

Glossary

Nutrient Management

Ammonium N: The NH_4^+ ionic form of inorganic nitrogen. Ammonium N has a positive electrical charge and is attracted to clay and organic matter. Under warm, moist soil conditions, the NH_4^+ form of N is rapidly converted to the nitrate (NO_3^-) form. Most plants can utilize both of these forms of N, though most of the nitrogen taken up by fruit trees is in the nitrate form.

Banded application: Applying chemicals such as fertilizer in a defined area near the plant. Compare with broadcast application, where chemicals are uniformly distributed.

Cover or green manure crops: A crop of close-growing grasses, legumes or small grains used primarily for seasonal protection and improvement of the soil. These crops can absorb leftover nutrients from the soil and may release them to the next crop. They may also help reduce leaching of nitrate N into groundwater. The use of cover crops is an important orchard preplant management practice. Cover crops are also used to a limited extent by some growers as a component of their orchard floor management practices in existing orchards.

Fertigation: The practice of applying N (or other nutrients) through a drip irrigation system. This practice usually results in a reduction of total N per acre and reduces the potential for leaching into groundwater by spreading out the application over time.

Legume: Any crop that has the ability to fix atmospheric N in its root system through a process known as symbiotic N fixation. Legumes such as alfalfa, clover and vetch can fix enough N for their own use and return additional N to the soil when they mature or are decomposed.

Mineralization: The microbial conversion of organic N to inorganic N (ammonium and nitrate). The process requires warm soil temperatures, usually greater than 50 degrees F, to proceed at a significant rate.

Nitrate N: The NO_3^- form of inorganic N. Nitrate N has a negative electrical charge and is repelled by clay particles and organic matter. As a result, nitrate N is very mobile in soil and moves with water as it percolates through the soil.

Nutrient management: Managing the amount, form, placement and timing of applications of plant nutrients. It includes the management of both inorganic and organic sources of nutrients.

Preplant N: Any N applied prior to orchard establishment. N may be applied to help a preplant cover crop develop adequately, but N for young trees is generally not applied until after trees have been planted. N applied too far in advance of planting the orchard is subject to potential leaching and denitrification losses before the trees have a chance to utilize it.

Realistic yield goal: A yield goal that can be obtained at least 50 percent of the time. The yield goal should be specific to the field and soil type. Excessively high yield goals can lead to overfertilization and loss of income, and it may threaten water quality.

Split applications of N: Two or more applications of N fertilizer applied at different stages of plant growth. This type of application can reduce the risk of N being lost because of wet soil conditions early in the growing season. This method is particularly effective on sandy soils to prevent N leaching and on poorly drained soils where denitrification may take place in waterlogged soils.

Pesticide Management and Integrated Pest Management

Beneficial organisms: Arthropod (insects, spiders and mites), bacterial, fungal and nematode predators and parasites of pests.

Biological control: Control of pest populations by naturally occurring or introduced beneficial organisms.

Economic threshold: Costs/benefits of using pesticides or other pest management options. Applying control measures below this level of damage cannot be justified economically. Any damage above this level requires control.

GAAMPS: Generally accepted agricultural and management practices.

Insect pheromone: Chemical compound released by insects as a mating attractant. Typically released by female insects, this sex attractant helps male insects locate female insects for mating. In pest management, pheromones can be used to help monitor insects, as attractants in mass trapping and in mating disruption strategies.

Integrated pest management: Knowledge-based pest management system that utilizes multiple strategies, tactics and tools to maintain pest damage below an economic threshold level. The system relies on scouting to determine the presence and density of pests and a knowledge of pest and crop life cycles to determine which pest management approach will be the most cost-effective while minimizing the impact on beneficial organisms and the environment.

Mass trapping: Insect control strategy that uses an attractant such as a pheromone or floral bait to lure insects into a trap.

Mating disruption (pheromone disruption): Pest management strategy that utilizes pheromones to disrupt the mating patterns of insects. The orchard is flooded with pheromones specific for the tar-

get insect so that the males are unable to locate the females. Successful mating is usually reduced, as is the need for insecticides.

Pesticide class: Classification system that groups pesticides according to chemical structure and mode of action against pests.

Resistance management: Resistance to control in pests that are repeatedly subjected to one control mechanism (e.g., repeated applications of a single insecticide). In Michigan, for example, oblique banded leafroller (OBLR) has developed resistance to organophosphate insecticides when they are used repeatedly in apple orchards. Where resistance has developed, these insecticides no longer provide effective control of OBLR. Using multiple strategies and tools helps delay or avoid the development of resistance. Mixing non-chemical controls (where available) with chemical controls and/or using chemicals from different classes can both be effective resistance management strategies.

RUP: Restricted Use Pesticide.

Rinsate: Rinse water from pesticide or fertilizer container or spray tank cleaning.

Scouting: Sampling crops to determine levels of pest populations and to assess natural mortality, plant health and populations of beneficial insects.

Trap crop: Crop that serves to attract and concentrate insect pests in an area where they can be easily controlled to reduce infestation (and pesticide applications) in the main crop. This crop can be different from the main crop or trap rows of the same crop, usually at the orchard border.

Treatment threshold: The level of a pest population at which treatment should be initiated to prevent damage greater than the cost of control.