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Weed Control Guide for Field Crops

SAMPLE PAGES

Purchase a complete version of E-434 from the MSU Bulletin Office Website.


See last pages of book for additional information on management of hard-to-control weeds.
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Pesticides must be registered with the U.S. Environmental Protection Agency and the Michigan Department of Agriculture before they can be legally used in Michigan. This bulletin suggests using pesticides in the management of crop pests. Purchase only those pesticide products labeled for 1) the crop you wish to use it on and 2) the pest you wish to manage on that crop. Remember, the pesticide label is the legal document on pesticide use. The label must be read carefully and all instructions and limitations followed closely. The use of a pesticide in a manner not consistent with the label can lead to the injury of crops, humans, animals and the environment, and also lead to civil fines and/or condemnation of the crop. Pesticides are management tools for the control of pests in crops but only when they are used in an effective, economical and environmentally sound manner.

See pesticide emergency information — page 182.
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Weeds reduce crop yields by competing for water, nutrients and light. Some weeds release toxins that inhibit crop growth, and others may harbor insects, diseases or nematodes that attack crops. Weeds often interfere with harvesting operations, and at times contamination with weed seeds or other plant parts may render a crop unfit for market. Profitable crop production depends on effective weed control.

Effective weed control in field crops requires the use of a combination of management techniques, including cultural methods and herbicides. Growing the same crop year after year and using the same weed control techniques encourage the development of problem weeds. Rotation of crops, herbicides and tillage methods help reduce this problem.

Cultural Control of Weeds

Crop competition is a very useful method of weed control. Maintaining production practices that optimize crop growth means the crop plants can compete more effectively with weeds. Several crop management practices can improve the competitive ability of the crop. These practices include crop and variety selection, planting date, population, soil fertility, drainage, etc. Recommended crop production practices are also beneficial weed control practices.

Crop and herbicide rotation may also be helpful in maintaining adequate weed control. Many weeds cannot tolerate crop rotation. Using the same herbicide program each year allows weeds tolerant of the herbicides to expand. Rotate herbicide programs to prevent this problem and to reduce the likelihood of herbicide-resistant weeds (e.g., triazine-resistant weeds) becoming a problem.

Cultivation

Timely, shallow cultivation may be necessary following herbicide application. Be sure to cultivate as shallowly as possible to prevent bringing new weed seeds from below the herbicide layer to the soil surface.

Do not cultivate most preemergence herbicides for at least 2 weeks after application unless weeds appear. If dry weather persists for 7-10 days after herbicide application, rotary hoe or cultivate shallowly. Delay cultivation after postemergence herbicide applications for at least 7-10 days to allow the chemical to move into weed stems and roots.

Chemical Control of Weeds

The first step for successful weed control with herbicides is to identify the weed species present. Note that some weed species are resistant to all of the present selective herbicides.

Annual weeds are easier to kill when they are small seedlings and when conditions favor rapid growth. However, crop plants are also easily injured under these conditions. Selective herbicides should control the weeds with little or no injury to the crop.

Timing and rate of application are very important with chemical weed control. Spraying at the wrong time often results in poor weed control and crop injury. No crop plant is completely resistant to injury from herbicides. Too much chemical can damage the crop.

Types of Herbicides

Chemical control of weeds can be obtained with either preplant incorporated, preemergence or postemergence herbicide applications. Many herbicides can be applied by more than one of these methods.

Preplant incorporated herbicides are compounds incorporated into the soil prior to planting. Incorporation of some of these herbicides is necessary to prevent losses of volatile active ingredients (e.g., trifluralin) or to overcome photodecomposition losses if the materials (e.g., EPTC) are left on the soil surface. Preplant incorporated herbicides have increased activity in the absence of rainfall that is required to move the herbicide into the weed-seed germination zone. This concept is often referred to as herbicide “activation.”

Advantages of preplant incorporated herbicides:

1. No weed competition to the crop with early control of weeds.
2. Weeds are already controlled when wet weather causes delays in cultivation or spraying.
3. Less reliance on rainfall to position the herbicides in the weed seed germination zone of the soil.
4. Much more effective control of some perennial weeds (nusedge) than with preemergence herbicide applications.

Disadvantages of preplant incorporated herbicides:

1. Incorporation operation represents added cost and fuel usage in herbicide application.
2. Soil compaction is increased by the incorporation operation.
3. Herbicide may be diluted by improper incorporation (too deep), resulting in reduced weed control.
4. “Streaking” pattern of good and poor weed control can result from incomplete incorporation. Two-pass incorporation helps prevent this problem.
5. Planting operations may be slowed somewhat because of the added incorporation operation.

Preemergence herbicides are compounds applied to the soil surface after the crop has been planted but before the crop seedlings emerge through the soil.
PESTICIDE EMERGENCY INFORMATION
For any type of an emergency involving a pesticide, immediately contact the following emergency information centers for assistance.
Current as of January 2010

Human Pesticide Poisoning

POISON CONTROL
From anywhere in the United States, call
1-800-222-1222

Special Pesticide Emergencies

Animal 
Poisoning

Pesticide 
Fire

Traffic 
Accident

Pesticide 
Spill

Pesticide Disposal 
Information

Your veterinarian:
Local fire department:
Local police department or sheriff’s department:
District Michigan Department of Natural Resources and Environment (MDNRE) Office Phone No.
1-800-662-9278

Animal Poison Control Center ($55 consultation fee per case)

*1-888-426-4435
*911
www.aspca.org

Poison Control Information

Michigan Clean Sweep, Michigan Department of Agriculture Environmental Stewardship Division.
Monday– Friday: 8 a.m.–5 p.m.
1-517-241-3933

* Telephone Number Operated 24 Hours

National Pesticide Information Center
Provides advice on recognizing and managing pesticide poisoning, toxicology, general pesticide information and emergency response assistance. Funded by EPA, based at Oregon State University
7 days a week; excluding holidays
6:30 a.m. – 4:30 p.m. Pacific Time Zone
1-800-858-7378
FAX: 1-541-737-0761
Web: npic.orst.edu

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