

| Northeastern IPM Center - Tree Fruit IPM Working Group | | | | | | |
|--|-----------------------|-------------|-------------|-------------|-------------|-------------|
| Ranking of Research and Extension Priorities: 6-Year Comparison | | | | | | |
| New England, NY, Canadian Fruit IPM Workshop, Burlington, VT - Oct. 18-19, 2016 (17 respondents) | | | | | | |
| | Percent Weighted Rank | | | | | |
| Pome Fruit Diseases | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Apple scab | 24.3 | 26.8 | 29.5 | 29.0 | 29.0 | 20.0 |
| Fire blight | 32.3 | 29.0 | 30.8 | 25.1 | 27.9 | 18.2 |
| Powdery mildew | 6.4 | 9.6 | 12.9 | 12.3 | 10.3 | 12.0 |
| Sooty Blotch/Flyspeck | 5.2 | 6.8 | 8.3 | 10.7 | 15.5 | 15.6 |
| Fruit Rots | 12.0 | 14.6 | 11.7 | 10.7 | 9.7 | 13.8 |
| Rust diseases | 4.0 | 2.6 | 1.8 | 4.6 | 2.9 | 7.6 |
| Replant disease | 0.8 | 2.6 | 1.2 | 4.4 | - | - |
| Anthracnose | 1.6 | 0.0 | 0.0 | 1.6 | 0.4 | 3.1 |
| Cankers | 3.6 | 4.4 | 3.4 | 0.9 | 2.7 | 4.4 |
| Root rots | 3.2 | 2.2 | 0.6 | 0.7 | 1.7 | 5.3 |
| Fabraea leaf spot | 0.0 | 1.5 | 0.9 | - | - | - |
| Phytophthora | 1.6 | - | - | - | - | - |
| Storage rots/pre-harvest sprays | 5.2 | - | - | - | - | - |
| Direct (Fruit-attacking) Pome Fruit Insect Pests | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Internal leps (Codling moth, OFM, Lesser appleworm) | 23.8 | 24.2 | 24.7 | 24.0 | 25.0 | 17.6 |
| Plum curculio | 25.9 | 20.8 | 22.4 | 19.2 | 20.6 | 16.7 |
| Apple maggot | 19.2 | 16.9 | 21.8 | 18.0 | 17.6 | 12.3 |
| Stink bugs | 17.2 | 15.9 | 18.4 | 15.1 | 11.0 | 14.1 |
| Obliquebanded leafroller | 7.1 | 10.0 | 6.0 | 9.4 | 17.6 | 16.3 |
| Spotted wing Drosophila | 2.5 | 2.9 | 2.9 | 8.4 | 1.6 | - |
| European apple sawfly | 2.5 | 3.7 | 3.2 | 4.1 | 1.8 | 9.7 |
| Tarnished plant bug (2015: Plant bugs) | 1.3 | 5.7 | 2.3 | 1.7 | 5.0 | 8.8 |
| Spotted lanternfly | 0.4 | - | - | - | - | - |
| Pome Fruit Indirect Arthropod Pests/ Beneficial species | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| European red mite/Two spotted spider mite | 18.0 | 17.8 | 24.9 | 24.4 | 25.6 | 20.0 |
| San Jose Scale | 15.9 | 23.3 | 23.5 | 17.2 | 11.2 | 12.9 |
| Predator mites | 10.5 | 10.1 | 12.5 | 13.2 | 14.2 | 10.5 |
| Borers/Ambrosia beetles | 19.7 | 18.0 | 18.0 | 12.7 | 4.3 | - |
| Woolly apple aphid | 6.3 | 10.8 | 8.7 | 8.7 | 17.6 | 11.4 |
| Potato/White apple leafhoppers | 3.3 | 5.1 | 3.5 | 8.5 | 6.1 | 15.7 |
| Leafminers | 1.7 | 3.8 | 1.2 | 5.2 | 6.7 | 8.6 |
| Pear psylla | 4.2 | 7.6 | 7.8 | 5.0 | 6.5 | 10.0 |
| Rosy apple aphid | 2.9 | 3.2 | 3.5 | 4.7 | 7.1 | 7.6 |
| Mealybugs | 0.0 | 0.4 | 0.0 | 0.2 | 0.6 | 3.3 |
| Predator conservation | 15.9 | - | - | - | - | - |
| Apple leafcurling midge | 1.3 | - | - | - | - | - |
| Rust mites | 0.4 | - | - | - | - | - |
| Cherry Arthropod Pests | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Spotted wing Drosophila | 28.7 | 19.3 | 26.8 | 24.3 | 29.1 | 17.8 |
| Plum curculio | 13.0 | 16.0 | 23.2 | 20.7 | 22.7 | 15.8 |
| Cherry fruit flies | 24.3 | 15.1 | 18.6 | 20.7 | 14.4 | 16.5 |
| Japanese beetle | 13.0 | 12.3 | 15.9 | 13.6 | 12.7 | 12.5 |
| Peachtree borers | 7.8 | 6.6 | 9.1 | 9.3 | 4.2 | 8.6 |
| Brown marmorated stink bug | 2.6 | 8.5 | 3.6 | 5.7 | 12.5 | 10.5 |
| Aphids | 3.5 | 9.9 | 0.5 | 5.0 | 3.6 | 8.6 |
| American plum borer | 6.1 | 4.2 | 0.0 | 0.7 | 0.6 | 8.6 |
| Scales | 0.9 | 8.0 | 4.1 | 0.0 | 0.3 | 1.3 |

| Cherry Diseases/Disorders | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Brown rot | 33.0 | 31.5 | 32.8 | 32.9 | 29.9 | 19.9 |
| Bacterial canker | 24.5 | 24.7 | 27.3 | 20.6 | 24.1 | 15.8 |
| Fruit cracking | 5.3 | 21.0 | 16.2 | 18.8 | 17.8 | 11.0 |
| Leaf spot | 5.3 | 4.9 | 7.6 | 11.2 | 10.5 | 12.3 |
| Powdery mildew | 0.0 | 1.9 | 2.0 | 6.5 | 2.1 | 4.1 |
| Black knot | 5.3 | 3.7 | 7.6 | 4.7 | 3.4 | 9.6 |
| X-disease | 20.2 | 5.6 | 4.0 | 2.9 | 4.7 | 11.0 |
| Phytophthora | 3.2 | 1.9 | 1.5 | 1.8 | 1.8 | 6.9 |
| Viruses | 3.2 | 4.9 | 4.0 | 0.6 | 5.5 | 9.6 |
| | | | | | | |
| Peach Direct (fruit-attacking) Insect Pests | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Brown marmorated & other stink bugs | 29.6 | 25.9 | 33.6 | 25.9 | 26.7 | 21.0 |
| Plum curculio | 16.0 | 16.3 | 19.9 | 22.4 | 18.2 | 16.7 |
| Oriental fruit moth | 20.0 | 20.1 | 24.1 | 20.5 | 20.3 | 15.9 |
| Spotted wing Drosophila | 11.2 | 13.7 | 12.4 | 17.5 | 19.1 | 18.1 |
| Tarnished plant bug | 8.0 | 13.1 | 11.6 | 9.9 | 12.7 | 15.9 |
| Obliquebanded leafroller | 2.4 | 2.9 | 2.5 | 3.8 | 1.8 | 8.7 |
| Western flower thrips | 2.4 | 1.9 | 0.0 | 0.0 | 1.2 | 3.6 |
| Japanese beetle | 10.4 | 6.1 | - | - | - | - |
| | | | | | | |
| Peach Indirect Arthropod Pests | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Peachtree borers | 31.9 | 31.1 | 33.2 | 33.8 | 35.8 | 19.6 |
| Japanese beetle | 25.2 | 20.1 | 24.9 | 24.4 | 22.2 | 21.0 |
| Green peach aphid | 10.1 | 13.6 | 14.1 | 15.1 | 9.8 | 13.3 |
| Mites | 6.7 | 12.5 | 12.4 | 13.3 | 16.5 | 16.1 |
| Scales | 16.8 | 17.4 | 14.5 | 11.6 | 6.3 | 15.4 |
| American plum borer | 9.2 | 5.3 | 2.5 | 1.8 | 8.5 | 14.7 |
| | | | | | | |
| Peach Diseases | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Brown rot | 31.9 | 32.7 | 38.3 | 30.7 | 32.0 | 19.9 |
| Bacterial spot | 19.3 | 25.1 | 30.4 | 24.9 | 22.9 | 19.1 |
| Peach leaf curl | 9.2 | 11.2 | 14.5 | 11.1 | 15.0 | 16.2 |
| Powdery mildew | 4.2 | 4.8 | 8.9 | 10.0 | 7.0 | 3.7 |
| X-disease | 8.4 | 10.8 | 7.5 | 8.4 | 6.5 | 11.8 |
| Perennial canker | 8.4 | 8.8 | 7.5 | 5.7 | 4.7 | 8.8 |
| Peach scab | 3.4 | 3.6 | 0.0 | 3.8 | 6.7 | 9.6 |
| Phytophthora rots | 4.2 | 3.2 | 3.3 | 3.1 | 2.3 | 6.6 |
| Plum pox | 2.5 | 1.6 | 6.1 | 2.3 | 2.9 | 4.4 |
| Winter kill | 8.4 | - | - | - | - | - |
| Rusty spot | 0.0 | - | - | - | - | - |
| | | | | | | |
| Vertebrate Pests | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Deer | 30.7 | 28.9 | 35.8 | 28.8 | 31.8 | 33.3 |
| Voies | 27.1 | 27.3 | 29.2 | 25.5 | 24.7 | 26.7 |
| Birds | 17.4 | 17.9 | 23.3 | 23.6 | 21.3 | 33.3 |
| Rabbits | 4.1 | 4.9 | 7.5 | 7.1 | 6.4 | 0.0 |
| Turkeys | 6.0 | 6.1 | 6.0 | 5.8 | 8.0 | 0.0 |
| Goundhogs | 3.7 | 8.6 | 3.5 | 5.5 | 5.2 | 6.7 |
| Canada geese | 0.0 | 3.3 | 0.9 | 3.6 | 1.6 | - |
| Beavers | 0.5 | 0.2 | 1.3 | 0.3 | 0.8 | 0.0 |
| Porcupines | 0.5 | 2.3 | - | - | - | - |
| Raccoons | 0.5 | 0.5 | - | - | - | - |
| Fishers | 0.0 | - | - | - | - | - |
| Crows | 6.9 | - | - | - | - | - |
| People | 2.8 | - | - | - | - | - |
| | | | | | | |

| Postharvest Issues | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Post-harvest decay management | 24.6 | 18.5 | 28.1 | 29.2 | 28.1 | 25.9 |
| GAPS & Food safety (2015: & FSMA) | 16.9 | 19.3 | 22.2 | 17.7 | 18.1 | 13.7 |
| Post-harvest drench alternatives | 8.7 | 11.2 | 15.0 | 16.4 | 21.3 | 18.7 |
| Bin sanitation | 8.2 | 9.8 | 7.2 | 9.1 | 16.8 | 19.4 |
| Scald | 9.2 | 5.3 | 5.9 | 8.6 | 9.0 | 7.2 |
| Bitter Pit | 16.4 | 22.4 | 15.7 | 6.2 | - | - |
| Packing line sanitation | 4.1 | 4.2 | 0.0 | 5.6 | 6.6 | 15.1 |
| 1-MCP | 5.6 | 4.8 | 5.6 | 5.1 | - | - |
| CO2 Damage | 1.5 | 4.5 | 2.3 | 2.1 | - | - |
| Flesh browning | 3.6 | - | - | - | - | - |
| Sanitation in storage facilities (new FSMA reqmt) | 1.0 | - | - | - | - | - |
| | | | | | | |
| Ground Cover Management | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Perennial weed management | 25.6 | 28.1 | 28.6 | 22.7 | 23.5 | 14.2 |
| Use of new herbicides | 6.7 | 12.6 | 17.3 | 16.4 | 19.1 | 12.9 |
| Timing of control methods | 9.7 | 12.6 | 17.6 | 16.4 | 15.6 | 10.2 |
| Alternatives to herbicides, mulching, cultivation | 22.7 | 18.8 | 13.6 | 15.6 | 19.1 | 17.3 |
| Herbicide resistance | 9.2 | 7.2 | 5.5 | 7.4 | 8.5 | 12.4 |
| Weed biology & ID | 5.0 | 9.1 | 5.5 | 7.4 | 3.3 | 8.9 |
| Winter injury, etc. from glyphosate | 13.4 | 6.5 | 7.8 | 7.1 | 8.1 | 9.8 |
| Nutrient competition | 5.0 | 3.5 | 1.4 | 6.0 | 2.3 | 5.3 |
| Best use of old herbicides | 0.4 | 1.6 | 2.0 | 1.1 | 0.6 | 8.9 |
| phytotoxicity and soil health of herbicides | 2.1 | - | - | - | - | - |
| | | | | | | |
| Application Technology Issues | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Spray coverage vs. control | 22.8 | 26.9 | 30.0 | 25.1 | 27.3 | 19.0 |
| Calibration | 25.0 | 24.1 | 23.9 | 21.1 | 19.2 | 17.2 |
| Drift management | 12.1 | 15.9 | 14.4 | 15.9 | 16.1 | 16.7 |
| Adjuvants w/ thinners (instead of oil) | 3.6 | 8.9 | 8.1 | 11.0 | 9.8 | 12.2 |
| Phytotoxicity and fruit finish | 12.5 | 12.9 | 13.9 | 8.7 | - | - |
| Canopy spray issues | 8.9 | 6.1 | 3.9 | 7.0 | 11.3 | 14.5 |
| Fixed spraying systems | 2.7 | 1.2 | 2.8 | 6.8 | 9.0 | 7.2 |
| Single-sided sprays in high density plantings | 1.8 | 3.0 | 2.5 | 2.6 | 6.0 | 8.6 |
| Herbicide shields | 5.4 | 1.2 | 0.6 | 1.9 | 1.3 | 4.5 |
| Tower sprayer options | 2.2 | - | - | - | - | - |
| Applic of growth regulators to canopy | 1.8 | - | - | - | - | - |
| Tank mixes (synergistic or antagonistic effects) | 1.3 | - | - | - | - | - |
| | | | | | | |
| Pest Management Education Issues | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Workshops for advisors/growers | 18.5 | 20.3 | 27.8 | 22.4 | 22.7 | 18.0 |
| Orchard demos | 15.8 | 9.3 | 14.2 | 14.8 | 17.7 | 15.6 |
| Production Guidelines publication | 17.6 | 15.7 | 20.6 | 13.4 | - | - |
| Web-based delivery methods | 12.2 | 14.9 | 17.4 | 9.5 | 16.2 | 14.7 |
| Pesticide applicator workshops | 4.5 | 6.6 | 6.1 | 9.2 | 9.1 | 10.9 |
| Pesticide safety programs | 2.3 | 3.8 | 2.0 | 9.0 | 3.9 | 8.1 |
| Smart phone apps | 6.8 | 10.9 | 5.8 | 7.5 | 8.7 | 8.1 |
| Consumer education | 6.3 | 9.1 | 4.6 | 5.6 | 8.6 | 10.0 |
| Biocontrol demos | 2.7 | 4.6 | 0.6 | 5.1 | 7.1 | 6.6 |
| Education for policy makers | 5.0 | 4.2 | 0.9 | 3.4 | 5.2 | 8.1 |
| Virtual IPM workshops based on plant growth simulations | 0.0 | 0.6 | - | - | - | - |
| e-version of Guidelines; web or app | 7.7 | - | - | - | - | - |
| training for pstc applicator exams | 0.9 | - | - | - | - | - |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| General IPM Issues | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Pesticide resistance | 15.6 | 17.4 | 22.0 | 22.6 | 22.6 | 19.8 |
| Invasive/exotic species | 18.7 | 19.6 | 24.6 | 15.6 | 25.5 | 17.6 |
| Weather/information delivery systems | 16.9 | 19.0 | 20.6 | 15.4 | 15.3 | 13.5 |
| Cost reduction | 7.1 | 6.8 | 7.7 | 10.3 | 13.9 | 9.9 |
| Pollinator conservation | 15.1 | 8.2 | 10.3 | 9.8 | - | - |
| Organic production | 6.7 | 3.8 | 4.6 | 8.9 | 6.5 | 9.0 |
| Pheromone technology | 5.3 | 10.4 | 4.0 | 6.8 | 7.9 | 9.9 |
| OP/carbamate replacements | 1.3 | 5.4 | 2.6 | 4.2 | 5.9 | 8.6 |
| Abandoned orchard impact | 0.9 | 1.6 | 0.9 | 3.3 | 2.2 | 4.5 |
| IFP certification | 0.0 | 1.0 | 0.6 | 2.8 | 0.2 | 6.3 |
| Groundwater monitoring | 0.0 | 0.8 | 0.0 | 0.5 | 0.0 | 0.9 |
| Metrics of IPM adoption | 5.8 | 5.8 | 4.6 | - | - | - |
| Impacts of potential product losses on spray progs | 2.2 | - | - | - | - | - |
| Drones for crop mgt | 0.9 | - | - | - | - | - |
| Beneficial insects | 1.3 | - | - | - | - | - |
| Pest monitoring | 2.2 | - | - | - | - | - |
| | | | | | | |
| Regulatory Issues | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 |
| Pesticide registration procedures/restrictions | 17.1 | 14.6 | 25.2 | 23.2 | 23.4 | 17.0 |
| Clarification of labels | 8.8 | 13.8 | 18.2 | 15.8 | 13.7 | 15.0 |
| Harmonization of labels | 9.3 | 8.3 | 15.7 | 14.8 | 12.4 | 11.0 |
| Invasive species | 17.1 | 14.2 | 17.6 | 12.8 | 15.8 | 7.5 |
| Production standards for imports/exports (MRLs) | 0.9 | 2.2 | 9.6 | 10.7 | 9.3 | 16.0 |
| Right-to-farm/drift issues | 4.6 | 5.9 | 8.0 | 7.9 | 13.0 | 8.0 |
| Smaller package sizes | 6.0 | 5.5 | 4.8 | 3.8 | 3.8 | 6.5 |
| Use of "Generally Regarded As Safe" products | 4.6 | 2.8 | 1.0 | 3.6 | 4.8 | 6.5 |
| Labor Regulations | 4.6 | 9.5 | 1.9 | 2.5 | - | - |
| Surface water regulations | 1.9 | 13.4 | 0.6 | 2.2 | 3.4 | 8.0 |
| Fast-track NYS label registrations | 2.3 | 0.4 | 0.3 | 1.6 | - | - |
| Updates on WPS | 7.9 | 2.8 | 0.3 | 1.1 | 0.4 | 4.5 |
| Pollinator protection | 12.0 | 6.7 | - | - | - | - |
| Spanish labels | 2.8 | - | - | - | - | - |