

# Apple 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 Apple- Primary concerns are insects, mites, diseases & weeds

Diseases	Insects & Mites	Weeds
Apple scab	Codling moth	Annual grasses
Fire blight	Apple maggot	Perennial grasses
Powdery mildew	San Jose scale	Annual broadleaves
Sooty blotch	Spotted tentiform leafminer	Perennial broadleaf
Fly speck	Plum curculio	Yellow nutsedge
Cedar apple rust	Leafrollers	
Black rot	Aphids	
White rot	Tufted apple budmoth	
Bitter rot	Leafhoppers	
Phytophthora crown and root rot	European red 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 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> 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 Tree Fruit Spray Guide. The Midwest Tree Fruit Pest Management handbook and other commodity specific reports, bulletins, or 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 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> 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				
Base choice of spray volume per acre on tree-row volume.	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 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
Soil test; amend soil with fertilizer or compost according to guidelines and yield of crop. ( <b>Nutrient Management – 590</b> )	15				
Adjust mineral soil pH to 6.0-6.8.	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				
Before planting the orchard, pick a planting site with excellent soil drainage and full exposure to the sun. If drainage is not excellent, perform practices to improve drainage such as planting on ridges (burms) or tiling.	15				
Use a water quality and placement plan that minimizes disease development, optimizes water use and minimizes erosion and runoff.	5				
Plant rows in the direction of prevailing winds to promote better air circulation and faster drying in the orchard.	10				
Prune annually to open the canopy and maintain tree height at a manageable level.	10				
Thin fruit, especially in clusters, to insure faster drying and complete fungicide coverage, as well as to promote fruit size and return bloom.	5				

**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 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
Use fungicides or fungicide combinations that allow extended spray intervals (10-14 days) rather than a 7-day protectant program (i.e. sterol-inhibitor plus protectant or strobilurin fungicides) to reduce overall fungicide use. If other options are not available use a 7-day protectant program to insure adequate disease control.	15				
When using fungicides 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.	10				
Use weather forecasts (principally for rain) to adjust (shorten or extend) fungicide spray intervals.	10				
When selecting new cultivars for planting, consider varieties with resistance to apple scab, fire blight, and other major diseases.	15				
When selecting rootstocks for new plantings, consider resistance to collar rot and fire blight.	15				
Select planting sites with excellent soil drainage to prevent problems with Phytophthora collar or root rot, or improve soil drainage with tile or by planting on ridges.	15				
Remove large brush and brush piles from the orchard and old mummies (black rot) and other debris (dead wood) from trees annually.	15				
Remove reservoir hosts (wild blackberry) for sooty blotch and fly speck annually.	10				
Remove dead leaves from the ground or use practices (i.e. urea application or mowing) to degrade dead leaves in order to reduce scab inoculation.	10				

**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 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
Use pheromone traps in all blocks to monitor adult populations of codling moth. Base spray application on thresholds and/or degree day accumulations after a trap-based biofix date.	15				
If Oriental fruit moth is also present, use pheromone traps to monitor its activity, and adjust spray program as needed to allow control of multiple generations.	15				
Use red ball traps to monitor apple maggot flies, and use an insecticide to target maggot if thresholds exceeded.	5				
Use pheromone traps to monitor adult populations of San Jose scale in blocks known for previous SJS damage. Base spray application timing for crawlers on detection with black sticky tape and/or on thresholds and/or degree day accumulations after catch of adults in traps.	5				
Monitor apple maggot fly with red-sphere attractants, and base control sprays on the threshold established for Ohio.	10				
Survey European red mite populations on a weekly basis from petal fall until mid August using the Cornell mite sampling method and form. Apply miticide only if threshold exceeded.	10				
Scout for rosy apple aphid at the early pink bud stage. Apply insecticide only if threshold exceeded.	10				
Scout for spotted tentiform leafminer at the early petal-fall stage.	15				
Scout for white apple leafhopper at the early petal-fall stage and weekly until late June. Apply insecticide only if threshold exceeded.	10				
Scout for woolly apple aphid weekly all summer; good control by insecticide is most likely if detected when infestation just beginning.	10				
Begin plum curculio sprays at petal fall and 14 days later in blocks where plum curculio has been a problem.	10				
Select insecticides and miticides based on minimizing toxicity to predatory mites and beneficial insects	10				
Rotate miticide product selection from year to year to avoid development of resistant populations.	10				
Spray a codling moth granulosis virus product to control codling moth.	15				
Apply pheromone mating disruption products for CM and/or OFM.	15				
Use a broadleaf ground cover in drive rows rather than a grass, to provide habitat for predatory mites.	10				
Remove or destroy culled fruit.	15				
Use trunk bands of corrugated cardboard to trap codling moth pupae; remove and destroy in June and post-harvest.	15				
Use paper bags to enclose individual fruit to protect from pests.	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 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
For new orchards, eradicate perennial weeds and reduce the soil weed seed bank the year prior to planting by using herbicides, cultivation, and cover crops.	15				
Establish a non-competitive grass between tree rows prior to planting a new orchard to help control weeds	15				
Use an herbicide to establish planting strips in established sod.	10				
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				

Your section total is \_\_\_\_\_ pts.

Total points in Element is 630.

**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** \_\_\_\_\_