

Some Common Questions

1. What is a pesticide? (And are herbicides included?)

The [Food and Agriculture Organization](#) defines a pesticide as “any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, or substances which may be administered to animals for the control of insects, arachnids or other pests in or on their bodies. The term includes substances intended for use as a plant growth regulator, defoliant, desiccant or agent for thinning fruit or preventing the premature fall of fruit. Also used as substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport.”

Among the most common pesticides are herbicides for weed control, insecticides for insect control and fungicides to control disease-causing fungi.

2. Aren't organic and natural pesticides safe? Why can't we just use them?

Ultimately, safety has nothing to do with whether a chemical is natural, organic or manmade. Some chemicals are inherently less harmful than other chemicals, and some are more so – regardless of how they were derived. One example: Sulfur is a naturally occurring substance often used as a fungicide by organic farmers. But many synthetically produced fungicides exhibit less inherent toxicity than sulfur.

Limiting pest control to natural and organic selections can have unintended consequences. For example, some natural and organic products are less effective at controlling pests, requiring additional treatment with a different pesticide. When products are not effective on the pests, there is also a greater likelihood of pest resistance developing.

The bottom line is that *any* registered product can be used safely if all label directions, precautions and stewardship practices are carefully followed – and *no* product should be used indiscriminately.

3. What do you mean by pest resistance?

Individual weeds, insects or plant pathogens in a pest population may contain a gene or genes or other mechanism that makes them resistant to certain pesticides. If pesticides that are similar chemically and work on a pest the same way are used continuously, resistant pests can become a significant percentage of, or even dominate, the pest population. When resistance develops, it decreases the number of choices available to control the pest. The same phenomenon happens in human health when bacteria develop resistance to commonly used antibiotics.

4. Why is rotating pesticides critical to resistance management?

Each pesticide has a physiological mode or mechanism of action – the pathway it takes to attack a pest at the tissue or cellular level. Rotating among pesticides with different modes of action and incorporating non-chemical control methods can help to prevent or manage pesticide resistance.

To choose a pesticide, read the label BEFORE you purchase the product, making sure it controls the pest, is registered on the crop or other application site, and that you can (and will) apply it according to the

label and using all precautions. If you recently used a pesticide on your target site (field, garden, lawn, house foundation, etc.), select a different mode or mechanism of action.

5. What is an “economic threshold”?

An economic threshold is the tipping point between the cost of pest management and the cost of yield or other losses attributable to competition from the pests. For example, a grower looking at the economic threshold might choose to make no additional investment in pest management if the cost of control exceeds the additional crop value produced when pests are controlled. However, a comprehensive economic analysis of whether pest management is warranted must also take into account the long-term cost of pests that are allowed to remain and reproduce, increasing the chance of future infestations and the development of pest resistance.

6. Should we really be concerned if non-chemical pest management costs more? Isn't it worth any cost?

Undoubtedly some consumers are willing to pay more for food produced naturally or organically. But not everyone has the financial resources or desire to do so. In addition, there are other costs to society that must be considered. One example: Tillage is an effective non-chemical approach for managing weeds growing in some crops. But tillage can promote soil erosion – increasing sediment in our water supplies, stripping arable soil from our croplands and diminishing our ability to meet the food demands of a growing world population.

7. How does using pesticides only as “the last line of defense” result in a more limited choice of pesticides?

Not every pesticide can be used on every pest. Many can be used only at specific stages in the life of the pest and only under certain conditions (their use impacted by weather, size of the crop, proximity to sensitive areas, etc.) Delaying until pesticides are the only remaining resort eliminates the possibility of using many products.

Some pesticides can only be used before the crop and/or pest emerges or before it reaches a certain developmental state. Those options are off the table if a “last line of defense” approach is used and treatment is delayed too long. In addition, pests allowed to infest a crop, lawn, building, etc. are typically more difficult to control and represent a larger threat to yield, quality and/or health.

8. If a product is toxic in any way – to an applicator, child, pets, birds, etc. – aren't we better off without it?

Many of the important products we use every day are harmful if used in the wrong way – from household cleaners to common medicines. We choose to use them, though, because the benefits outweigh the risks when we follow all the label directions and precautions. The same is true of pesticides. They play an important role in controlling pests that can wreak havoc in both crop and non-crop environments.

9. What do you mean when you say a product is “registered”?

The Environmental Protection Agency (EPA) has a very strict registration process for pesticides, and registered products are those that fully comply and are available for use. Manufacturers must conduct a long list of studies to gauge safety and effectiveness and must submit the results to the EPA for review. Study results determine whether the product will be registered and, if so, what language must appear on the label to protect health and the environment. In addition, pesticides must be reregistered periodically in order to remain available for use. The pesticide user has a critical role in ensuring that health and the environment are protected by diligently following the label directions and all precautions.

10. What is the relationship between IPM, organic crop production, conventional crop production and sustainability?

Integrated pest management (IPM) encompasses all the important tools and techniques used to make pest prevention and management decisions before, during and after a potential pest infestation. These tools and techniques are used in an integrated way for optimal pest control. Sustainability in pest management involves the capacity of the program to evolve as necessary and remain effective over time.

Any good farmer or gardener wants to grow crops in a sustainable way that manages pests effectively, conserves soil, water and energy, prevents environmental pollution, etc. *Organic* crop production avoids synthetic pesticides and chemical fertilizers that are part of *conventional* crop production systems. However, both organic and conventional crops, whether grown in the garden or on large fields, should rely on IPM as their sustainable approach to pest management.