

# Pesticide and Nutrient Management for Orchards



**T**raditionally, pesticides and fertilizers have been an important part of growing high-quality tree fruit, but today growers are under increasing pressure to manage orchards in ways that reduce environmental, health and other risks. The public is concerned about the possibility of agricultural pesticides and fertilizers showing up in water samples taken from private wells, lakes and other water bodies. Growers have faced legal problems from pesticide drift and spills. Improved pesticide and fertilizer use is viewed as an important step in protecting the health of workers, neighbors and wildlife. This publication series treats comprehensive orchard management as a three-part process of nutrient management, safe and effective pesticide use, and integrated pest management.



The most sophisticated and effective pest management programs rely on farming systems that build soil quality and enhance the crop's ability to withstand pests through proper nutrition and crop management. Proper management of nutrients from chemical fertilizers and organic sources is critical to maximizing fruit production and preventing environmental problems. Evidence is increasing that farming practices have resulted in nitrogen (N) and phosphorus (P) finding their way into both surface and groundwater in Michigan. Managing N is challenging because trees grow for a relatively short period and have an even shorter period of significant N uptake. Nitrogen becomes available for tree use when it is converted into nitrate (NO<sub>3</sub>), and it is then also subject to movement with water. On fine-textured (clay) soils, runoff is the most serious problem. On coarse-textured (sandy) soils, percolation or leaching is the most serious problem. Part 1 of the assessment tool (page 3) will help you assess your nutrient management practices and identify areas where you can make improvements.

Safe and effective use of pesticides is fundamental to managing pests and protecting the environment. By their nature, pesticides are designed to destroy certain life processes of plants, fungi and/or insects. These same properties pose threats to humans, livestock and wildlife. Improved pesticide use can prevent pesticides from polluting surface and groundwater. At every stage, from pesticide selection to application decisions, growers have opportunities to reduce the impacts from pesticide use. Safe storage and mixing practices can prevent large quantities of pesticides from entering a drinking water supply and causing acute (immediate) health problems for people or livestock. There are many strategies to use pesticides

more efficiently without sacrificing good pest control. Some actions, such as spraying in spots or alternate rows, may reduce risks and potentially save money. Better pesticide management and practices may reduce on-farm exposures to pesticides that can result in chronic (long-term) health problems. Part 2 of the assessment tool (page 6) will help you assess your pesticide practices and identify ways to prevent pollution.

Integrated pest management (IPM) helps growers use pesticides wisely in combination with other approaches to minimize economic, health and environmental risks. IPM provides a system for growers to use knowledge instead of pesticides to control pest problems. To make good choices about control, growers need knowledge gained from training and observations in the field. This includes education about pest life cycles, scouting for pests and the impact of pesticides. IPM's systematic approach helps growers use information to make sound decisions about pest control that take into account cost, effectiveness, resistance management and potential environmental impacts. IPM emphasizes a range of options to prevent pest problems — including solutions based on mechanical (e.g., mowing or pruning) or cultural practices (e.g., planting cultivars that match site conditions or are disease resistant). With improved spray timing, IPM enables growers to use pesticides more efficiently, effectively and safely. Growers can reduce or eliminate practices such as application of broad-spectrum pesticides that disrupt natural processes for controlling pests. FAS 105, "Orchard IPM Checklist," available from your county Extension office, discusses IPM management practices for the orchard.

## What is Orchard\*A\*Syst and how can it help me protect the environment and improve pest management?

Orchard\*A\*Syst will help you better control pests while reducing environmental and health risks and improving the quality of your product.

### Part 1: Nutrient Management

This part has seven sections that help you identify areas of concern related to nutrient management and take actions to improve management practices. For each question that applies to you, select the choice that best describes your operation. Use the "Your Rank" box to fill in the number that corresponds to your choice: 3=low risk, 2=moderate risk, 1=high risk. You can identify improvements that reduce risks by referring to the descriptions to the left of the answer

you selected. Develop the Action Plan (page 11) to target activities that reduce high (1) risks.

### Part 2: Pesticide Management

This part has three sections that help you identify areas of concern related to pesticide use and take actions to prevent pollution and reduce health risks. Part 2 follows the same format as Part 1. Answer each question that applies to you by selecting from one of the three risk rankings. Add to your Action Plan (page 11) by outlining activities that will reduce high (1) risks identified in this part.

You may also want to complete the Orchard IPM Checklist (FAS 105).