)..... not somewhat..... very

EFFECTS OF IPM

The following questions ask about your experiences using IPM. Please circle the number of your response.

E1) Below are various opinions, both positive and negative, that we have heard people give on the topic of IPM. We would like to know whether you agree or disagree with each. If you use IPM practices, please base your answer on your experience with IPM on your own farm. If you don't use IPM practices, please give us your opinion about its effects. (Circle your response.)

- 1. Use of IPM attracts more customers. agree disagree
- 2. Use of IPM increases management time. agree disagree
- 3. Use of IPM allows growers to charge a higher price for their product. agree disagree
- 4. Use of IPM increases the costs of pest management agree disagree
- 5. Use of IPM improves relations with neighbors..... agree disagree
- 6. Use of IPM decreases the quality of the product. agree disagree
- 7. Use of IPM leads to decreased insecticide use agreee disagree

E2) If there are IPM techniques you choose not to use, what keeps you from using them? (Circle all that apply).

- 1. I feel the technique is too costly to implement
- 2. I am uncertain about how effective the technique will be
- 3. I don't know exactly how to use the technique
- 4. I am satisfied with my current production methods
- 5. other (please specify: _____)

E3) Which of the following might encourage you to adopt IPM techniques that you are not currently using? (Please circle all that apply.)

- 1. 1. markets that want IPM-grown crops
- 2. availability of cost sharing for IPM consulting
- 3. learning more about how to use IPM techniques
- 4. better evidence that IPM techniques work
- 5. pressure from neighbors or consumers
- 6. loss of currently registered materials
- 7. new IPM techniques that are safer to the applicator than my current practices
- 8. other (please specify: _____)

BUSINESS OPERATION

The next few questions ask about the importance of bedding plants in your greenhouse operation. Please circle the number of your response. This is the last section of the survey!

F1) Approximately how many square feet of greenhouse space do you use for bedding plants?

Under glass: _____

Under plastic (rigid or film): _____

Cold frames: _____

F2) Approximately what percentage of your greenhouse business income is from bedding plants?

%

F3) Approximately what percentage of your bedding plant sales is sold through each of the following types of markets?

1. wholesale	_____ %
2. retail	_____ %

(Note that percentages should add up to 100)

100%

In order for us to shape our programs to meet the needs of the entire bedding plant industry, we would like to compare answers given by different types of agricultural businesses. The following questions ask you to describe your business.

F4) How many total square feet of greenhouse space do you have in production?

F5) What are your three most important agricultural products, OTHER THAN BEDDING PLANTS, if any?

F6) How old are you? _____

F7) How long have you worked in an agricultural business? _____

Are there any other specific pest control or crop management problems or solutions that you wish your state university would research further or provide more training on? Please tell us what they are.

Are there any other comments or suggestions you would like to make?

THANK YOU FOR YOUR THOUGHT AND YOUR TIME!