Integrated Pest Management (IPM): Chemical Control (published 01-04-2025)
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This is the sixth and final article of a multi-part series on Integrated Pest Management (IPM).

In 1947, the U.S. Government enacted the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). This act regulates the distribution, sale, and use of pesticides, as well as provides strict labeling requirements on lawful pesticide usage and storage. A lot of DIYers don't realize that the end-user must apply pesticides in accordance with federal law, and "the label is the law." This article will explain key aspects of the pesticide label, which should aid the end-user in the proper selection and safe application of pesticides.

When browsing a pesticide label, you'll notice several key parts. The first is the product name. This is the brand name of the product, and is often accompanied by its purpose (e.g., "Insect Killer for Lawns"). You'll also find a "signal word" that indicates the toxicity level of the product. These three signal words are: Caution (least toxic), Warning (moderately toxic), and Danger (highly toxic). As with all chemical control, it is desirable to use the least toxic chemical to produce the desired effects.

The next label item is the active ingredients list. This is a listing of the chemicals in the product responsible for controlling the pest. These are listed as percentages. An eye-opening revelation regarding pesticide toxicity can be found here, as you will often find extremely low percentages of the actual pesticide, mixed with non-pesticide carriers.

One of the most important bits of information on the label is the target pest listing. This lists the specific pests the chemical is designed to control. As with all IPM methods, identification of the target pest is the crucial first step. It is also important to consider the life-stage of your target pest. For example, while there are a variety of chemicals effective in controlling grubs in their egg or larvae stage, they are not effective in controlling the adult (beetle) stage of the life cycle.

Also found on the label are use restrictions. A potential restriction could be a reentry interval which is how long you must wait until you can safely enter the treated area. Another restriction could be timing, such as time of day, wind speed limitations to prevent pesticide spray from drifting onto non-target species, or restrictions in and around higher-risk facilities, such as hospitals and daycare centers.

Similar to use restrictions, there are also environmental precautions. An example would be mowing low, flowering plants, such as clover, prior to application. This action will remove low-growing flowers that may attract non-target pollinators and result in a non-target species being harmed. Also be cognizant of rainwater runoff from the treated area. Chemically contaminated rainwater runoff can migrate into streams and lakes and can have a disastrous effect on aquatic life that can be very sensitive to the pesticide.

You'll also find an application rate on the label. This may vary depending on various factors, such as growth stage, or treatment schedule. Make sure you correctly identify any of the factors pertinent to your situation to prevent over or under application. Above all, DO NOT embrace the

mantra of “if a little is good, a lot is better.” In the case of chemical control, you can not only endanger yourself and other living organisms, but you will also be in violation of federal law!

Another label entry is directions for use. This will list any equipment you may need, as well as settings for your application equipment. It may also list various personal protection equipment (PPE), such as rubber gloves, goggles, and a respirator. Make sure to follow the directions precisely, as these directions are intended to minimize the end-user’s risk of exposure.

Finally, storage and disposal of pesticides is important. Most containers need to be stored in an area protected from environmental extremes, so protection from rain and freezing temperatures should be considered. Make sure you keep these chemicals out of reach of children and pets, too. When mixing chemicals, make only what you’ll need for that application. This reduces the burden of disposal and prevents unnecessary degradation of the chemical while awaiting further use.

So that’s our overview of chemical control. This is presented last as a reminder that chemical management of pests should be the last consideration after all the prior IPM control methods have been exhausted. While chemical control is often times more expensive, riskier and more effective for a shorter duration, it can sometimes be the only method that will solve your pest management problem. Make sure you follow the label guide in your selection, application, and storage of any pesticide.

Until next time, keep workin' th’ dirt!

Resources

How to choose and when to apply grub control products for your lawn, https://www.canr.msu.edu/news/how_to_choose_and_when_to_apply_grub_control_products_for_your_lawn

IPM Tactic: Chemical Control, https://extension.psu.edu/ipm-tactic-chemical-control

Occupational and Environmental Epidemiology – Pesticides, https://epi.dph.ncdhhs.gov/oee/a_z/pesticides.html

How do I ask a question?

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