

Integrated Pest Management (IPM) Apple Planning Project

The survey should be completed by the person most responsible for farm management decisions on your farm. Thank you very much for your help.

Do you grow apples **FOR SALE**? (Please circle the number of your answer.)

1. Yes → → Please continue below.
2. No → → If no, **please take a moment now to return the blank survey** in the enclosed envelope in

order to avoid getting follow-up mailings from us--thank you!

Survey Coordinators, Entomology West, Ag. Eng. Bldg., UMass, Amherst, MA 01003

Please **circle** the number of your response, **fill in** the blanks or **circle** selections when indicated.

A. HORTICULTURAL MANAGEMENT

A2) Which of the following pruning practices do you use? (Circle all that apply.)

1. Dormant pruning
2. Summer pruning
3. Removal and destruction of prunings
4. Chop prunings on orchard floor
5. Removal of fruit mummies
6. Other (please specify: _____)

A3) Do you use leaf nutrient analysis to determine fertilizer needs in most years? (Circle one.)

1. Yes
2. No

A4) Which of the following describe your planting densities? (Please estimate the approximate percentage of your orchard that is planted at each density.)

<u>density</u>	<u>percentage of orchard planted at this</u>
1. Fewer than 100 trees per acre	_____ %
2. 100-200 trees per acre	_____ %
3. 201-400 trees per acre	_____ %
4. More than 400 trees per acre	_____ %

(Note that percentages should add up to 100.)

100%

A5) Do you expect tree density in your orchard to change in the next 5 years?

1. Yes, tree densities in the orchard will be **INCREASED SOMEWHAT** over the next 5 years
2. Yes, tree densities in the orchard will be **INCREASED SIGNIFICANTLY** over the next 5 years.
3. No, tree density will **STAY ABOUT THE SAME**, or decrease

B. GENERAL PEST MANAGEMENT

B1) Please ESTIMATE your average pesticide usage in a typical year:

1. Number of **INSECTICIDE** applications per acre: _____
2. Number of **MITICIDE** applications per acre: _____

3. Number of FUNGICIDE/BACTERICIDE applications per acre: _____

4. Number of HERBICIDE applications per acre: _____

B2) Please indicate how important each of the following pests are on your farm in a typical year. In addition, please tell us whether you would benefit from additional training related to this pest or predator. (Please circle your answers.)

Pest or Predator	How <u>SIGNIFICANT</u> is this organism?			Could you use additional training in an IPM approach to this pest or predator?	
	not	somewhat	very	yes	no
1. Plum curculio	not	somewhat	very	yes	no
2. European apple sawfly	not	somewhat	very	yes	no
3. Tarnished plant bug	not	somewhat	very	yes	no
4. European red mite	not	somewhat	very	yes	no
5. Two-spotted mite	not	somewhat	very	yes	no
6. Leafhoppers	not	somewhat	very	yes	no
7. Leafminers	not	somewhat	very	yes	no
8. Mite predators	not	somewhat	very	yes	no
9. Aphid predators	not	somewhat	very	yes	no
10. San Jose scale	not	somewhat	very	yes	no
11. Apple maggot fly	not	somewhat	very	yes	no
12. Leafrollers/fruitworms	not	somewhat	very	yes	no
13. Codling moth	not	somewhat	very	yes	no
14. Apple scab	not	somewhat	very	yes	no
15. Fire blight	not	somewhat	very	yes	no
16. Sooty blotch/flyspeck	not	somewhat	very	yes	no
17. Cedar apple rust	not	somewhat	very	yes	no
18. Bitter rot	not	somewhat	very	yes	no
19. Storage rots	not	somewhat	very	yes	no
20. Other insects/mites: <i>pls. specify:</i> _____	not	somewhat	very	yes	no
21. Other diseases: <i>pls. specify:</i> _____	not	somewhat	very	yes	no
22. Weeds	not	somewhat	very	yes	no

B3) Do you calibrate your sprayer?

1. Yes

2. No → → → → Skip to question B5)

B4) If you calibrate your sprayer, how often do you do it?

1. Once per season
2. Twice per season
3. More than twice in a season

B5) Do you adjust spray output for different blocks with different tree size, shape, or spacing?

1. No → → → Skip to question B7)
2. No, because I don't have blocks with different requirements → → → Skip to question B7)
3. Yes

B6) If you adjust spray output for different blocks, how do you do it?

1. I make informal adjustments, such as shutting off nozzles or changing tractor speed
2. I adjust according to calculated tree row volume.
3. Other (please specify: _____)

The next two questions ask about what kinds of information are useful to you in making decisions about orchard management.

B7) Is weather information important to you? Please indicate the importance of weather information to your pest management decision making. (Please circle your answers.)

	How <u>SIGNIFICANT</u> is this information?	Could you benefit from Extension products and training for using this type of information?
1. Forecasts of when the next rain will arrive.....	notsomewhatvery	yesno
2. Forecasts of wind and other conditions that affect my ability to make airblast applications.....	notsomewhatvery	yesno
3. Temperature and humidity forecasts	notsomewhatvery	yesno
4. Observed temperature data to run insect degree day models for my site	notsomewhatvery	yesno
5. Observed leaf wetness and temperature data to run disease models for my site.....	notsomewhatvery	yesno
6. Observed rain to help in estimating depletion of previous sprays	notsomewhatvery	yesno

B8) Where do you get good information? Please indicate how important each of the following sources of information are to you in learning about apple pest and crop management. (Circle your response.)

(How IMPORTANT is this source of information?)

1. Meetings or courses organized by Extension..... not..... somewhat..... very
2. Extension IPM publications not..... somewhat..... very
3. Extension newsletter or pest message not..... somewhat..... very
4. Farm visits from Extension specialist not..... somewhat..... very
5. Farm visits from private crop consultant..... not..... somewhat..... very
6. Chemical company representatives not..... somewhat..... very

7. Apple industry trade publications..... not..... somewhat..... very

8. Other farmers..... not..... somewhat..... very

C. INSECT AND MITE MANAGEMENT

The following questions ask for information about how you learn about insect activity in your orchard and how you decide when to treat an insect.

C1) If IPM practices such as insect trapping or field monitoring are done on your farm, who MOST OFTEN does them? (Circle ONE. If these practices are not used, go on to the next question.)

1. You
2. Private IPM scout/consultant
3. Farm employee or family member
4. Extension agent or IPM scout
5. Other (please specify: _____
_____)

C2) Do you (or a consultant, employee, or Extension employee) use DIRECT OBSERVATION of pests or beneficials for monitoring on your farm?

1. No → → → → Skip to question C5)
2. Yes

C3) If DIRECT OBSERVATION of insects or mites is used on your farm, which organisms are monitored? (Please circle all that apply.)

1. Mites
2. Mite predators
3. San Jose scale
4. Leafminer mines or eggs
5. Tarnished plant bug
6. Plum curculio injury
7. Leafhoppers
8. Leafhopper foliar damage or excrement
9. Leafroller, green fruitworm, or codling moth foliar or fruit injury
10. Aphids
11. Aphid predators

C4) Which of these monitoring methods is used on your farm? (Please circle all that apply.)

1. A formal sampling pattern, such as examining 10 leaves on each of 10 trees in a block.
2. Informal monitoring, observing leaves and fruit in no particular pattern or number
3. Other (please specify: _____)

C5) Do you (or a consultant, employee, or Extension employee) use TRAPS for insect monitoring on your farm?

1. No → → → → Skip to question C7)
2. Yes

C6) If TRAPS are used on your farm, which pests are monitored? (Circle all that apply.)

1. Tarnished plant bugs (white traps)
2. European apple sawfly (white traps)
3. Leafminers (red traps)

4. Any pheromone traps
5. San Jose scale (sticky tapes)
6. Apple maggot fly (AMF)

(CIRCLE the trap you use for AMF: red sphere traps Ladd traps yellow cards

C7) Do you (or a consultant, employee, or Extension employee) use PEST THRESHOLDS to determine when or whether to treat insects or mites?

1. No → → → → Skip to question C9)
2. Yes

C8) If THRESHOLDS are used, what is the MOST IMPORTANT source of the specific thresholds used? (Please circle ONE.)

1. University-provided threshold
2. Private consultant-provided threshold
3. My own threshold
4. Other (please specify: _____)

C9) How do you determine the need for and timing of sprays for insects? (Circle the 5 MOST OFTEN USED.)

1. Chemical company representative recommendations
2. IPM Scout/Consultant recommendations
3. *New England Apple Pest Management Guide*
4. My own experience and knowledge of the orchard
5. Extension newsletters, pest messages, or hotlines
6. When traps or observations indicate pests reach thresholds
7. Time of year
8. Label directions
9. General orchard observations
10. Other

C10) Which of the following, if any, do you use in insect or mite management? (Circle all that apply.)

1. Border row spray for one or more of the insecticide applications against plum curculio
2. Border row spray for one or more of the insecticide applications against apple maggot
3. At least one alternate row spray
4. Dormant oil for mites
5. Summer oil for mites
6. Selection of pesticides not harmful to beneficials
7. Apple maggot fly trap-out
8. Removal of abandoned apple trees within 100 yards of the orchard border
9. Other (please specify _____)

D. DISEASE MANAGEMENT

The next few questions ask for information about how you manage apple scab.

D1) Which, if any, of the following cultural techniques do you use for scab management? (Circle all that apply. If you don't use any of these techniques, go on to the next question.)

1. Chopping leaves
2. Applying urea or other chemicals to leaf litter
3. Removing abandoned trees in the vicinity of the orchard

- 4. Planting scab resistant cultivars
- 5. Other (please specify: _____)

D2) Do you spray for scab?

- 1. Yes
- 2. No → → → → Skip to question D6)

D3) How important are the following factors to you in choosing a fungicide for scab control? (Please circle your responses.)

(How IMPORTANT is this factor?)

- 1. Reducing the number of sprays by using SIs.....not somewhat..... very
- 2. The eradicator action of SIsnot somewhat..... very
- 3. Cost per application dose.....not somewhat..... very
- 4. Resistance management.....not somewhat..... very
- 5. Effect of fungicide on beneficials.....not somewhat..... very
- 6. Control of additional diseases besides scab.....not somewhat..... very

D4) Which, if any, of the following MONITORING METHODS do you use for scab? (Circle all that apply.)

- 1. Thermometer and observation of length of wetting period
- 2. Specialized weather equipment, such as a hygrothermograph
- 3. Scab ascospore maturity evaluation or trapping
- 4. Monitoring foliage for primary infection
- 5. None of the above

D5) Which of the following do you use to TIME SCAB SPRAYS? (Circle all that apply.)

- 1. I time first treatment according to the previous year's scab incidence, measured at fruit damage at harvest
- 2. I time first treatment according to PAD assessment the previous fall
- 3. I time first treatment according to ascospore development information
- 4. I treat AFTER scab infection periods determined by Mills tables
- 5. I treat BEFORE potential wetting periods
- 6. I spray based on the tree growth stage and/or the number of days between sprays
- 7. other (please specify: _____)

The next few questions ask about your management of summer diseases.

D6) Do you spray for summer diseases?

- 1. Yes
- 2. No → → → → Skip to question E1)

D7) How important are the following factors to you in selecting SUMMER FUNGICIDES? (Circle your responses.)

(How IMPORTANT is this factor?)

- 1. Efficacy against sooty blotch/fly specknot somewhat..... very
- 2. Efficacy against summer rots.....not somewhat..... very
- 3. Toxicity to mite predators.....not somewhat..... very

- 4. Days to harvest not somewhat very
- 5. Visible residue at harvest not somewhat very
- 6. Other (pls. specify: _____) not somewhat very

D8) How do you determine the need for and timing of sprays against summer diseases? (Circle the 5 MOST IMPORTANT.)

- 1. Recent weather (rain)
- 2. Disease prevalence in previous year
- 3. Tree canopy density
- 4. Current disease incidence
- 5. Regular schedule (for example, every 2 weeks)
- 6. My own experience and knowledge of the orchard
- 7. Advice of private consultants
- 8. Advice of agricultural products salespeople
- 9. Advice of Extension staff
- 10. Other (please specify: _____)

E. EFFECTS of IPM

The following questions ask about your experiences using or considering the use of 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 use. We want to know whether you agree or disagree with each. If you use IPM, 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 increases pest damageagree.....disagree
- 7. Use of IPM leads to decreased pesticide useagree.....disagree
- 8. Use of IPM is more risky than other approaches.....agree.....disagree

E2) Which of the following might encourage you to adopt IPM techniques that you are not currently using? (Circle all that apply.)

- 1. Markets that want IPM-grown crops
- 2. Pressure from neighbors or consumers
- 3. Availability of cost sharing for IPM consulting
- 4. Crop insurance to protect against loss due to use of IPM
- 5. Availability of consultants
- 6. Learning more about how to use IPM techniques
- 7. Better evidence that IPM techniques are effective
- 8. Timely and affordable access to weather and pest model estimates for my specific location.

- 9. Loss of currently registered materials
- 10. Less success with my current methods due to such things as increased pesticide resistance
- 11. New IPM techniques that are safer to use than my current practices
- 12. New IPM techniques that are less costly (or more profitable) than my current practices
- 13. Other (please specify: _____)

F. GENERAL

F1) How many acres of apples do you manage? _____acres.

F2) What percentage of your farm income is generated by apple production? ____%

F3) What percentage of your apples are sold through each of these types of markets?

- | | | |
|---------------------------------------|-------|---|
| 1. Processing | _____ | % |
| 2. Fresh market retail--pre-picked | _____ | % |
| 3. Fresh market retail--pick-your-own | _____ | % |
| 4. Fresh market wholesale | _____ | % |
| 5. Other (please specify: _____) | _____ | % |
| | ----- | |

(Note that percentages should add up to 100) 100%

F4) How would you describe your apple production practices?

Conventional Organic IPM Other (please specify: _____)

F5) How long have you been growing apples commercially? _years.

F6) What is the age of the primary farmer/grower on your farm? (Please circle one)

under 20 20-29 30-39 40-49 50-59 60-69 70 and over

F7) What other crops do you grow? _____

F8) How many total acres do you have in all commercial crops? _____

F9) Do you have suggestions for how Extension and university research could better assist you with apple pest management? Please tell us what they are.

THANK YOU FOR YOUR THOUGHT AND YOUR TIME!