

2018 Ranking of Tree Fruit IPM Research and Extension Priorities - Summary				
Respondent Groups:				
1: LOFP Fruit School, Lockport - Feb. 5, 2018 (48 Respondents)				
2: LOFP Fruit School, Newark - Feb. 6, 2018 (21 Respondents)				
3: New England/NY/Canadian Fruit IPM Workshop, Burlington, VT - Oct. 24, 2017 (27 respondents)				
	Group/Percent Ranking			
Pome Fruit Diseases	1	2	3	Average
Apple scab	16.2	19.2	26.2	20.5
Fire blight	27.0	26.8	29.0	27.6
Powdery mildew	7.9	9.9	3.3	7.0
Sooty Blotch/Flyspeck	2.1	1.7	4.6	2.8
Fruit Rots	5.4	5.3	11.1	7.3
Rust diseases	1.9	4.0	3.3	3.1
Replant disease	4.7	3.3	2.8	3.6
Anthracnose	0.0	0.0	0.0	0.0
Cankers	1.9	4.3	3.1	3.1
Root rots	3.4	0.7	2.1	2.1
Fabraea leaf spot	0.1	1.0	1.8	1.0
Phytophthora	1.0	1.3	2.6	1.6
Storage rots/pre-harvest sprays	5.4	5.6	1.8	4.3
Tree stress (>black stem borer)	8.9	7.6	8.0	8.2
Scald	2.9	0.0	0.3	1.0
Sudden Apple Decline syndrome	9.6	9.3		9.4
(write-in) Viruses	1.0			1.0
(write in) Lenticel breakdown	0.6			0.6
Direct (Fruit-attacking) Pome Fruit Insect Pests	1	2	3	Average
Internal leps (CM/OFM/LAW)	25.0	18.0	22.3	21.7
Plum curculio	11.7	14.8	20.8	15.8
Apple maggot	11.7	9.5	17.4	12.9
Stink bugs	15.9	9.9	17.4	14.4
Obliquebanded leafroller	5.3	8.5	4.9	6.2
Spotted wing Drosophila	9.6	7.4	6.9	8.0
European apple sawfly	2.4	5.3	1.8	3.2
Tarnished plant bug	3.2	3.2	1.5	2.6
Spotted lanternfly	3.5	9.5	0.3	4.4
Scales	8.9	7.7	3.6	6.7
Japanese beetle	2.3	6.3	2.8	3.8
Gypsy moth	0.5	0.0	0.3	0.2
(write in) Invasives	0.2			0.2

Pome Fruit Indirect Arth Pests/ Beneficial species	1	2	3	Average
European red mite/ Twospotted spider mite	9.4	9.1	11.7	10.1
San Jose Scale	15.2	19.0	13.7	15.9
Predator mites	8.3	11.2	7.1	8.9
Borers/ Ambrosia beetles	17.3	15.1	22.4	18.2
Woolly apple aphid	14.9	15.5	9.6	13.3
Potato/ White apple leafhoppers	4.6	3.4	4.9	4.3
Leafminers	1.9	6.0	2.2	3.4
Pear psylla	6.2	2.2	6.6	5.0
Rosy apple aphid	4.3	3.9	2.7	3.6
Mealybugs	1.4	1.3	0.0	0.9
Predator conservation	11.3	6.9	16.7	11.6
Apple leafcurling midge	1.3	5.6	1.6	2.8
Rust mites	3.0	0.9	0.8	1.6
(write in) Parasitic wasps	0.2			0.2
(write in) Oystershell scale	0.6			0.6
Peach Diseases	1	2	3	Average
Brown rot	21.7	24.7	29.9	25.4
Bacterial spot	13.8	0.6	22.6	12.3
Peach leaf curl	13.3	14.9	11.5	13.2
Powdery mildew	10.7	8.4	6.6	8.6
X-disease	1.7	1.3	5.2	2.7
Perennial canker	15.2	5.8	10.1	10.4
Peach scab	4.8	5.8	2.8	4.5
Phytophthora rots	0.7	0.0	3.8	1.5
Plum pox	5.2	5.2	0.0	3.5
Winter kill	8.6	16.2	6.9	10.6
Rusty spot	1.9	0.0	0.7	0.9
PGRs to promote dormancy	2.4	13.6		8.0
(write in) Frost		3.2		3.2
Peach Direct (fruit-attacking) Insect Pests	1	2	3	Average
Brown marmorated & other stink bugs	17.2	23.3	28.4	22.9
Plum curculio	19.2	13.2	15.1	15.8
Oriental fruit moth	18.7	10.9	19.4	16.3
Spotted wing Drosophila	14.1	14.7	14.0	14.3
Tarnished plant bug	8.6	15.5	7.6	10.5
Obliquebanded leafroller	7.6	8.5	0.4	5.5
Western flower thrips	0.8	0.0	2.5	1.1
Japanese beetle	6.3	10.9	7.2	8.1
Wasps	3.0	0.0	0.7	1.2
White "peach" (Prunicola) scale	4.5	3.1	4.7	4.1

Peach Indirect Arthropod Pests	1	2	3	Average	
Japanese beetle	15.7	17.6	19.6	17.6	
Peachtree borers	26.9	25.4	33.3	28.5	
Mites	10.9	21.1	11.8	14.6	
Scales	20.0	9.9	17.6	15.8	
American plum borer	16.0	14.1	6.7	12.3	
Green peach aphid	10.6	12.0	11.0	11.2	
Cherry Arthropod Pests	1	2	3	Average	
Spotted wing Drosophila	22.0	25.0	34.5	27.2	
Plum curculio	14.2	10.6	14.9	13.3	
Cherry fruit flies	18.9	22.0	16.1	19.0	
Japanese beetle	10.6	9.1	12.2	10.6	
Peachtree borers	10.4	9.8	10.2	10.1	
Brown marmorated stink bug	5.7	12.1	5.9	7.9	
Aphids	9.1	7.6	2.7	6.5	
American plum borer	3.1	3.8	1.2	2.7	
Scales	6.0	0.0	2.4	2.8	
Cherry Diseases/Disorders	1	2	3	Average	
Brown rot	28.9	26.5	28.8	28.1	
Bacterial canker	14.4	10.8	25.5	16.9	
Leaf spot	9.4	9.6	10.9	10.0	
X-disease	0.8	3.6	5.2	3.2	
Fruit cracking	18.1	19.9	16.9	18.3	
Black knot	6.9	10.8	8.6	8.8	
Viruses	5.6	9.6	2.2	5.8	
Phytophthora	4.2	1.2	1.1	2.2	
Powdery mildew	11.7	4.8	0.7	5.7	
(write in) Frost		3.0		3.0	
Postharvest Issues	1	2	3	Average	
Post-harvest decay management	18.2	16.7	17.9	17.6	
GAPS & Food safety	16.8	16.0	20.2	17.7	
Post-harvest drench alternatives	5.3	8.9	12.0	8.7	
Bin sanitation	8.3	10.0	6.2	8.2	
Scald	7.3	4.8	4.1	5.4	
Bitter Pit	20.5	25.7	18.2	21.5	
Packing line sanitation	1.4	0.4	0.9	0.9	
1-MCP	4.6	2.6	5.6	4.3	
CO2 Damage	1.5	2.2	0.9	1.5	
Flesh browning	7.0	4.1	2.6	4.6	
Sanitation in storage facilities (new FSMA reqmt)	2.4	2.2	8.5	4.4	<i>continued</i>

Postharvest Issues (cont.)	1	2	3	Average	
Canadian small bin controlled storages	0.8	3.0	0.0	1.3	
Ultra-low oxygen	0.7	0.0	1.5	0.7	
Soft scald	4.4	1.5	1.5	2.5	
(write in) Harvista vs. Retain	0.8			0.8	
(write in) Too much rain		0.4		0.4	
(write in) Lenticel breakdown		1.5		1.5	
Vertebrate Pests	1	2	3	Average	
Deer	26.8	28.6	25.1	26.8	
Voles	19.5	18.7	23.8	20.6	
Birds	21.2	15.5	23.5	20.0	
Rabbits	6.6	6.3	5.7	6.2	
Turkeys	2.0	5.2	7.0	4.7	
Groundhogs	5.1	6.7	5.0	5.6	
Canada geese	1.3	3.6	0.5	1.8	
Beavers	2.6	1.2	0.0	1.3	
Porcupines	0.0	0.0	2.3	0.8	
Raccoons	5.5	1.2	0.0	2.2	
Crows	8.4	11.9	7.0	9.1	
Foxes	0.2	1.2	0.0	0.5	
(write in) Coyotes	0.8			0.8	
Pest Management Education Issues	1	2	3	Average	
Workshops for advisors/growers	13.6	21.3	17.6	17.5	
Orchard demos	13.3	15.9	12.1	13.8	
Production Guidelines publication	8.4	8.8	14.1	10.4	
Web-based delivery methods	5.0	5.4	13.4	7.9	
Pesticide applicator workshops	8.8	9.2	6.4	8.1	
Pesticide safety programs	3.4	3.3	4.7	3.8	
Smart phone apps	10.8	7.1	5.4	7.8	
Consumer education	7.7	5.0	5.0	5.9	
Biocontrol demos	3.6	3.8	7.7	5.0	
Education for policy makers	7.7	4.6	2.5	4.9	
Virtual IPM wkshps based on plant growth sims	2.6	1.7	0.0	1.4	
e-version of Guidelines; web, app	4.0	1.7	9.4	5.0	
Training for pstc applicator exams	2.1	2.1	1.7	2.0	
Pesticide training for H2A/Hispanic staff	5.3	1.7		3.5	
On-farm scout training & certification	3.6	8.4		6.0	
Ground Cover Management	1	2	3	Average	
Alternatives to herbicides, mulching, cultivation	17.1	15.3	21.5	18.0	
Perennial weed management	16.3	17.0	17.8	17.0	<i>continued</i>

Ground Cover Management (cont)	1	2	3	Average	
Use of new herbicides	8.8	10.7	9.9	9.8	
Herbicide resistance	7.0	12.0	5.2	8.1	
Timing of control methods	10.2	7.3	10.4	9.3	
Winter injury, etc. from glyphosate	3.3	3.3	4.2	3.6	
Weed biology & ID	2.5	2.7	2.5	2.5	
Nutrient competition	4.9	4.7	2.2	3.9	
Best use of old herbicides	3.0	3.3	2.5	2.9	
phytotoxicity and soil health of herbicides	7.7	4.3	5.7	5.9	
Under-tree ground covers	9.1	9.3	9.4	9.3	
Biological weed control	2.8	1.0	3.2	2.3	
Organic weed control	2.7	6.0		4.3	
Weed control vs. yield	4.2	2.7		3.4	
soil health/carbon sequestration			5.7	5.7	
(write in) Herbicide damage to trees/fruit	0.6			0.6	
(write in) Mulch types & adaptability		0.3		0.3	
Application Technology Issues	1	2	3	Average	
Spray coverage vs. control	16.3	18.7	18.5	17.8	
Calibration	9.7	9.5	16.4	11.9	
Drift management	8.9	6.0	16.7	10.5	
Adjuvants w/ thinners (instead of oil)	6.0	9.5	5.7	7.1	
Phytotoxicity and fruit finish	15.1	13.0	10.2	12.8	
Canopy spray issues	6.0	3.9	3.9	4.6	
Fixed spraying systems	3.8	3.9	0.5	2.7	
Single-sided sprays in high density plantings	5.4	8.5	3.9	5.9	
Herbicide shields	2.5	1.1	3.7	2.4	
Tower sprayer options	4.9	3.5	1.8	3.4	
Application of growth regulators to canopy	4.9	8.1	2.9	5.3	
Tank mixes (synergistic or antagonistic effects)	8.9	4.9	10.2	8.0	
Crop-adapted spraying	1.7	1.4	5.5	2.9	
Better herbicide application techniques	6.0	7.7		6.9	
(write in) Terrain		0.4		0.4	
Regulatory Issues	1	2	3	Average	
Pesticide registration procedures/restrictions	12.9	11.5	13.4	12.6	
Clarification of labels	2.0	4.0	9.4	5.1	
Harmonization of labels	5.2	3.1	12.7	7.0	
Invasive species	12.8	7.1	9.6	9.8	
Production standards for imports/exports (MRLs)	2.7	0.0	4.1	2.2	
Right-to-farm/drift issues	8.1	9.7	6.6	8.1	
Smaller package sizes	2.0	2.2	8.4	4.2	
Use of "Generally Regarded As Safe" products	3.7	3.5	3.5	3.6	<i>continued</i>

Regulatory Issues (cont)	1	2	3	Average	
Labor Regulations	12.8	14.6	8.9	12.1	
Surface water regulations	1.8	1.3	2.5	1.9	
Fast-track NYS label registrations	6.2	4.9	1.5	4.2	
Updates on WPS	6.7	2.7	1.5	3.6	
Pollinator protection	3.2	6.2	10.4	6.6	
Spanish labels	2.0	2.7	3.8	2.8	
Container disposal	3.0	1.8	1.8	2.2	
Cost containment	2.2	1.3	0.0	1.2	
Food processing license fees (cider)	1.2	7.1	0.8	3.0	
Soap bars for deer control	7.4	3.5		5.5	
FSMA	3.5	12.8	1.3	5.9	
(write in) Plum pox quarantine	0.5			0.5	
General IPM Issues	1	2	3	Average	
Pesticide resistance	12.6	16.3	10.1	13.0	
Invasive/exotic species	14.5	11.8	10.6	12.3	
Weather/information delivery systems	6.5	5.7	14.8	9.0	
Cost reduction	9.1	6.9	3.7	6.6	
Pollinator conservation	8.1	4.1	9.6	7.3	
Organic production	4.8	5.3	6.9	5.7	
Pheromone technology	3.3	7.3	3.2	4.6	
OP/carbamate replacements	3.8	3.7	2.0	3.2	
Abandoned orchard impact	3.5	2.0	1.7	2.4	
IFP certification	0.8	2.4	0.0	1.1	
Groundwater monitoring	1.8	2.0	1.0	1.6	
Metrics of IPM adoption	0.2	0.8	5.9	2.3	
Impacts of product losses on mgt progs	1.1	0.8	2.0	1.3	
Drones for crop mgt	3.8	3.7	4.4	4.0	
Beneficial insects	10.5	8.6	5.9	8.3	
Pest monitoring & thresholds	11.6	13.9	11.6	12.4	
Multiple pest/disease economics & thresholds	3.8	4.5		4.2	
Climate change adaptation			6.4	6.4	