Tomato (Fresh Market & Processing) 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 Tomatoes - Primary concerns are diseases, insects, & weeds

Diseases	Insects	Weeds
Damping off	Tomato fruitworm	Annual grasses
Early blight	Variegated cutworm	Annual broadleaf weeds
Septoria leaf blight	Stink bugs	Perennial weeds
Anthracnose	Hornworms	Yellow nutsedge
Late blight	Colorado potato beetle	
Buckeye fruit rot	Cabbage looper	
Botrytis grey mold	Aphids	
Bacterial Spot	Grasshoppers & Crickets	
Bacterial Speck	Flea beetles	
Bacterial Canker	Beet armyworm	
	Whiteflies	
	Thrips	

Educational IPM Considerations

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

		IPM Score			
Activity	Points	Baseline	1st Yr	2nd Yr	3rd 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 vegetable information websites for research based information	5				
Obtain the latest Ohio Vegetable Production Guide (Bulletin 672) and other commodity specific reports / production guides.	10				
Subscribe to “free” VegNet 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.

		IPM Score			
Activity	Points	Baseline	1st Yr	2nd Yr	3rd 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.

Pre-plant IPM Considerations

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

		IPM Score			
Activity	Points	Baseline	1st Yr	2nd Yr	3rd Yr
Soil test annually; amend soil with fertilizer or compost according to guidelines and yield of crop. (**Nutrient Management – 590)**	15				
Adjust mineral soil pH to 6.0-6.8.	10				
Apply 100 % P and K broadcast according to soil test.	10				
Split apply N, 50% pre plant and side dress remaining nitrogen after fruit set on bare ground tomatoes. On plastic or mulch with trickle, 3 or more applications of nitrogen can be made as fruits set and increase in size until total recommended N is reached	15				
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.	15				
Select fields rotated at least two years away from peppers, tomatoes, potatoes, or eggplant. (**Conservation Crop Rotation – 328)**	10				
Select fields at least 0.25 miles away from last year's tomato or potato fields to reduce potential Colorado Potato Beetle (CPB) infestations.	10				
Transplant into a no-till or zone-till prepared field. (**No-Till - 329**)	10				
Practice weed seed exclusion tactics such as high pressure washing machinery shared between farms.	15				
Buy certified seed and weed free soil mixtures; determine weed seed content of all seed and do not plant seed contaminated with weed seed not known to occur on your farm.	15				
Use a combination of fall/spring tillage and fall/spring application of a broad spectrum herbicide to control established perennials or rotate with a herbicide resistant crop on which a broad spectrum herbicide was used.	15				
Apply pre-plant herbicides to control seedling broadleaf weeds and annual grasses if necessary.	10				
Use stale seed bed technique.	15				

Mulch with opaque plastic film before transplanting	10				
Select cultivars with a tolerance or resistance to the prominent viral, fungal, and bacterial diseases in your area. Buy certified seed to transplant to limit exposure to disease. Buy commercially fungicide and acid treated seed. If using transplants, be sure they are certified disease free from inspected fields or greenhouses. Select transplants grown in isolation from ornamental crops to avoid TSWV. Raise your own transplants to limit introduction of bacterial and fungal diseases.	10 10 15 15 15 10				

Your section total is_____pts.

At-planting IPM Considerations

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

		IPM Score			
Activity	Points	Baseline	1st Yr	2nd Yr	3rd Yr
Apply starter fertilizer solution at time of transplant.	10				
Apply pre-emerge herbicides to control seedling broad leaf weeds and annual grasses if necessary.	10				

Your section total is_____pts.

In-season IPM Considerations

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

		IPM Score			
Activity	Points	Baseline	1st Yr	2nd Yr	3rd Yr
Use predictive models such as TOMCAST or BLITECAST for early blight, anthracnose, *Septoria* leaf blight, and late blight development to better time fungicide sprays.	15				
Scout for late blight during periods of cool, wet weather. If detected immediately disc surrounding area and apply an appropriate fungicide on a 7 to 10 day schedule until harvest.	10				
Concentrate scouting for Colorado Potato Beetle at field edges, treat the field edge if the crop becomes infested.	15				
Use pheromone traps to detect variegated cutworms, treat if trap catches exceed 10 variegated cutworm moths per trap per week and the plants have fruit.	15				
Use pheromone traps for Fall armyworm, Corn earworm, and Beet armyworm. Although no specific trap-based thresholds are available, when large numbers of moths are caught, scouting should be intensified.	15				
Scout leaves for aphids, treat if > 0.5 aphid per leaflet.	15				
Scout for variegated cutworms, tomato fruitworms, hornworms, stink bugs, stink bug damaged fruit, and grasshoppers using guidelines in Ohio Vegetable Production Guide (Bulletin 672); treat if thresholds are exceeded.	15				
Use cultivation to control weeds.	10				
Control broadleaf weeds, annual and perennial grasses using broadcast, directed, or shielded application of herbicide to control or suppress weeds between rows and after crop establishment.	10				
Physically remove weeds uncommon or new to the field to prevent seed production.	15				

Your section total is_____pts.

Harvest IPM Considerations

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

		IPM Score			
Activity	Points	Baseline	1st Yr	2nd Yr	3rd Yr
Apply ethaphon (1.0 - 4.0 pts / A depending on air temperature and cultivar) to trigger ripening of mature green fruit.	15				

Your section total is_____pts.

Post-Harvest IPM Considerations

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

		IPM Score			
Activity	Points	Baseline	1st Yr	2nd Yr	3rd Yr
Evaluate new IPM practices used on the farm this year, even if used on limited acreage. Implement successful practices over greater acreage next season.	10				
Prepare beds and seed cover crop mixtures on raised beds in the fall. Be sure to kill the plant residue mulch well in advance of spring transplanting. (**Cover Crops – 340, Bedding - 310)**	15				
Update field weed maps, use to make treatment decisions next season.	15				
Control weeds after harvest to prevent further spread and seed production	15				
Plow down residue as soon as possible after harvest to reduce weed residue, fungal inoculum, and insect over wintering locations.	15				

Your section total is_____pts. Total points for Element is 610.

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 _____