Introduction

The Insect Pest Management Guide is issued annually by the LSU AgCenter. Each edition supersedes guides for all prior years. Visit www.LSUAgCenter.com for the latest information. Call 225-578-1634 with questions about insects and arthropods and their management of them. You may also contact your county agent.

Insecticide recommendations and rates of application listed in this guide are in conformance with U.S. Environmental Protection Agency registrations and U.S. Food and Drug Administration tolerances.

Users of this guide should still read the label on the insecticide container and follow the directions and precautions on the label carefully when using the insecticides recommended in this guide.

Some insecticides registered by the U.S. Environmental Protection Agency are not included in this guide for a variety of reasons, such as their hazardous nature, lack of availability, inefficient control of pests, or higher costs for use.

Restricted Use Pesticides

Some of the pesticides or certain uses of pesticides in this publication may be classified for restricted use. The labels of those pesticides with restricted uses will contain information regarding these restrictions. Be sure to read all labels thoroughly. It is illegal to use any pesticide in a manner that is inconsistent with the label directions. Information on pesticide applicator certification programs may be obtained from the LSU AgCenter.

General Information for Users of This Guide

The following pest control recommendations are based on research conducted by LSU AgCenter faculty members in its Louisiana Agricultural Experiment Station and Louisiana Cooperative Extension Service in cooperation with the U.S. Department of Agriculture.

Pest control recommendations made by LSU AgCenter faculty are based on materials for which there is specific information regarding effectiveness under Louisiana conditions, residues that will remain on the crop at harvest, phytotoxicity, and effects on beneficial predators, parasites, honeybees, fish, and other wildlife. In addition, environmental effects, particularly as each pesticide relates to water, are strongly considered. Recommended chemicals also must be registered and labeled for use by both the Environmental Protection Agency and the Louisiana Department of Agriculture and Forestry.

New materials and formulations will be included in the recommendations only after they have been properly registered, have proven effective, and have shown the registered use will not result in a residue that exceeds the legal tolerance when applied as directed under Louisiana conditions.

These suggestions for pest control are based on the best information available for each pesticide listed. If followed carefully, they should result in satisfactory control and should not leave residues that exceed the tolerance established for any chemical on a particular crop. To avoid excessive residues on the harvested crop, follow directions carefully with respect to dosage levels, the number of applications, and the minimum interval between application and harvest. Always be sure to observe the waiting period for re-entry into the field after a pesticide application if such a period is stated on the label. Also, wear any protective clothing or devices specified on the label for applying pesticides or entry into a treated field.

The grower is responsible for residues on his or her crop as well as for problems caused by drift from the grower's property to other properties or crops.

General Precautions

All pesticides are poisonous and should always be used with caution. The following suggestions for using and handling pesticides will help minimize the likelihood of injury to humans, animals, and crops from exposure to the chemicals.

1. Always read all the label's precautionary directions before using pesticides and follow those directions exactly. Notice warnings and cautions before opening the containers. Repeat the process every time no matter how often you use a pesticide or how familiar you think you are with the directions. Apply the pesticide only in amounts and at times specified.
2. Keep pesticides out of reach of children, pets, irresponsible individuals, and livestock. Pesticides should be stored outside the house, away from food and feed or livestock, and under lock and key.
3. Always store pesticides in their original containers and keep containers tightly closed. Never keep pesticides in anything but the original containers with legible labels.
4. Never smoke or eat while applying pesticides.
5. Avoid inhaling sprays or dust. When directed on the label, wear protective clothing and an approved mask.
6. Should pesticides be accidentally spilled on the skin or clothing, remove contaminated clothing immediately and wash the contaminated skin thoroughly.
7. Bathe and put on clean clothing after spraying or dusting. If it is not possible to bathe, wash hands and face thoroughly and change clothes. Also, wear fresh clothing each day.
8. Cover food and water containers when treating in or around livestock or pet areas. Do not contaminate fishponds, streams, or lakes.
9. Do not reuse pesticide containers for any purpose.
10. Observe label directions and follow recommendations to keep the residue on edible portions of plants within the limits permitted by law.
11. If symptoms of illness occur during or shortly after dusting or spraying, call a physician or get yourself or the affected person to a hospital immediately. Also, bring a label from the container of pesticide that was used to the doctor or hospital.
12. Do not use the mouth to siphon liquids from containers or blow out clogged lines, nozzles, etc.

13. Do not spray with leaking hoses or connections.
14. Do not work in the drift of a spray or dust.
15. Confine pesticides to the property being treated. Avoid drift to adjacent properties by stopping treatment if weather conditions become unfavorable.
16. Do not apply pesticides over waterways or canals, and do not apply them to a field while it is being irrigated or if water runs off a field.
17. If laborers are working in crops with heavy foliage, such as cotton, tomatoes, peaches, citrus, etc., that have been treated with highly toxic compounds, be sure the recommended interval between the treatment and entrance into the treated area is observed. These workers should follow the same precautions given to applicators regarding clothing changes, wearing protective clothing, eating, smoking, and bathing. If a worker becomes ill while working under these conditions, call a physician immediately.

Insecticide/Acaricide Resistance Management

The insecticides recommended in this publication are important components of an integrated pest management plan. If the insecticides are not used properly, or if they are used repeatedly over time, there is a possibility that resistance to those insecticides will develop.

It is the responsibility of the producer or pesticide applicator to conserve the use of insecticides. It is important that insecticides with different mode-of-action classifications be rotated during a season. An insecticide's mode of action defines how a specific pesticide kills an insect or mite. Repeated use of pesticides with the same mode of action often will result in the development of resistance to the entire class of insecticides.

Resistance to insecticides may be defined as "a heritable change in the sensitivity of a pest population that is reflected in the repeated failure of a product to achieve the expected level of control when used according to the label recommendations for that pest species," according to the Insecticide Resistance Action Committee. Once an insect population becomes resistant to a class of insecticides, the entire class can no longer be used to manage the target insect.

While using this pest control guide, please be sure to refer to the IRAC MoA (mode of action) classifications in the final table in this publication. Be sure to keep records of the insecticides you use during the season to control pests in your crop. We encourage you to practice pesticide stewardship and rotate insecticides used during the season based on the mode-of-action classifications.

Pesticide Drift

Pesticide drift is by far the most important cause of illegal residues on forage crops. No pesticide can be applied by either aerial or ground equipment without some drift occurring. Drift can be kept to a minimum (and therefore the contamination of forage crops reduced) if certain precautions are observed. Those precautions involve the selection of the pesticide, method of application, type of formulation (dust, spray, or granular), timing of treatment, wind direction and velocity, and distance between the point of application, and the nearest forage crop downwind.

Pesticides Hazardous to Honeybees and Other Beneficial Insects

Many pesticides are highly toxic to honeybees and other beneficial insects. Farmers, beekeepers, and the pest control industry should cooperate closely to keep losses of beneficial insects to a minimum.

Certain pesticides are more toxic than others to these insects. Therefore, whenever possible, use the least toxic pesticide and apply at a time when the pollinator or beneficials are not active.

When bees are present, the safest time and method of application of pesticides should be employed. Avoid the drift of pesticides onto bee colonies or nearby crops and weeds in bloom. Do not contaminate bee drinking water.

New label statements to protect bees have been added to some labels (neonicotinoids in particular). Read and follow these statements.

Wildlife Hazards

To protect fish and other wildlife, do not apply pesticides over canals or streams, and do not allow drainage from treated fields to enter waterways immediately after application.

Pesticide Phytotoxicity

Certain chemicals may cause plant injury if used at the wrong stage of plant development or when the temperature is too high. The injury also may result when excessive dosage rates, wrong formulations, or incompatible pesticide combinations are applied. To avoid plant injury, follow recommendations precisely.

Buffers/Water pH

Water pH is a critical factor in the effectiveness of most insecticides. Since most insecticides are acid-formers, it is critical that your water pH be acidic to prevent chemical breakdown, known as hydrolysis.

The optimum pH is between 5.5 and 6.5. The best way to correct a high water pH is with a buffer because it will establish the pH so it will not fluctuate with changes in temperatures.

The water pH can be measured using a swimming pool test kit, litmus paper, or a pH meter. Use what will work best for you. Water pH is affected by temperature, sunlight, rainfall, drought, and many other factors and is seldom the same from one spray to the next. Thus, check the water pH before each spray.

Several buffers are on the market that are about equal in efficiency. Use the one available to you. You should test the effectiveness of the buffer by using 1 to 2 ounces per 50 gallons of water and then mixing and rechecking the pH. Whatever is dissolved in the water will determine how much buffer you may need. The label may say one quart, but you may need less or occasionally more.

Check each time and start with about 2 ounces per 50 gallons of water. Then add 1 ounce at a time until the correct pH is reached. Too much of a buffer will cause the water to be too acidic, which can be phytotoxic to your plants.

Buffers help to enhance the initial knockdown of your spray and give you better residual effects. That will, in the long term, reduce the number of sprays you make. Reducing the number of sprays will reduce the development of pest tolerance, harm to the environment, effects on beneficial insects (saving beneficials), and costs while also helping you to produce a good crop.

Oils as Pesticides

Oil may be used to control many pest populations of insects and mites. They may be used alone or in combination with insecticides or miticides. Oils may be used year-round simply by varying the rates for the seasons.

Examples include dormant oil, Volck oil, Superior oil, Sun Spray Ultra Fine oil, and others. Some oils can be used on a wide variety of crops such as fruits, vegetables, ornamentals, trees, flowers, and foliage plants. Others may be limited. Follow the label for proper control.

Predators and Parasites

The use of beneficial insects or predators to control pest populations is a natural phenomenon. Parasites and predators usually build up once a pest or host becomes established. In some cases, these naturally occurring controls effectively maintain pest numbers below economic thresholds.

As pest density increases, it initiates the development of the “beneficials.” Beneficial insects, however, can be purchased to supplement the natural beneficials and enhance control, thereby reducing the need for pesticide use. Beneficials always should be purchased in either the egg or immature stage to help ensure the desired control. Some adults can fly off to other areas.

Some beneficials can become a nuisance if numbers become too dense. Such a problem developed in areas with the Asian lady beetle. Another example is the small braconid wasp that will infest catalpa worms when released to control hornworms in vegetables and tobacco.

Restricted Entry Intervals (REIs)

Read the agricultural use requirements on the label very carefully to determine the restricted entry interval for a particular use of an insecticide. The restricted entry intervals may vary for different uses of the same insecticide. ALWAYS READ THE LABEL!

In Case of Poisoning

Louisiana (Nationwide) Toll-Free Poison Center
800-222-1222

24-Hour-a-Day Service
National Pesticide Information Center
800-858-7378
(800-858-PEST)
Monday-Friday, 8 a.m.-12 p.m. (Pacific Time)
www.npic.orst.edu

Pesticide Spills and Hazardous Material Cleanup
855-452-5323

Read the Pesticide Label for Your Area/Use

Louisiana State Arthropod Museum Insect and Spider Identification Services

See https://www.lsu.edu/lmnh/lsam.php for information.

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Disclaimer Statement

The pesticides recommended in this publication were registered for prescribed uses at the time of publication. Pesticide registrations are reviewed continuously. When the registration for a recommended pesticide is canceled, the LSU AgCenter no longer recommends that pesticide.

Uses of brand or trade names in this publication are for clarity and information. Such use does not imply approval of the product to the exclusion of others that may be of similar suitable composition, and it does not guarantee or warrant the standard of any given product. The lists of products provided in this publication are not intended to cover all available products.

All insecticides must be used as instructed on their labels. Most insecticides are registered for insects on particular commodities. It is a violation of federal law to use any insecticide for an insect or commodity for which it is not labeled.

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