

## **Integrated Pest Management (IPM) Sweet Corn Planning Project**

Do you grow sweet corn for sale?

1. Yes → → Please continue on the next page.

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!

**This study will help sweet corn IPM programs throughout the Northeast and Mid-Atlantic to better understand how you grow and manage your sweet corn. We will use this information to plan our future research and Extension activities in sweet corn IPM.**

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

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The following questions refer to various farming practices for management of soil, nutrients, and pests in sweet corn. We are interested in practices done on your farm, regardless of who does them. Please circle the number of your response.

**PEST MANAGEMENT**

**A2)** Do you apply insecticides to sweet corn?

- 1. yes
- 2. no → → → If no, skip to question A0

**A3)** If yes, what type of sprayer do you use to apply insecticides to sweet corn? **(Please circle the number of your response.)**

- 1. air blast
- 2. boom without drop nozzles (1 nozzle/row)
- 3. boom with single or double drop nozzles (2-5 nozzles/row)
- 4. fixed wing aerial application
- 5. helicopter aerial application
- 6. other (please specify: \_\_\_\_\_)

**A4)** What methods, if any, do you use to evaluate the effectiveness and accuracy of your sprayer(s)? **(Circle all that apply.)**

- 1. calibration of whole sprayer once per season
- 2. calibration of whole sprayer two or more times per season
- 3. calibration of individual nozzles
- 4. tests with water-sensitive cards clipped to target areas of corn
- 5. other (please specify: \_\_\_\_\_)
- 6. I don't check the effectiveness or accuracy of my sprayer.

The next few questions ask about how you obtain information about insect pests and how you decide whether to spray them. Please tell us how these activities are done on your farm, 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).

**A5)** If IPM practices such as insect trapping or field scouting are done on your farm, **WHO MOST OFTEN** does them? **(Please circle one. If these practices are not used, go on to the next question.)**

- 1. you
- 2. private IPM scout/consultant
- 3. farm employee
- 4. Extension agent or IPM field scout
- 5. other (please specify: \_\_\_\_\_)

**A6)** If **TRAPS** are used on your farm for insect monitoring, which type of trap do you use? **(Circle the type of trap you use for each pest, or, if traps aren't used, circle "no trap".)**

**(Circle the type of trap you use)**

- 1. corn earworm..... blacklight trap .....pheromone trap .....no trap
- 2. European corn borer ..... blacklight trap .....pheromone trap .....no trap
- 3. fall armyworm ..... blacklight trap .....pheromone trap .....no trap

**A7) If FIELD SCOUTING for insects is done on your farm, WHAT PESTS are monitored? (Circle all that apply. If scouting is not done, skip to question A0.**

1. European corn borer
2. fall armyworm
3. corn earworm

**A8) If FIELD SCOUTING for insects is done on your farm, HOW is it done? (Please circle all that apply. If scouting is not done, please go on to the next question.)**

1. observe plants for insects at least once per week
2. observe plants for insects occasionally, but less than once per week
3. look at 50-100 plants per field
4. look at fewer than 50 plants per field
5. examine plants throughout the field
6. examine plants clustered in one part of the field
7. other (please specify: \_\_\_\_\_)

**A9) How do you determine the need for and timing of sprays for key insect pests (corn earworm, fall armyworm, European corn borer)? (Please circle the 3 most important).**

1. Extension hotline or pest message
2. time of year
3. crop growth stage
4. IPM scout or consultant recommendation
5. when traps or scouting indicate pests have reached action thresholds
6. my own experience
7. chemical company fieldmen recommendations
8. when damage is found in harvested ears
9. informal field observations
10. other (please specify: \_\_\_\_\_)

**A10) If ACTION THRESHOLDS are used, what is the most important source of the thresholds used? An action threshold is a certain level of pest activity or infestation at which a treatment is needed to prevent crop damage. (Please circle one. If you don't use thresholds, go on to the next question.)**

1. university-provided threshold
2. private-consultant provided threshold
3. my own threshold (please specify the threshold you use for each pest: \_\_\_\_\_)

**A11) What CULTURAL OR BIOLOGICAL methods do you use for control of insect pests, on at least part of your acreage? (Please circle all that apply.)**

1. apply a biological insecticide (such as B.t.)
2. release beneficial insects (such as Trichogramma)
3. use floating row covers (such as Reemay<sup>TM</sup>)
4. plow under corn stubble in the fall, or before European corn borer moth flight begins in the spring
5. avoid late planting to reduce potential for fall armyworm or corn earworm infestations
6. rotate corn with other crops
7. shred stalks after harvest
8. avoid spraying when bees are actively foraging

**The next question asks about DISEASE MANAGEMENT in your sweet corn.**

**A12)** Which, if any, of the following practices do you use for disease management on your farm? (**Circle all that apply.**)

1. select varieties that are tolerant to Stewart's wilt, rust, or maize dwarf mosaic virus.
2. apply fungicides
3. cover early crops with floating row cover
4. apply insecticides to control flea beetles
5. other (please specify: \_\_\_\_\_)

**The next few questions ask about WEED MANAGEMENT methods.**

**A13)** Which, if any, of the following weed management practices do you use in sweet corn? (**Circle all that apply.**)

1. herbicides applied at rates recommended for your soil
2. herbicides applied at rates **lower** than those recommended for your soil
3. delayed application of herbicides (until corn emergence or spike stage) with **reduced** rates.
4. banded application of herbicides (over the row only)
5. supplementing herbicide applications with cultivation
6. cultivation only, with no application of herbicides
7. spot treatment of problem weeds (such as bindweed, velvetleaf) with postemergence herbicide
8. hand pulling of problem weeds
9. living mulch
10. no-till
11. use of propane burners to control annual weeds
12. other (please specify: \_\_\_\_\_)

**A14)** Do you monitor your sweet corn fields for weeds during the season or shortly after harvest?

1. always
2. sometimes
3. never → → → If never, skip to question A0

**A15)** If you do monitor or check for weeds, do you do any of the following, based on information from scouting? (**Circle all that apply.**)

1. keep written records or maps of weed scouting
2. postemergence weed control (handpulling or herbicide)
3. adjust next year's weed management practices in the same field
4. rotate to another crop for better weed control
5. other (please specify: \_\_\_\_\_)

**The next question asks about VERTEBRATE PEST management.**

**A16)** Which of the following management techniques do you use to manage vertebrate pests (birds, mammals)? (**Circle all that apply.**)

1. trapping
2. shooting
3. noise deterrents
4. visual deterrents
5. chemical deterrents or poisons
6. none, vertebrates are not a problem on my farm.
7. none, vertebrates are a problem on my farm but I choose not to manage them.
8. other (please specify: \_\_\_\_\_)

## SOIL AND NUTRIENT MANAGEMENT

The next few questions ask about soil and nutrient management in sweet corn. Please circle the number of your response.

**B1)** How often do you take **soil tests** on your fields for nutrient and pH status? **(Please circle one.)**

1. every year.
2. every 2-3 years
3. every 4-5 years
4. every 6 years or more
5. never

**B2)** How often do you test for the **organic matter status** of your sweet corn fields?

1. every year.
2. every 2-3 years
3. every 4-5 years
4. every 6 years or more
5. never

**B3)** How often do you **apply lime** to your sweet corn fields?

1. every year
2. every 2-3 years
3. every 4 or more years
4. whenever a need is indicated by soil tests
5. never

**B4)** How and when do you apply nitrogen fertilizer? **(Circle all that apply.)**

1. preplant broadcast
2. banded through the planter
3. broadcast top-dress
4. banded side-dress
5. other (please specify: \_\_\_\_\_)

**B5)** Do you take a pre-sidedress nitrate test? **(Please circle one.)**

1. always
2. sometimes
3. never

**B6)** What organic soil amendments do you use? **(Circle all that apply.)**

1. manure
2. compost
3. neither of the above

**B7)** Approximately what percent of your sweet corn acreage is planted on rotated land--land that was **not** planted with corn the previous year? **(Please circle one.)**

1. 0 - 25 %
2. 26 - 50%
3. 51- 75%
4. 76-100%

**B8)** What percent (%) of your sweet corn acreage is planted to a fall cover crop (either overseeded or seeded after harvest)? **(Please circle one.)**

- 1. 0 - 25%
- 2. 26 - 50%
- 3. 51 - 75%
- 4. 76 - 100%

**B9)** What cover crops do you use? **(Circle all that apply.)**

- 1. winter rye
- 2. winter wheat
- 3. oat
- 4. hairy vetch
- 5. red clover
- 6. ryegrass
- 7. white clover
- 8. other (please specify: \_\_\_\_\_)

**B10)** In making decisions about fertilizer applications, how important are each of the following in your decision? **(Please circle your response.)**

**(How IMPORTANT is this**

**information?)**

- 1. soil test results .....not.....somewhat ..... very
- 2. expected nutrient needs of crop .....not.....somewhat ..... very
- 3. nutrient credits for soil organic matter,  
manure applications, or crop residues .....not.....somewhat ..... very
- 4. results of pre-sidedress nitrate test .....not.....somewhat ..... very
- 5. recommendations of crop consultant .....not.....somewhat ..... very
- 6. recommendations from soil test lab .....not.....somewhat ..... very
- 7. recommendations of Extension guide or agent.....not.....somewhat ..... very
- 8. recommendations of fertilizer salesperson.....not.....somewhat ..... very
- 9. past experience with crop .....not.....somewhat ..... very
- 10. other (please specify: \_\_\_\_\_).....not.....somewhat ..... very

**RESEARCH NEEDS**

**In the following section we are interested in what pests or management issues are problems on your farm and what pests or management issues need more research into better management methods.**

**The first question in this section is the chart on the following page. → → → →**

C1) Below is a list of insect, disease, weed, and vertebrate pests. At the bottom, you can add additional pests that are important on your farm. An example is given in the first line.

**(Please put a check in the columns that are true for each pest. In the first column, you can consider a pest to be anything that would be damaging if it were not controlled. In some cases, you may want to check both columns two and three.)**

	THIS IS A PEST ON MY FARM IN MOST YEARS	MANAGED EFFECTIVELY WITH CURRENT METHODS	NEEDS MORE RESEARCH AND BETTER METHODS
<i>Blue-spotted Toad (an example pest)</i>	—		—
<b>INSECTS</b>			
European corn borer			
corn earworm			
fall armyworm			
aphids			
sap beetles			
<b>DISEASES</b>			
rust			
corn smut			
Stewart's wilt			
<b>WEEDS</b>			
annual grasses (eg. crabgrass)			
annual broadleaves (eg. pigweed)			
perennial weeds (eg. quackgrass)			
<b>VERTEBRATES</b>			
raccoons			
deer			
blackbirds			
crows			
Add an additional or more specific pest below, if needed			

**C2)** Below is a chart with a line for each of five key areas of nutrient management in sweet corn (or other vegetables). **(For each nutrient management area, please check which of the following statements are true. You may check more than one for each area.)**

	I am satisfied with my CURRENT practices	I would like to LEARN MORE about this area	MORE RESEARCH is needed to develop better methods
adjusting nutrients to crop needs			
using nutrient credits from organic matter, cover crops, compost, or manure			
using cover crops			
using compost			
understanding and using soil tests			

**C3)** Where research is needed, which type of new methods do you think are **MOST IMPORTANT** to develop? **(Please circle your top three choices.)**

1. effective biological or cultural methods
2. effective chemical methods
3. whichever type of method is **most** effective
4. whichever type of method is safest for applicators, workers, and the environment
5. whichever type of method is least costly
6. other (please specify: \_\_\_\_\_)

**SOURCES OF INFORMATION**

**This question asks about where you obtain information about farming 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 **corn pest and crop management**. **(Please circle the number of your response.)**

**(How IMPORTANT is this source of information?)**

1. winter meetings or workshops .....not .....somewhat .....very
2. on-farm twilight meetings or demonstrations .....not .....somewhat .....very
3. IPM guide, pamphlet, or video .....not .....somewhat .....very
4. IPM hotline, recorded phone message .....not .....somewhat .....very
5. Extension newsletter or pest message.....not .....somewhat .....very
6. farm visits from Extension specialist.....not .....somewhat .....very
7. farm visits from private crop consultant .....not .....somewhat .....very
8. other farmers .....not .....somewhat .....very

**CHANGES IN FARM PRACTICES OVER TIME**

**The next two questions ask about how your use of IPM has changed and how it might change in the future.**

**E1) Below is a list of some of the practices which have been mentioned above. FIVE YEARS AGO, which of the following practices were being done on your farm?**

1. sprayer calibration
2. trapping for insect pests
3. scouting for insect pests
4. spraying according to thresholds
5. using biological controls such as Bt or beneficial insects
6. crop rotation
7. using reduced rates of herbicides
8. cultivation for weed control
9. no-till production
10. use of soil tests to determine crop nutrient needs
11. use of manure or compost or cover crops to provide crop nutrients
12. use of split applications of nitrogen fertilizer--at planting and as a top-dress

**E2) Which of those practices would you like to be doing on your farm FIVE YEARS FROM NOW?**

1. sprayer calibration
2. trapping for insect pests
3. scouting for insect pests
4. spraying according to thresholds
5. using biological controls such as Bt or beneficial insects
6. crop rotation
7. using reduced rates of herbicides
8. cultivation for weed control
9. no-till production
10. use of soil tests to determine crop nutrient needs
11. use of manure or compost or cover crops to provide crop nutrients
12. use of split applications of nitrogen fertilizer--at planting and as a top-dress
13. accessing information on-line

**EFFECTS OF USING IPM**

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

**F1)** Below are various opinions, both positive and negative, that we have heard people give on the topic of the effects of IPM use. 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 .....agree  
disagree

**F2)** If there are IPM techniques you choose not to use, what keeps you from using them? **(Please 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: \_\_\_\_\_)

**F3)** Which of the following might encourage you to adopt IPM techniques that you are not currently using? **(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 use than my current practices
- 8. other (please specify: \_\_\_\_\_)

**FARM OPERATION**

The next few questions ask about the importance of sweet corn in your farm operation.

G1) How many acres of sweet corn did you grow last year? \_\_\_\_\_ acres

G2) Approximately what percentage of your farm income is generated by sweet corn production?

\_\_\_\_\_ %

G3) Approximately what percentage of your corn crop in an average year is not marketable due to pest damage (including birds, insects, etc.)?

\_\_\_\_\_ %

G4) Approximately how much marketable corn per acre do you harvest in an average year?

- 1. less than 150 crates per acre (one crate = five dozen ears).
- 2. 150-199 crates per acre
- 3. 200-250 crates per acre
- 4. more than 250 crates per acre

G5) What percentage of your sweet corn is sold through each of the following types of markets? (Please fill in the approximate percentage. Note that percentages should add up to 100).

- 1. processing \_\_\_\_\_ %
- 2. fresh market retail \_\_\_\_\_ %
- 3. fresh market wholesale \_\_\_\_\_ %
- 4. other (please specify: \_\_\_\_\_) \_\_\_\_\_ %

G6) What was the average price you received for sweet corn in 1995?

- |                                |                           |
|--------------------------------|---------------------------|
| <b>RETAIL:</b>                 | <b>WHOLESALE:</b>         |
| 1. less than \$2.00/dozen ears | 1. less than \$5.00/crate |
| 2. \$2.00-\$2.49/dozen ears    | 2. \$5.00-\$6.99/crate    |
| 3. \$2.50-2.99/dozen ears      | 3. \$7.00-\$8.99/crate    |
| 4. \$3.00-\$3.49/dozen ears    | 4. \$9.00-\$10.99/crate   |
| 5. \$3.50 or more/dozen ears   | 5. \$11 or more/crate     |

In order for us to shape our programs to meet the needs of the entire sweet corn industry, we would like to compare answers given by different types of farms. The following questions ask you to describe your farm. This is the last section of the survey!

G7) How many total acres of all crops do you have in production? \_\_\_\_\_ acres

G8) What are your four most important crops?

- 1.
- 2.
- 3.
- 4.

G9) Which of the following do you have on your farm? (Circle all that apply).

- 1. fax machine

2. computer with modem (ie. on-line access)
3. neither

**G10)** How old are you?

**G11)** How long have you been farming?

**Please turn to the back cover for two questions that ask for your general comments on what research and training you think we should be doing.**

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!**