

**NRCS Conservation Practice Standard: Code 595 ~ Pest Management**

**IPM Worksheet: Peppers**

Version: 5/21/2008

**Soil Nutrient Management and Cultural Practices**

*Cultural practices are of value in management of nutrients, weeds, diseases, or insects. The goal of a sound fertility program is to supply adequate nutrients with optimum timing for maximum economical crop yield, while avoiding excesses that can degrade water quality or adversely affect crop or soil quality.*

- |     |   |          |
|-----|---|----------|
| 1.  | Crop rotation is practiced as follows to reduce the incidence of diseases and insects:  |          |
|     | a. Field has not been planted to tomato, eggplant or peppers for more than three years;   | 15 _____ |
|     | <b>OR</b>   |          |
|     | b. Field has not been planted to tomato, eggplant or peppers for two previous years;  | 10 _____ |
|     | <b>OR</b>   |          |
|     | c. Field has not been planted to tomato, eggplant or peppers in the previous year.  | 5 _____  |
| 2.  | Fields have been evaluated with an appropriate soil test for nutrient status and pH for the current year.   | 10 _____ |
|     | <b>OR</b>   |          |
|     | Fields have been evaluated with an appropriate soil test for nutrient status and pH within two years.   | 5 _____  |
| 3.  | Soil organic matter status has been tested within three years. The nitrogen contribution of the organic matter has been calculated and fertilizer application is  | 10 _____ |
| 4.  | Fertilizer is applied in accordance with soil test results and expected uptake of nutrients and crop yield. Expected nutrient uptake is determined from the <i>New England Vegetable Management Guide</i> . | 15 _____ |
| 5.  | A pre-sidedress nitrogen test is used to determine the need for supplemental nitrogen.  | 10 _____ |
| 6.  | Nitrogen fertilizer is applied by split application. Some is applied at planting and some as a side dress, if needed  | 10 _____ |
| 7.  | This year's crop was preceded by a winter cover crop.   | 10 _____ |
| 8.  | <i>If the winter cover crop was a legume or legume/grass mix, its nitrogen contribution is calculated and fertilizer N for this year's crop was adjusted accordingly.</i>                                   | 10 _____ |
| 9.  | <i>If compost or manure is applied, its nutrient (NPK) contribution is calculated, and fertilizer application is adjusted accordingly.</i>  | 10 _____ |
| 10. | Raised beds are used to improve soil drainage and prevent diseases that depend on high soil moisture.   | 10 _____ |
| 11. | Low areas of the field are not planted, or are planted to crops that are not susceptible to <i>Phytophthora capsici</i> (such as cucurbits, eggplant, pepper, tomato)                                       | 10 _____ |
| 12. | Soil drainage is maintained or improved by subsoiling   | 10 _____ |
| 13. | Irrigation systems are designed and maintained to avoid standing water in any areas of the field.   | 10 _____ |

- |     |  |    |  |
|-----|--|----|--|
| 14. | Soil surface around plants is covered to reduce splashing of soil pathogens onto leaves. Cover may include plastic or organic mulch or cover crop residue. | 10 |  |
| 15. | Transplants are used to increase earliness, yield and early season insect resistances and crop competitiveness with weeds.                                 | 10 |  |

*Total practice points for Soil Nutrient Management and Cultural Practices*  
*Total possible points for Soil Nutrient Management and Cultural Practices*

**140**

**Pesticides Application and Records**

*Only pesticides approved and registered for peppers in the state are used. Records of pesticide applications are maintained, including date, field and block, target pest, crop stage pesticide name and EPA number, formulation, rate and number of acres treated. Pesticide drift is minimized. Re-entry and pre-harvest intervals are adhered to. **Win-PST analysis is conducted for all pesticides considered for use on the farm***

- |    |  |    |  |
|----|--|----|--|
| 1. | Only pesticides with a LOW or VERY LOW environmental hazard (Win-PST) are used all major pests (includes insects, diseases and weeds).                                   | 20 |  |
|    | <b>OR</b>  |    |  |
|    | Only pesticides with a LOW or VERY LOW environmental hazard (Win-PST) are used for at least one major pest.  | 10 |  |
| 2. | Pesticide application equipment is calibrated at the start of the season and the procedure is recorded.  | 10 |  |
| 3. | Calibration is checked at least once during the season and equipment is recalibrated as needed.  | 5  |  |
| 4. | Records of planting dates and stage of crop of treated fields are maintained.  | 5  |  |
| 5. | Water-sensitive spray cards have been used to test the coverage of leaf surfaces in this crop within the past five years, using current pesticide application equipment. | 10 |  |

*Total practice points for Pesticides Application and Records*  
*Total possible points for Pesticides Application and Records*

**50**

**Disease Management**

*Disease management includes the many cultural practices. See previous section on nutrient and soil management and cultural practices. Preventative fungicides are generally not recommended unless the field has a history of disease or weather conditions are particularly favorable for disease development. Written records are kept indicating the results of monitoring, disease forecasting, and disease identification. Diseases include bacterial leaf spot, phytophthora, cucumber mosaic virus, tomato spotted wilt virus and anthracnose.*

- |    |  |    |  |
|----|--|----|--|
| 1. | Seed is used which has been disease-indexed.   | 5  |  |
| 2. | Seed is hot water-treated to reduce seed-borne bacterial disease.  | 5  |  |
| 3. | Cultivars resistant to bacterial leaf spot are grown on at least 50% of pepper acreage.  | 15 |  |
| 4. | Peppers are grown on domed or peaked beds to increase air movement and to aid in soil drainage.                                    | 10 |  |
| 5. | Transplants are grown in state and are disease-free.   | 10 |  |
| 6. | <i>If transplants are grown on-farm, preventative practices are followed (MAXIMUM 15 pts):</i>                                     |    |  |
|    | <i>a. The growing medium does not include field soil and transplants are grown in a separate greenhouse from ornamental crops.</i> | 5  |  |
|    | <b>OR</b>  |    |  |

*b. Sanitation practices in the greenhouse include cleaning of benches, trays, hose nozzles, etc. with a disinfectant, and avoiding contamination of the transplant medium and hose nozzles.*

5 \_\_\_\_\_

OR

*c. Greenhouse is kept weed-free.*

5 \_\_\_\_\_

OR

*d. Humidity in the greenhouse is reduced through proper timing of watering, ventilation and air circulation.*

5 \_\_\_\_\_

7. Fields are monitored for bacterial leaf spot and other diseases weekly. Scouting results are recorded, including disease symptoms and percent infected plants and foliage.

10 \_\_\_\_\_

8. *If disease problems occur, diseases are accurately identified (using the help of consultants or a diagnostic laboratory if needed).*

10 \_\_\_\_\_

9. Bactericide/fungicide applications are used only after disease is observed and identified. Only pesticides which will suppress the target disease are used.

5 \_\_\_\_\_

10. Fungicides are applied on a rotating basis (by active ingredient) for resistance management.

10 \_\_\_\_\_

11. Fungicides and bactericides are applied only when the application will be followed by a drying period of at least 2 hours.

5 \_\_\_\_\_

12. Precautions are taken to avoid spreading pathogens, including working the crop only when plants are dry, working in areas of infection last, and, if Phytophthora blight is present, hosing down cultivation equipment between fields.

5 \_\_\_\_\_

13. The field is kept free of solanaceous weeds such as horsenettle, black nightshade and jimsonweed, which can harbor plant pathogens. Crop residue is incorporated into soil immediately after harvest to encourage rapid decomposition and reduce survival of plant pathogens.

5 \_\_\_\_\_

14. Fruit is harvested when dry, fruit injury is minimized, and fruit is kept cool and dry during packing and storage.

5 \_\_\_\_\_

15. *If tomato spotted wilt virus (TSWV) is present, thrips are controlled.*

5 \_\_\_\_\_

*Total practice points for Disease Management*

*Total possible points for Disease Management*

\_\_\_\_\_ **100**

### **Insect Management**

*Major Pests: cutworms, aphids (esp. green peach aphid), pepper maggot, European corn borer, tomato hornworm*

1. Fields of pepper seedlings are scouted weekly for three to four weeks after transplanting for cutworm larvae, leaf-feeding or clipped stems

5 \_\_\_\_\_

2. Insecticide treatments for cutworm are applied only if plant injury warrants.

10 \_\_\_\_\_

3. Beginning in late June, fields are scouted for aphids weekly. Recommended method: examining 4 leaves per plant on at least 25 plants per field.

15 \_\_\_\_\_

4. Aphids are kept below action threshold by relying on naturally occurring parasites and predators, and insecticide applications are made only if aphid numbers exceed 10/leaf.

10 \_\_\_\_\_

5. *a. If pepper maggot has not been previously confirmed on farm, then treatment is made only after on-farm monitoring indicates their presence.*

10 \_\_\_\_\_

OR

*b. If pepper maggot has been previously confirmed on the farm, then treatment is made only after regional or on-farm monitoring indicates their presence, or when previous history indicates activity is likely*

10 \_\_\_\_\_

|  |  |    |            |
|--|--|----|------------|
| 6.   | <i>If pepper maggot fly has been a problem, indicator plants (e.g. cherry pepper) are planted.</i>   | 10 | _____      |
| 7.   | <i>If appropriate, pepper maggot flies are monitored during July using traps or indicator plants, as recommended in IPM publications.</i>  | 5  | _____      |
| 8.   | <i>If pepper maggot fly has been a problem, a perimeter trap crop is used and insecticides for PMF are applied to the perimeter only.</i>  | 15 | _____      |
| 9.   | European corn borer moth is monitored on-farm using pheromone traps after mid-July, when flight activity may threaten pepper fruit. Traps are checked at least once per week.                                | 20 | _____      |
| 10.  | Insecticides for European corn borer control are initiated one week after total moth counts reach or exceed the action threshold of 7 moths per week, and are maintained while moth counts exceed threshold. | 15 | _____      |
| 11.  | Selective insecticides are included in European corn borer management.   | 10 | _____      |
| 12.  | Scouting for tomato hornworm and other foliage-feeding insects is conducted weekly during July and August.   | 5  | _____      |
| 13.  | If control is needed for hornworms, only selective insecticides that conserve  | 5  | _____      |
| 14.  | Synthetic pyrethroids are avoided for European corn borer control, because they are likely to induce outbreaks of aphid populations.   | 10 | _____      |
| 15.  | <i>Parasitic wasps, <i>Trichogramma ostrinae</i>, are released for control of European corn borer. Bonus.</i>  | 15 | _____      |
| <i>Total practice points for Insect Management</i> |  |    | _____      |
| <i>Total possible points for Insect Management</i> |  |    | <b>115</b> |

### **Weed Management**

Weeds include summer annuals, grasses and broadleaves

|  |  |    |           |
|--|--|----|-----------|
| 1.   | This year's fields were scouted for weeds in the previous year, at mid- to late season. Weeds were identified and mapped. This information was used in the current weed management program | 10 | _____     |
| 2.   | Weed management includes one or more of the following:   |    |           |
|  | a. Herbicide use is supplemented by at least one cultivation or hand weeding;  | 5  | _____     |
|  | b. Herbicide rates are reduced through banding of herbicides & cultivation;  | 10 | _____     |
|  | c. No herbicides are applied and weeds are controlled through cultivation.   | 15 | _____     |
| 3.   | Weeds in fields, alleys and roadways are prevented from going to seed.   | 10 | _____     |
| 4.   | Fields are scouted in midseason for weeds. Location and species of uncontrolled weeds are mapped and the information is used in planning for next year.                                    | 10 | _____     |
| 5.   | Outbreaks of new or problem weed species are controlled, using chemical or non-chemical means, to prevent spreading or seed production.  | 10 | _____     |
| 6.   | <i>A trial plot is maintained to test a different weed management technique. The methods and results are recorded. Bonus.</i>  | 10 | _____     |
| <i>Total practice points for Weed Management</i> |  |    | _____     |
| <i>Total possible points for Weed Management</i> |  |    | <b>55</b> |

### **Education**

|  |   |   |       |
|--|---|---|-------|
| 1.   | Manager has a current copy of the <i>New England Vegetable Management Guide</i> .                                 | 5 | _____ |
| 2.   | Manager attends one or more state/regional/national Extension vegetable training session during the current year. | 5 | _____ |
| 3.   | Manager subscribes to the UMass Extension <i>Vegetable Notes &amp; IPM Message</i> .                              | 5 | _____ |
| <i>Total practice points for Education</i> |   |   | _____ |

*Total possible points for Education*

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**15**

## **POINT SUMMARY**

**TOTAL POINTS**

**TOTAL POSSIBLE POINTS**

**Percentage**

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**375**

**%**