

Research Brief #62

Fresh market growers share pest management strategies

Integrated Pest Management (IPM) combines monitoring practices with cultural, physical, and biological control strategies to manage pests with a minimum of pesticides.

With support from the Pesticide Use and Risk Reduction Project at CIAS, UW-Madison rural sociologist Pete Nowak and Extension IPM specialist Karen Delahaut surveyed Wisconsin fresh market vegetable and berry growers in 2001. They found that many fresh market vegetable and berry growers in Wisconsin use IPM practices.

“It was enlightening to learn that this group does not rely heavily on pesticides as their first line of defense when it comes to pest management,” Delahaut notes. “But my personal observation is that while growers use individual IPM practices, few have an overall understanding of IPM. Growers are often unsure of their practices and would benefit from more information on scouting and pest management.”

Who responded to the survey?

Half of the 131 growers responding to the survey owned farms of less than five acres and had farmed for less than 10 years. One-third of the growers considered themselves organic, and their farms tended to be newer than the non-organic farms.

As farm size increased, the number of organic operations decreased. Conventional farms outnumbered organic farms by five to one for operations greater than 20 acres in size. Fifty-seven percent of the growers generated under \$15,000 of income from their farm.

The most popular crops included squash, pumpkins, cucumbers, tomatoes, peppers, eggplants, and sweet corn. About one-third of the respondents grew strawberries or raspberries. Over half of the growers marketed their crops at farmers markets and roadside stands.

Pest management practices

The participating growers listed their top three weed, insect, and disease problems and indicated how they managed these problems.

Weed management was the most predictable hurdle that these growers faced. Growers employed three main strategies for weed control in vegetable production: hand weeding as needed (60%), mechanical cultivation on an entire field (57%), and crop rotations (46%). Hand weeding was more common on smaller farms, while mechanical cultivation replaced this labor-intensive activity on larger farms.

Growers were more likely to use cultural practices in vegetables than in berries to reduce weed infestations and avoid future problems. Berries are a perennial crop, limiting cultural management options like crop rotations and adjusted planting dates for weed control. Most growers employed physical management practices in berries. For berries, hand weeding was the number one strategy (44%), followed by using mulch (33%) and mechanical field cultivation (22%).

Only 17% of the growers applied herbicides regularly to vegetables while 12% did so in berries. Twenty-three percent of the growers used herbicides only as needed in vegetables, and 12% did so in berries. Diverse vegetable plantings limit herbicide use, as few herbicides are appropriate for application on multiple crops and carryover restrictions limit which crops can be planted 12 to 24 months after application.

Insect management becomes increasingly important as the size of the operation increases and fields become less diverse. Many growers took no action to manage insects (45% in vegetables and 29% in berries). Growers were likely to use insecticides only when risks or insect levels were high. Only 14% of the growers used insecticides regularly in vegetables (5% in berries).



Mulching is a commonly used weed control strategy.

Cultural insect management practices in vegetables included crop rotations, crop residue incorporation, and adjusting planting dates and locations. Some berry growers used crop rotations, eco-friendly/natural insecticide applications, scouting, and plowing down crop residues.

Disease management is most often necessary when land has been in production for many years. Disease outbreaks are more likely to occur if growers do not employ crop rotations or use varieties not bred for disease resistance.

Forty-seven percent of the growers did nothing to manage vegetable diseases, while 26% took no action to manage berry diseases. Crop rotations and disease resistant varieties were the top two disease management strategies. Twelve percent of growers used regular fungicide applications to manage vegetable diseases, and 10% did so for berry diseases. Growers also plowed down or removed diseased plant material, adjusted planting dates, and changed row spacings, density, or direction to control or prevent disease.

Specific IPM strategies

Looking for pests and problems, or **scouting**, is a basic IPM strategy. Ninety percent of these growers reported scouting on a regular basis. Almost 90% of the growers who scouted did so at least weekly; organic growers were more likely than non-organic growers to scout more than once a week. However, the researchers' personal communication with growers indicated that their scouting practices were not thorough. Reasons provided by growers for not scouting included time constraints, expense, or inappropriateness for specific pests. Only one grower did not scout because of a regular spray program.

Twenty-five percent of the growers used pheromone or blacklight **traps** to monitor economically damaging insect pests. Delahaut says, "Unfortunately, only 23% of the sweet corn growers in the survey trapped for insects, despite UW Extension programs encouraging this."

Weather information, such as accumulated degree days and seasonal changes affecting plant life cycles, can predict insect pest and disease development. Rainfall and humidity levels help

Percent of growers choosing strategies that use pesticides at three farm sizes

Pesticide	Total acres of fresh market crops			Average
	<5 acres	5-20 acres	>20 acres	
Herbicide	11%	58%	78%	41%
Fungicide	9%	28%	70%	30%
Insecticide	17%	54%	79%	46%
All pesticides	12%	47%	76%	39%

growers determine when plants are most likely to have pest problems. Half of the growers used weather information for pest forecasting.

Survey conclusions

The table above shows that as farm size increases, the percentage of growers choosing strategies that use pesticides increases. "Larger growers could reduce their pesticide use without substantial increases in labor costs by adopting IPM," Delahaut suggests. Pesticides can be used by non-organic growers as part of an IPM strategy. However, 45% of the growers surveyed felt that their neighbors don't practice IPM because they use pesticides.

Growers use different strategies depending on the pest and crop they are managing. These growers were more likely to manage weeds than insects or disease. While 37% did nothing to control insects or disease, only 6% took no action to control weeds. Growers were more likely to list chemical solutions for berry pests than for vegetable pests. As a portion of all strategies, growers selected chemical solutions more frequently for managing insects than for managing weeds or disease. Weeds can be effectively managed with physical practices (hoeing, tillage) and disease resistant cultivars are effective for managing disease. Insects can be more difficult to manage without pesticides due to migration patterns and multiple generations during the course of one growing season.

For more information, contact:

Karen Delahaut, UW Extension Entomology, 608-262-6429, kadelaha@facstaff.wisc.edu,
Pete Nowak, UW-Madison Rural Sociology, 608-265-3581, pnowak@facstaff.wisc.edu or visit <http://ipcm.wisc.edu> and <http://www.thinkIPM.org>