

Strawberry IPM Elements

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The purpose of this document is to consolidate current Ohio information on Integrated Pest Management (IPM) in the form of general working practices or tactics for a specific crop. The second intent is to use this checklist as an evaluation instrument for growers applying to conservation programs such as Environmental Quality Incentives Program (EQIP). This document is intended to help growers identify areas in their production system that possess strong IPM qualities and also point out areas for improvement.

Growers should review the seven sections of this document and indicate which practices they **currently use** on this crop in their operation. There is a point value associated with every IPM practice; the higher the number, the greater the relative importance of the practice. After going through the list, add the associated values for each section to get the **Baseline IPM Score**. Growers will complete this evaluation every year of their contract, and maintain at least 60% of the total points available each year of the contract to be considered in compliance and eligible for a payment.

Major Pests of Strawberry - Primary concerns are diseases, insects, & weeds

| Diseases | Insects & Mites | Weeds |
|-------------------------------------|----------------------------|------------------------|
| Leaf Spot, Leaf Scorch, Leaf Blight | Tarnished Plant Bug | Annual grasses |
| Powdery Mildew | Strawberry Bud Weevil | Annual broadleaf weeds |
| Angular Leaf Spot | Strawberry Sap Beetle | Perennial broadleaf |
| Red Stele | Thrips | Perennial grasses |
| Verticillium | Meadow Spittlebug | Winter annuals |
| Black Rot | Strawberry Rootworm | |
| Botrytis Fruit Rot | Strawberry Aphids | |
| Leather Rot | Leafrollers | |
| Strawberry Anthracnose | Potato Leafhoppers | |
| Plant Parasitic Nematodes | Whitefly | |
| | Cyclamen mite | |
| | Two-spotted spider mite | |

Educational IPM Considerations

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

| Activity | Points | IPM Score | | | |
|---|--------|-----------|--------------------|--------------------|--------------------|
| | | Baseline | 1 st Yr | 2 nd Yr | 3 rd Yr |
| Join local or state grower associations that handle this commodity. | 5 | | | | |
| Attend winter or summer educational meetings or field days annually to keep current on pest management recommendations. | 10 | | | | |
| Access University based fruit information websites for research based information | 5 | | | | |
| Obtain the latest Ohio Commercial Small Fruit Spray Guide. The Midwest Small Fruit Pest Management handbook and other commodity specific reports/production guides | 10 | | | | |
| Subscribe to the Ohio ICM Fruit or other newsletter for updates on disease, insect, and weed development, plus management options during the growing season. | 10 | | | | |
| Research alternative markets that encourage less pesticide use either through specific use reduction requirements (organic, eco-, IPM labels) or simply by permitting more insect feeding, etc. | 5 | | | | |

Your section total is _____ pts.

Pesticides and Record Keeping

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

| Activity | Points | IPM Score | | | |
|---|--------|-----------|--------------------|--------------------|--------------------|
| | | Baseline | 1 st Yr | 2 nd Yr | 3 rd Yr |
| Calibrate insecticide and fungicide sprayer at least once a year. | 10 | | | | |
| Calibrate herbicide sprayer at least once a year. | 10 | | | | |
| Use drift control nozzles for pesticide applications | 10 | | | | |
| Maintain accurate and organized spray records. | 15 | | | | |
| Maintain accurate records of planting dates, field locations, varieties, and fertilizer applications. | 10 | | | | |
| Analyze spray records to determine Environmental Impact Quotient. | 10 | | | | |
| Among pesticides of comparable efficacy, use the one with the lowest Environmental Impact Quotient. | 10 | | | | |

Your section total is _____ pts.

Soil and Nutrient Management and Cultural Practices

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

| Activity | Points | IPM Score | | | |
|--|--------|-----------|--------------------|--------------------|--------------------|
| | | Baseline | 1 st Yr | 2 nd Yr | 3 rd Yr |
| Soil test; amend soil with fertilizer or compost according to guidelines and yield of crop. (Nutrient Management – 590) | 15 | | | | |
| Adjust mineral soil pH to 5.0-6.5. | 10 | | | | |
| Balance nitrogen with plant growth without promoting rapid growth and prolong succulence. (Conduct leaf analysis every year) | 10 | | | | |
| Adjust N application to account for any N given by cover crop, compost or other sources of organic nitrogen. | 10 | | | | |
| Choose a site that has good surface drainage; tile perennially wet fields. Prevent standing water between rows with a good layer of mulch or grassed alley way | 15 | | | | |
| Select fields rotated at least two years away from peppers, tomatoes, potatoes, eggplant, strawberries or raspberries (Conservation Crop Rotation – 328). | 10 | | | | |
| Use a water quality and placement plan that minimizes disease development, optimizes water use and minimizes erosion and runoff. | 5 | | | | |
| Select cultivars with a tolerance or resistance to the prominent viral, fungal, and bacterial diseases in your area. | 10 | | | | |
| Remove old leaves from planting. For June bearers, beds are renovated and leaves are mowed or incorporated to reduce disease inoculum. | 10 | | | | |

Your section total is _____ pts.

Disease Management

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

| Activity | Points | IPM Score | | | |
|---|--------|-----------|--------------------|--------------------|--------------------|
| | | Baseline | 1 st Yr | 2 nd Yr | 3 rd Yr |
| When using fungicide with a high potential for fungicide resistance development use 2-spray block alternations of different fungicide chemistries to prevent or delay the development of resistant strains of pathogenic fungi. | 15 | | | | |
| Select fungicides or fungicide combinations that will control all of the potential diseases that can develop. Especially the fruit rots (Botrytis and anthracnose fruit rots and leather rot). | 10 | | | | |
| Sprays for Botrytis are applied throughout bloom | 10 | | | | |
| Use weather forecasts (principally for rain) to adjust (shorten or extend) fungicide spray intervals. | 10 | | | | |
| Where a history of red stele, Verticillium wilt, or leaf diseases warrants, cultivars that have tolerance or resistance to the appropriate disease are used. | 15 | | | | |
| For June bearers, the bulk of nitrogen is applied after renovation to reduce Botrytis problems | 15 | | | | |

Your section total is _____ pts.

Arthropods Management (Insects and mites)

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

| Activity | Points | IPM Score | | | |
|---|--------|-----------|--------------------|--------------------|--------------------|
| | | Baseline | 1 st Yr | 2 nd Yr | 3 rd Yr |
| Field is not planted near woods or fence rows (to avoid problems with clipper weevil), not planted after sod (to avoid white grub problems) or near old plantings (if root weevils were present in the old planting). | 15 | | | | |
| Cultivars highly susceptible to tarnished plant bug are avoided. | 15 | | | | |
| Select nursery plants that are free of cyclamen mite. | 5 | | | | |
| Choose appropriate plant spacing to discourage slugs | 5 | | | | |
| Good weed control, berries are harvested on time, debris is removed and mulch application is delayed until fall. | 10 | | | | |
| Bait buckets sap beetles are used during harvest and/or traps for slugs are used. | 10 | | | | |
| Row covers are used for tarnish plant bugs. | 10 | | | | |
| Scouting for strawberry clipper, two spotted spider mite and tarnished plant bug is conducted once per week. | 15 | | | | |
| Plants are examined for flower thrips, tarnished plant bug and spittlebugs at bloom. | 15 | | | | |
| Sampling for two spotted spider mite, strawberry rootworm beetles and miscellaneous pests: leaf rollers, leafhoppers, whiteflies, aphids, root weevils is conducted post harvest. | 10 | | | | |
| Select insecticides and miticides based on minimizing toxicity to predatory mites and beneficial insects | 10 | | | | |
| Scouting results are recorded and maintained | 15 | | | | |

Your section total is _____ pts.

Weed Management

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

| Activity | Points | IPM Score | | | |
|--|--------|-----------|--------------------|--------------------|--------------------|
| | | Baseline | 1 st Yr | 2 nd Yr | 3 rd Yr |
| Eradicate perennial weeds and reduce the soil weed seed bank the year prior to planting by using herbicides, cultivation, and cover crops. | 15 | | | | |
| Identify and list problem weeds and locations to tailor herbicide and floor management practices. If herbicides are needed, product choice, rate, and area to be treated are based on identified weed species and locations. | 15 | | | | |
| If needed, apply soil active herbicide prior to weed emergence. Do not use herbicides of the same class in successive years. | 15 | | | | |
| If perennial weeds are present, time herbicide applications to weed growth stage as specified on the product label. | 15 | | | | |
| Cultivation or hand weeding is used as a supplement for herbicides | 15 | | | | |
| Plant growth within 30 feet of field border is controlled (i.e. mowing) to reduce weed seeds, improve air drainage, and reduce insect infestation. | 15 | | | | |

Your section total is _____ pts. Total points in Element is 515.

Baseline IPM Score (Add the scores of the previous 7 sections) _____

End of Year 1 at least 60% of total IPM Element points _____

End of Year 2 at least 60% of total IPM Element points _____

End of Year 3 at least 60% of total IPM Element points _____