

## IPM techniques check list for fruit production

Acknowledgement: This checklist was developed by the MSU Fruit AoE Team and MSU IPM Program. Follow all appropriate use instructions, labels, and MSU recommendation guides. More detailed information can be found in E-154, *Michigan Fruit Management Guide*. For other publications, visit: <http://www.ipm.msu.edu/fruit.htm>

### Monitoring, forecasting

Method	Crops
Monitor on recommended schedule: detect pest presence and estimate density, location, and determine if plant is at susceptible stage, use economic thresholds	As available and appropriate
Use on-farm weather monitoring devices or weather-aided pest management service	As available and appropriate
Use pest modeling computer software or weather-aided pest management service	As available and appropriate

### Reduced-risk pesticides

Method	Crops
Incorporate EPA approved reduced-risk pesticides that are registered for use in Michigan and recommended for the crop per MSU recommendations. Follow all label instructions and environmental cautions.	Per label and MSU recommendations

### Reduced-risk technology

Method	Crops
Electronic sensing technology for sprayers (trunk and canopy)	As available and appropriate
Use of robotics and other automated equipment for weed and pest control	As available and appropriate
Use water flow meters at spray loading stations	All
Use pesticide nurse tanks to reduce pesticide transport travel	All
Limit pesticide applications to borders of plantings to manage immigrating pests or pest "hot spots"	As available and appropriate
Post harvest or dormant pesticide applications to reduce pest populations	Per MSU recommendations

### Biologically based control

Method	Crops
Pheromone mating disruption	Per label and MSU recommendations
Lure and kill insecticide products that use attractants for discrete insecticide use	Per label and MSU recommendations
Release of biological control organisms	As available and appropriate
Provide nesting structures for birds of prey, insectivorous birds, bats, native bumble bees, snakes and other pest predators	As available and appropriate
Maintain “mow-free strips” around planting perimeter for natural enemy and pollinator preservation	As available and appropriate
Alternate row mowing for insect control, natural enemy enhancement, and pollinator preservation	As available and appropriate
Provide and sequence flowering plants for nectar and pollen to enhance pollinator and natural enemy populations	As available and appropriate

### Cultural control

Method	Crops
Mound dwarf rootstock	Apple
Plant insect and disease resistant rootstocks and cultivars	As available and appropriate
Mulches, use of side delivery mower to mulch	As available and appropriate
Plant groundcovers under plants and in drive rows	As available and appropriate
Remove wild host plants (pest reservoir) adjacent to plantings	All
Remove abandoned blocks of plants (pest reservoir)	All
Remove abandoned individual woody plants	All
Fall applications of urea and other materials (compost tea, manure, compost) to enhance decomposition of leaves (reduce overwintering disease inoculum, rodent habitat)	As available and appropriate
Post leaf drop mowing (reduce overwintering disease inoculum, rodent habitat)	As available and appropriate
Removal or on-site mulching of plant prunings (pest removal)	As available and appropriate