

Northeastern IPM Center - Tree Fruit IPM Working Group
 Ranking of Research and Extension Priorities: 7-Year Comparison
 New England, NY, Canadian Fruit IPM Workshop, Burlington, VT — Oct. 22–23, 2019 (24 respondents)

	Percent Weighted Rank						
	2019	2018	2017	2016	2015	2014	2013
Pome Fruit Diseases							
Apple scab	23.7	26.4	26.2	24.3	26.8	29.5	29.0
Fire blight	30.1	29.0	29.0	32.3	29.0	30.8	25.1
Powdery mildew	1.5	3.6	3.3	6.4	9.6	12.9	12.3
Sooty Blotch/Flyspeck	4.1	6.9	4.6	5.2	6.8	8.3	10.7
Fruit Rots	9.9	18.1	11.1	12.0	14.6	11.7	10.7
Rust diseases	1.8	1.4	3.3	4.0	2.6	1.8	4.6
Replant disease	1.8	0.4	2.8	0.8	2.6	1.2	4.4
Anthraco nose	0.3	0.0	0.0	1.6	0.0	0.0	1.6
Cankers	2.3	1.4	3.1	3.6	4.4	3.4	0.9
Root rots	0.0	0.0	2.1	3.2	2.2	0.6	0.7
Fabraea leaf spot	0.9	0.7	1.8	0.0	1.5	0.9	-
Phytophthora	0.3	0.0	2.6	1.6	-	-	-
Storage rots/pre-harvest sprays	2.6	2.9	1.8	5.2	-	-	-
Tree stress (>black stem borer/SAD)	5.8	3.6	8.0	-	-	-	-
Scald	0.6	0.0	0.3	-	-	-	-
Sudden Apple Decline syndrome	7.0	5.4	-	-	-	-	-
Viruses	1.2	-					
Lenticel breakdown	0.0	-					
Scarf skin	0.0	-					
(write-in): Marssonina leaf blotch	4.7	-					
(write-in): Glomerella	1.5	-					
Direct (Fruit-attacking) Pome Fruit Insect Pests							
Internal leps (Codling moth, OFM, Lesser appleworm)	24.1	24.1	22.3	23.8	24.2	24.7	24.0
Plum curculio	21.4	19.4	20.8	25.9	20.8	22.4	19.2
Apple maggot	16.1	12.4	17.4	19.2	16.9	21.8	18.0
Stink bugs	12.3	14.0	17.4	17.2	15.9	18.4	15.1
Obliquebanded leafroller	7.0	6.7	4.9	7.1	10.0	6.0	9.4
Spotted wing Drosophila	3.5	4.7	6.9	2.5	2.9	2.9	8.4
European apple sawfly	0.5	1.3	1.8	2.5	3.7	3.2	4.1
Tarnished plant bug (2015: Plant bugs)	1.1	3.3	1.5	1.3	5.7	2.3	1.7
Spotted lanternfly (moved to "Indirect Pests", below)	-	4.7	0.3	0.4	-	-	-
Scales	7.0	7.4	3.6	-	-	-	-
Japanese beetle	2.4	2.0	2.8	-	-	-	-
Gypsy moth	0.0	0.0	0.3	-	-	-	-
Invasive species	4.6						
Pome Fruit Indirect Arthropod Pests/Beneficial species							
European red mite/Two spotted spider mite	12.9	19.5	11.7	18.0	17.8	24.9	24.4
San Jose Scale	14.3	16.8	13.7	15.9	23.3	23.5	17.2
Predator mites	7.0	6.4	7.1	10.5	10.1	12.5	13.2
Borers: Dogwood, Black stem borer, others	28.0	21.5	22.4	19.7	18.0	18.0	12.7
Woolly apple aphid	12.9	7.4	9.6	6.3	10.8	8.7	8.7
Potato/White apple leafhoppers	3.6	4.7	4.9	3.3	5.1	3.5	8.5
Leafminers	1.1	0.0	2.2	1.7	3.8	1.2	5.2
Pear psylla	5.3	7.4	6.6	4.2	7.6	7.8	5.0
Rosy apple aphid	2.0	1.3	2.7	2.9	3.2	3.5	4.7
Mealybugs	0.6	0.0	0.0	0.0	0.4	0.0	0.2
Predator conservation	5.9	13.1	16.7	15.9	-	-	-
Apple leafcurling midge	1.1	1.3	1.6	1.3	-	-	-
Rust mites	0.0	0.0	0.8	0.4	-	-	-
Green pug	0.3	0.3	-	-	-	-	-
Parasitic wasps	1.7	-	-	-	-	-	-
Oystershell scale	0.3	-	-	-	-	-	-
Spotted lanternfly	3.1	-	-	-	-	-	-
Cherry Arthropod Pests							
Spotted wing Drosophila	30.5	32.7	34.5	28.7	19.3	26.8	24.3
Plum curculio	6.9	19.2	14.9	13.0	16.0	23.2	20.7
Cherry fruit flies	28.0	21.0	16.1	24.3	15.1	18.6	20.7
Japanese beetle	5.9	7.9	12.2	13.0	12.3	15.9	13.6
Peachtree borers	7.8	9.3	10.2	7.8	6.6	9.1	9.3
Brown marmorated stink bug	4.0	3.7	5.9	2.6	8.5	3.6	5.7
Aphids	1.9	4.2	2.7	3.5	9.9	0.5	5.0
American plum borer	2.2	0.9	1.2	6.1	4.2	0.0	0.7
Scales	3.1	0.9	2.4	0.9	8.0	4.1	0.0

European cherry fruit fly	9.7	-	-	-	-	-	-
Cherry Diseases/Disorders	2019	2018	2017	2016	2015	2014	2013
Brown rot	31.2	34.1	28.8	33.0	31.5	32.8	32.9
Bacterial canker	20.9	21.6	25.5	24.5	24.7	27.3	20.6
Leaf spot	15.8	13.0	10.9	5.3	4.9	7.6	11.2
X-disease	1.3	2.7	5.2	20.2	5.6	4.0	2.9
Fruit cracking	11.1	18.9	16.9	5.3	21.0	16.2	18.8
Black knot	6.8	5.4	8.6	5.3	3.7	7.6	4.7
Viruses	3.8	0.5	2.2	3.2	4.9	4.0	0.6
Phytophthora	2.1	2.2	1.1	3.2	1.9	1.5	1.8
Powdery mildew	3.4	1.6	0.7	0.0	1.9	2.0	6.5
Frost	3.4	-	-	-	-	-	-
Peach Direct (fruit-attacking) Insect Pests	2019	2018	2017	2016	2015	2014	2013
Brown marmorated & other stink bugs	27.2	26.0	28.4	29.6	25.9	33.6	25.9
Plum curculio	17.2	18.9	15.1	16.0	16.3	19.9	22.4
Oriental fruit moth	20.5	22.0	19.4	20.0	20.1	24.1	20.5
Spotted wing Drosophila	9.6	13.0	14.0	11.2	13.7	12.4	17.5
Tarnished plant bug	9.3	8.7	7.6	8.0	13.1	11.6	9.9
Obliquebanded leafroller	2.6	2.8	0.4	2.4	2.9	2.5	3.8
Western flower thrips	0.0	0.0	2.5	2.4	1.9	0.0	0.0
Japanese beetle	9.3	3.5	7.2	10.4	6.1	-	-
Wasps	2.3	3.9	0.7	-	-	-	-
White "peach" (Prunicola) scale	2.0	1.2	4.7	-	-	-	-
Wheel bug	0.0	-	-	-	-	-	-
Peach Indirect Arthropod Pests	2019	2018	2017	2016	2015	2014	2013
Japanese beetle	22.5	18.2	19.6	25.2	20.1	24.9	24.4
Peachtree borers	31.2	30.5	33.3	31.9	31.1	33.2	33.8
Mites	16.7	14.8	11.8	6.7	12.5	12.4	13.3
Scales	13.0	22.5	17.6	16.8	17.4	14.5	11.6
American plum borer	8.0	2.1	6.7	9.2	5.3	2.5	1.8
Green peach aphid	8.7	11.9	11.0	10.1	13.6	14.1	15.1
Peach Diseases	2019	2018	2017	2016	2015	2014	2013
Brown rot	30.9	31.1	29.9	31.9	32.7	38.3	30.7
Bacterial spot	20.5	20.0	22.6	19.3	25.1	30.4	24.9
Peach leaf curl	6.3	11.1	11.5	9.2	11.2	14.5	11.1
Powdery mildew	5.6	3.4	6.6	4.2	4.8	8.9	10.0
X-disease	3.5	5.1	5.2	8.4	10.8	7.5	8.4
Perennial canker	8.7	11.5	10.1	8.4	8.8	7.5	5.7
Peach scab	6.9	0.4	2.8	3.4	3.6	0.0	3.8
Phytophthora rots	1.0	4.7	3.8	4.2	3.2	3.3	3.1
Plum pox (removed from list)	-	0.0	0.0	2.5	1.6	6.1	2.3
Winter kill	6.3	9.8	6.9	8.4	-	-	-
Rusty spot	3.5	1.7	0.7	0.0	-	-	-
PGRs to promote dormancy	2.4	1.3					
Frost	4.5						
Vertebrate Pests	2019	2018	2017	2016	2015	2014	2013
Deer	27.5	31.1	25.1	30.7	28.9	35.8	28.8
Voies	19.9	22.6	23.8	27.1	27.3	29.2	25.5
Birds	18.0	21.5	23.5	17.4	17.9	23.3	23.6
Rabbits	4.6	3.7	5.7	4.1	4.9	7.5	7.1
Turkeys	7.2	2.6	7.0	6.0	6.1	6.0	5.8
Groundhogs	5.2	3.7	5.0	3.7	8.6	3.5	5.5
Canada geese	0.3	1.1	0.5	0.0	3.3	0.9	3.6
Beavers	0.3	0.7	0.0	0.5	0.2	1.3	0.3
Porcupines	1.0	2.2	2.3	0.5	2.3	-	-
Raccoons	0.0	0.0	0.0	0.5	0.5	-	-
Fishers (removed from list)	-	0.0	0.0	0.0	-	-	-
Crows	2.6	3.7	7.0	6.9	-	-	-
Foxes	0.0	0.0	0.0	-	-	-	-
Coyotes	0.7	-	-	-	-	-	-
Squirrels	4.9	3.3	-	-	-	-	-
Rodents	7.8	3.7	-	-	-	-	-
Postharvest Issues	2019	2018	2017	2016	2015	2014	2013
Post-harvest decay management	19.7	24.5	17.9	24.6	18.5	28.1	29.2
GAPS & Food safety (2015: & FSMA)	11.6	15.8	20.2	16.9	19.3	22.2	17.7
Post-harvest drench alternatives	9.4	12.9	12.0	8.7	11.2	15.0	16.4
Bin sanitation	4.8	3.7	6.2	8.2	9.8	7.2	9.1
Scald	7.4	2.9	4.1	9.2	5.3	5.9	8.6
Bitter Pit	20.6	23.7	18.2	16.4	22.4	15.7	6.2

Packing line sanitation	1.6	1.7	0.9	4.1	4.2	0.0	5.6
1-MCP	1.3	1.2	5.6	5.6	4.8	5.6	5.1
CO2 Damage	0.3	0.8	0.9	1.5	4.5	2.3	2.1
Flesh browning	3.9	4.6	2.6	3.6	-	-	-
Storage facilities sanitation (FSMA)	1.6	2.9	8.5	1.0	-	-	-
Small bin controlled storages (CAN)	0.0	0.0	0.0	-	-	-	-
Ultra-low oxygen	0.0	0.4	1.5	-	-	-	-
Soft scald	3.2	3.3	1.5	-	-	-	-
Soggy breakdown	1.9	1.7	-	-	-	-	-
Harvista vs. Retain	7.4	-	-	-	-	-	-
Too much rain	1.3	-	-	-	-	-	-
Lenticel breakdown	3.9	-	-	-	-	-	-
Ground Cover Management	2019	2018	2017	2016	2015	2014	2013
Alternatives to herbicides, mulching, cultivation	18.7	24.6	21.5	22.7	18.8	13.6	15.6
Perennial weed management	17.8	24.6	17.8	25.6	28.1	28.6	22.7
Use of new herbicides	10.4	8.7	9.9	6.7	12.6	17.3	16.4
Herbicide resistance	8.9	6.8	5.2	9.2	7.2	5.5	7.4
Timing of control methods	7.1	9.5	10.4	9.7	12.6	17.6	16.4
Winter injury, etc. from glyphosate	3.4	3.8	4.2	13.4	6.5	7.8	7.1
Weed biology & ID	4.9	3.4	2.5	5.0	9.1	5.5	7.4
Nutrient competition	0.0	1.5	2.2	5.0	3.5	1.4	6.0
Best use of old herbicides	1.2	3.0	2.5	0.4	1.6	2.0	1.1
Herbicide phyto and soil health	5.2	4.2	5.7	2.1	-	-	-
Under-tree ground covers	2.1	3.4	9.4	-	-	-	-
Biological weed control	2.8	1.1	3.2	-	-	-	-
Soil health/carbon sequestration	-	-	5.7	-	-	-	-
Organic weed control	2.1	0.8	-	-	-	-	-
Weed control vs. yield	1.5	4.5	-	-	-	-	-
Herbicide damage to trees/fruit	12.3	-	-	-	-	-	-
Mulch types & adaptability	1.5	-	-	-	-	-	-
Application Technology Issues	2019	2018	2017	2016	2015	2014	2013
Spray coverage vs. control	23.1	29.7	18.5	22.8	26.9	30.0	25.1
Calibration	19.0	14.8	16.4	25.0	24.1	23.9	21.1
Drift management	14.0	16.3	16.7	12.1	15.9	14.4	15.9
Adjuvants w/ thinners (instead of oil)	3.6	4.9	5.7	3.6	8.9	8.1	11.0
Phytotoxicity and fruit finish	9.6	5.7	10.2	12.5	12.9	13.9	8.7
Canopy spray issues	3.3	2.3	3.9	8.9	6.1	3.9	7.0
Fixed spraying systems	2.7	4.2	0.5	2.7	1.2	2.8	6.8
Single-sided sprays in high density plantings	2.5	0.4	3.9	1.8	3.0	2.5	2.6
Herbicide shields	3.6	0.8	3.7	5.4	1.2	0.6	1.9
Tower sprayer options	3.6	4.9	1.8	2.2	-	-	-
Applic of growth regulators to canopy	2.5	1.1	2.9	1.8	-	-	-
Tank mixes (synergistic or antagonistic effects)	6.9	8.0	10.2	1.3	-	-	-
Crop-adapted spraying	1.9	2.3	5.5	-	-	-	-
Better herbicide application techniques	0.8	4.2	-	-	-	-	-
2-D Canopy mgt for application optimization	1.6	0.4	-	-	-	-	-
Terrain	0.0	-	-	-	-	-	-
(write-in): New sprayer technology	1.4	-	-	-	-	-	-
Pest Management Education Issues	2019	2018	2017	2016	2015	2014	2013
Workshops for advisors/growers	22.0	20.5	17.6	18.5	20.3	27.8	22.4
Orchard demos	10.8	11.7	12.1	15.8	9.3	14.2	14.8
Production Guidelines publication	11.8	14.4	14.1	17.6	15.7	20.6	13.4
Web-based delivery methods	10.5	12.8	13.4	12.2	14.9	17.4	9.5
Pesticide applicator workshops	3.5	6.7	6.4	4.5	6.6	6.1	9.2
Pesticide safety programs	0.3	1.7	4.7	2.3	3.8	2.0	9.0
Smart phone apps	9.9	3.7	5.4	6.8	10.9	5.8	7.5
Consumer education	6.1	5.0	5.0	6.3	9.1	4.6	5.6
Biocontrol demos	3.2	3.7	7.7	2.7	4.6	0.6	5.1
Education for policy makers	8.0	5.0	2.5	5.0	4.2	0.9	3.4
Virtual IPM workshops based on plant growth simulations	0.0	0.0	0.0	0.0	0.6	-	-
e-version of Guidelines; web or app	5.7	9.4	9.4	7.7	-	-	-
Training for pstc applicator exams	0.6	1.3	1.7	0.9	-	-	-
Pesticide training for H2A/Hispanic staff	1.3	1.0	-	-	-	-	-
On-farm scout training & certification	5.4	3.0	-	-	-	-	-
Guidelines under NEWA	1.0	-	-	-	-	-	-
General IPM Issues	2019	2018	2017	2016	2015	2014	2013
Pesticide resistance	16.7	14.3	10.1	15.6	17.4	22.0	22.6
Invasive/exotic species	14.8	20.0	10.6	18.7	19.6	24.6	15.6
Weather/information delivery systems	12.7	15.3	14.8	16.9	19.0	20.6	15.4

Cost reduction	4.2	4.0	3.7	7.1	6.8	7.7	10.3
Pollinator conservation	4.5	5.0	9.6	15.1	8.2	10.3	9.8
Organic production	2.4	2.7	6.9	6.7	3.8	4.6	8.9
Pheromone technology	4.2	3.0	3.2	5.3	10.4	4.0	6.8
OP/carbamate replacements	3.0	3.0	2.0	1.3	5.4	2.6	4.2
Abandoned orchard impact	3.9	1.3	1.7	0.9	1.6	0.9	3.3
IFP certification	0.0	0.0	0.0	0.0	1.0	0.6	2.8
Groundwater monitoring	0.9	0.0	1.0	0.0	0.8	0.0	0.5
Metrics of IPM adoption	4.8	3.7	5.9	5.8	5.8	4.6	-
Impacts of potential product losses on spray progs	1.8	0.7	2.0	2.2	-	-	-
Drones for crop management	2.4	0.7	4.4	0.9	-	-	-
Beneficial insects	3.3	1.7	5.9	1.3	-	-	-
Pest monitoring & thresholds	7.9	9.3	11.6	2.2	-	-	-
Climate change adaptation	6.4	12.3	6.4	-	-	-	-
Multiple pest/disease economics & thresholds	4.2	3.0	-	-	-	-	-
Nursery stock verification	1.5	-	-	-	-	-	-
Regulatory Issues	2019	2018	2017	2016	2015	2014	2013
Pesticide registration procedures/restrictions	17.4	22.1	13.4	17.1	14.6	25.2	23.2
Clarification of labels	12.1	13.1	9.4	8.8	13.8	18.2	15.8
Harmonization of labels	8.5	9.7	12.7	9.3	8.3	15.7	14.8
Invasive species	10.2	13.9	9.6	17.1	14.2	17.6	12.8
Production standards for imports/exports (MRLs)	6.2	5.6	4.1	0.9	2.2	9.6	10.7
Right-to-farm/drift issues	3.9	6.7	6.6	4.6	5.9	8.0	7.9
Smaller package sizes	2.0	1.5	8.4	6.0	5.5	4.8	3.8
Use of "Generally Regarded As Safe" products	0.3	0.4	3.5	4.6	2.8	1.0	3.6
Labor Regulations	12.5	4.9	8.9	4.6	9.5	1.9	2.5
Surface water regulations	2.0	1.5	2.5	1.9	13.4	0.6	2.2
Fast-track NYS label registrations	1.3	1.9	1.5	2.3	0.4	0.3	1.6
Updates on WPS	1.6	0.4	1.5	7.9	2.8	0.3	1.1
Pollinator protection	6.2	7.9	10.4	12.0	6.7	-	-
Spanish labels	0.0	1.9	3.8	2.8	-	-	-
Container disposal	0.3	1.1	1.8	-	-	-	-
Cost containment	3.6	2.2	0.0	-	-	-	-
Food processing license fees (cider)	1.6	1.5	0.8	-	-	-	-
Soap bars for deer control	1.0	1.1	-	-	-	-	-
FSMA	4.9	2.6	1.3	-	-	-	-
Plum pox quarantine	0.0	-	-	-	-	-	-
European cherry fruit fly quarantine	4.3	-	-	-	-	-	-