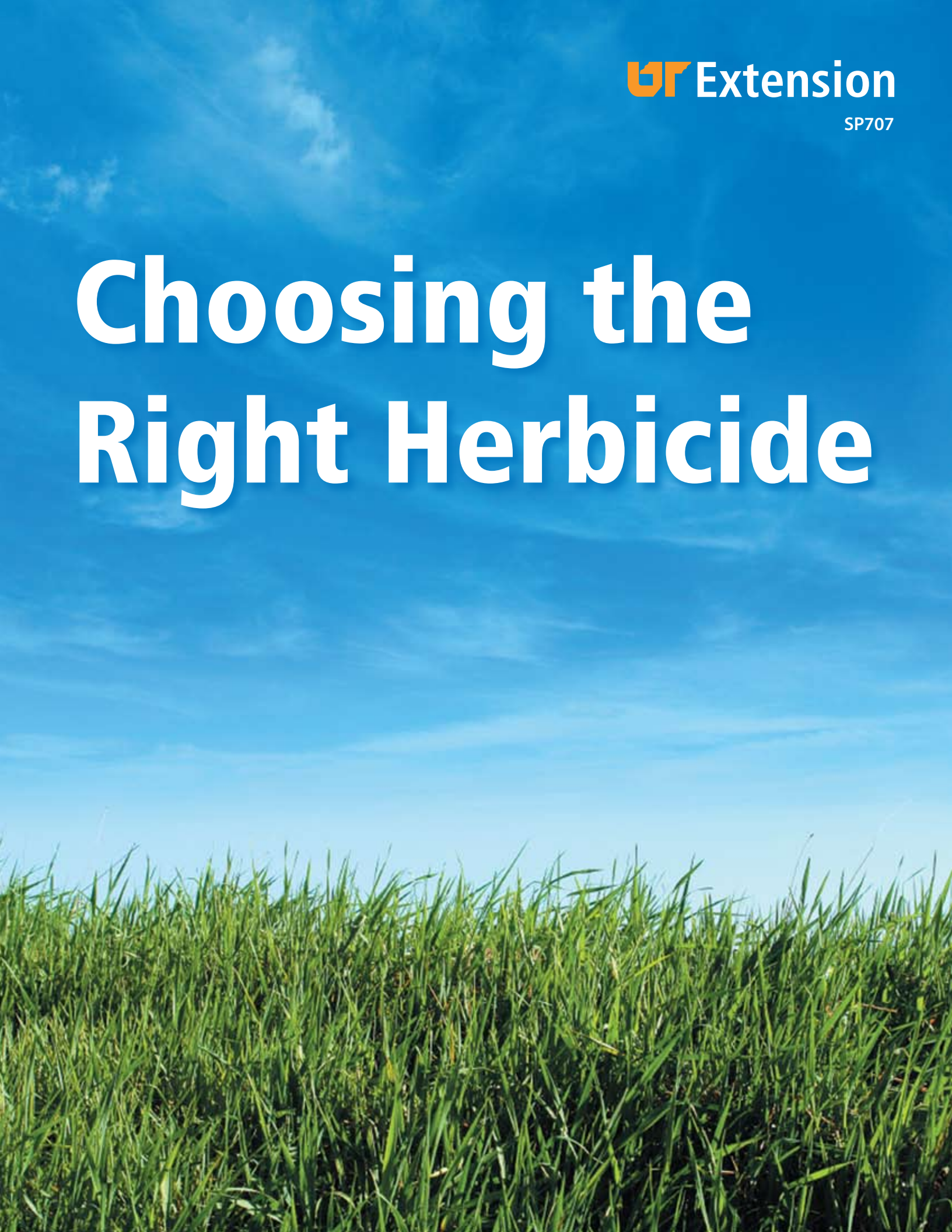
UT Extension
SP707

Choosing the Right Herbicide



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Introduction

Herbicides are chemicals used to control weeds in different crop and non-crop environments. Choosing the right herbicide for a weed control issue can be confusing, intimidating and a time-consuming process. In this day and age, shopping for any consumer product can be difficult, even if comparing prices is your major concern. However, the most frustrating part about shopping for herbicide products is trying to determine if you are actually getting the right product to control your problem weeds at an affordable price. Many retailers who sell herbicide products might not have a staff member specializing in this area, so, unfortunately, having a knowledgeable person to discuss the situation with is not always possible. In this situation, knowing how to interpret a product label can be extremely helpful. The label contains all the information you need to properly apply the product. However, there are a few things you need to consider before you purchase an herbicide.

What to know before you go

Proper identification of the target weed is the first and most important step in finding the best control measure. Weeds that you may encounter will either be classified as a **broadleaf** (i.e., wild carrot, chickweed, dandelion, etc.); a **grass** (i.e., johnsongrass, crabgrass, goosegrass, etc.); or a **sedge** (i.e., yellow nutsedge or nutgrass). In addition, weeds may also be classified by their life cycle.

- **Annual weeds** (i.e., crabgrass, chickweed) reproduce from seeds and complete their life cycle within one year.
- **Biennial weeds** (i.e., wild carrot, etc.) reproduce from seeds and complete their life cycle in two years.
- **Perennial weeds** (i.e., yellow nutsedge, dandelion, johnsongrass, etc.) continue to reproduce over an indeterminate number of years by producing specialized underground reproductive structures (i.e., rhizomes, tubers, etc.). These structures make perennial weeds very difficult to control.

If you are unable to identify the weed yourself, you can contact your local county Extension office for help. There are also many useful Internet sites to aid in identification of weeds. Some of the most user-friendly of these Web sites are the University of Tennessee Weed ID guide (http://turfweeds.utk.edu/weeddb/default.asp), the Virginia Tech Weed ID guide (http://www.ppws.vt.edu/weedindex.htm) and the University of Missouri Weed ID guide (http://weedid.missouri.edu/). After you have made a positive identification of your problem weed, you may start the process of selecting an herbicide product that will give you maximum control of the target weed.

Timing the application

Now that you have identified your target weed, figuring out how to manage it will be easier. Always remember, the more you know about your weed issue, the easier it will be to select the proper herbicide and decide the optimal application timing for maximum control. There are two main types of herbicides to choose from: **preemergence** (pre) or **postemergence** (post).

Preemergence herbicides are applied before the weed emerges and prevent the germinating seedlings from developing once the germination process begins. For preemergence herbicides to work properly, they must be applied before weed emergence and need approximately one-half inch of rainfall or overhead irrigation within one week after application. Preemergence herbicides are most effective against annual weeds like crabgrass, and generally provide poor control of most perennial weeds like dandelion.

Postemergence herbicides are used to control weeds that have emerged and are actively growing. Postemergence herbicides can either be classified as **selective** or **non-selective**. A **selective** herbicide controls certain weeds without injuring the desired plants (i.e., fruits and vegetables, ornamental plants or turf) it may contact. Selective postemergence herbicides are available for control of annual and perennial broadleaf weeds, grass weeds and sedges. **Non-selective** postemergence herbicides will severely injure or kill all weeds as well as desirable plants. Non-selective herbicides (products containing glyphosate, glufosinate, diquat or pelargonic acid, just to name a few) can be used for spot applications around desired plants as long as the user is extremely careful to avoid contact of the herbicide with the desired plant. You must use caution in applying these herbicides around any plants you want to keep.

Useful information found on the herbicide label

The weed has been identified and now, armed with additional knowledge on the types of herbicides available, you can purchase a product for your specific weed control issues. When you go to a store to make your purchase, you likely will encounter a broad offering of herbicides. The question now is, where do I start to find the right herbicide product? The place to start is comparing the various product labels. The herbicide product label contains all the information you will need to know for selecting the best product, and more importantly, it contains all the information you need to know when it comes to safely handling and applying the herbicide product you choose. The most useful information needed for successful weed control includes:

1. **Ingredients.** The ingredient section lists which active ingredients (i.e., herbicides) and inactive ingredients (i.e., inerts) are contained in the product and at which percentage these active and inactive ingredients are in relationship to the total volume of the product. Many similar products will have only slight differences in the amount of one or more active ingredients. Therefore, knowing the percentage of the active ingredient in a product will help to determine how much of a product to apply. For example, if there are two products that contain the same active ingredient(s) and the first product contains half the percentage of the active ingredient(s) compared to the second product, then apply twice as much of the first product to get similar levels of weed control provided by the second product. Checking the ingredients section will also allow you to be sure the product you are purchasing has the appropriate active ingredient or combination of active ingredients recommended for control of your specific weed issue.

DO NOT RELY ON THE TRADE NAME FOR SELECTING APPROPRIATE HERBICIDE PRODUCTS.

Often trade names will change or can be similar for products containing vastly different active ingredients.

2. **Precautionary Statements and Restricted Use.** Herbicides are generally classified for safety as "Caution" – the least toxic, "Warning" – mildly to moderately toxic, or "Danger" – very toxic/poison. The label gives specific instructions for what an applicator is to do if the product comes in contact with a person's skin or clothing, is inhaled or ingested, or if the product gets into the eyes. Some herbicides are registered as **restricted use**. This classification can be due to specific potential dangers to applicators or to the environment if the product is handled in an inappropriate manner. When an herbicide is classified as restricted use, it must be purchased and applied by a certified applicator or a person under his or her direct supervision. If you are not a certified applicator and would like to become one, please contact your local county Extension office for additional details.

3. **Specific Uses.** The label gives you specific information about where the herbicide can be applied. For many products, there is a broad range of differences in allowable use areas. For example, one product may be registered for weed control in specific situations such as tall fescue home lawns, azaleas or bermudagrass hay fields. However, other products may be less specific, allowing for use on all turf types, in all types of ornamental plant beds or all types of forages. Always make sure the desired use for the product being purchased is covered on the label. If the use is not listed, then severe injury or plant death may occur to desirable plants. In addition, it is also illegal to use an herbicide in a manner not consistent with its labeling.

4. **Personal Protective Equipment (PPE).** This section of the label contains information about the safety equipment that applicators and handlers must wear. If you do not have the type of equipment listed, then make sure to purchase it and use it appropriately. Types of safety equipment may include the use of safety glasses or goggles, chemical-resistant footwear, gloves, aprons or coveralls.

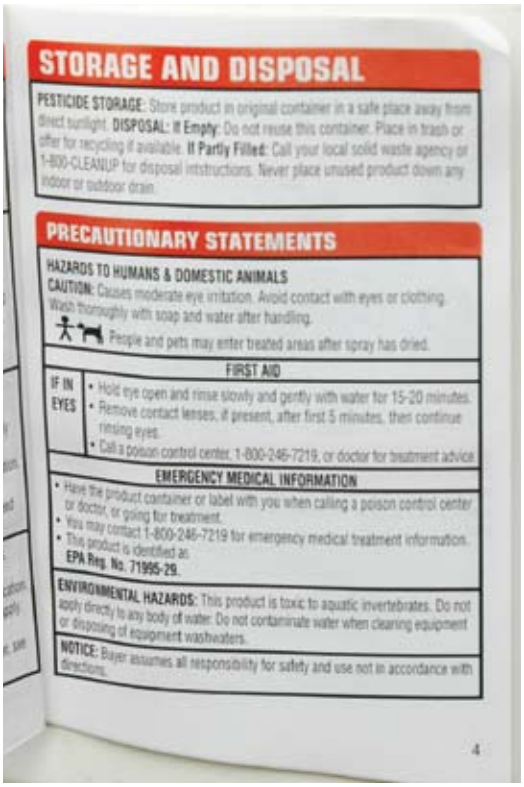
5. **Application Directions.** This section of the label contains information about the product application rate and timing of application (postemergence or preemergence). The application rate can be represented in several different ways. Application rates will often be expressed in pounds, ounces or grams per thousand square feet (1000 ft^2) or acre for dry formulations; or quarts, pints or fluid ounces per thousand square feet (1000 ft^2) or acre for liquid formulations. Depending on the product, there may also be specific recommendations for "spot treatments" of certain weed problems, whereby an applicator will mix a certain amount of the herbicide product in a specified amount of water and then spray

the target weed with this mixture through a pressurized boom or wand sprayer until the foliage is wet. Many liquid herbicide products are pre-formulated for postemergence spot spraying, so containers bought in the store are already equipped with a nozzle and some type of pump for immediate application without pre-mixing. Other liquid-based postemergence products are concentrated with a higher percentage of the active ingredient and should be mixed with water and broadcast-applied at a specific rate of material per area of land with a pressurized sprayer. In contrast, many granular types of preemergence herbicide products are recommended for use with a spreader-type applicator.

The most important thing to remember is that no matter which herbicide product is found on the shelf, this section of the label will specify exactly how best to apply the product, even if it may not be obvious by looking at the packaging. In addition, specific information regarding calibration of the appropriate sprayer/spreader and whether the product needs any special additives (such as a surfactant) may also be found in this section of the label. Basically, everything you will need to know about safely and accurately applying the product can be found in this section of the label.

6. **Weeds Controlled.** This section has a list of weeds that the product controls when applied at the appropriate rate and application timing. Some herbicides will need to be applied before weeds emerge, while others may have weed size restrictions when applied postemergence to certain weeds. Usually, specific information about the rates and timings for control of specific weeds will be found in this section.

7. **Use Precaution Statements.** This area of the label has information about specific


STORAGE AND DISPOSAL

PESTICIDE STORAGE: Store product in original container in a safe place away from direct sunlight. DISPOSAL: If Empty: Do not reuse this container. Place in trash or offer for recycling if available. If Partly Filled: Call your local solid waste agency or 1-800-CLEANUP for disposal instructions. Never place unused product down any indoor or outdoor drain.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS & DOMESTIC ANIMALS

CAUTION: Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling.

People and pets may enter treated areas after spray has dried.

FIRST AID

IF IN EYES
- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after first 5 minutes, then continue rinsing eyes.
- Call a poison control center, 1-800-246-7219, or doctor for treatment advice.

EMERGENCY MEDICAL INFORMATION
- Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
- You may contact 1-800-246-7219 for emergency medical treatment information.
- This product is identified as EPA Reg. No. 71995-29.

ENVIRONMENTAL HAZARDS: This product is toxic to aquatic invertebrates. Do not apply directly to any body of water. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

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things to do or not to do to limit potential risks. Information regarding irrigation, herbicide movement, sensitive plant precautions and other useful hints are contained in this section of the label.

Final Thoughts

Always remember that the label is the law. Pesticide use is governed by state and federal regulations, so be sure to read the entire label and follow all label directions. If you have questions or concerns, contact your local Extension agent for help. With proper handling and use, herbicides are safe and effective tools for rapidly controlling many weeds.

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http://www.utextension.utk.edu/

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