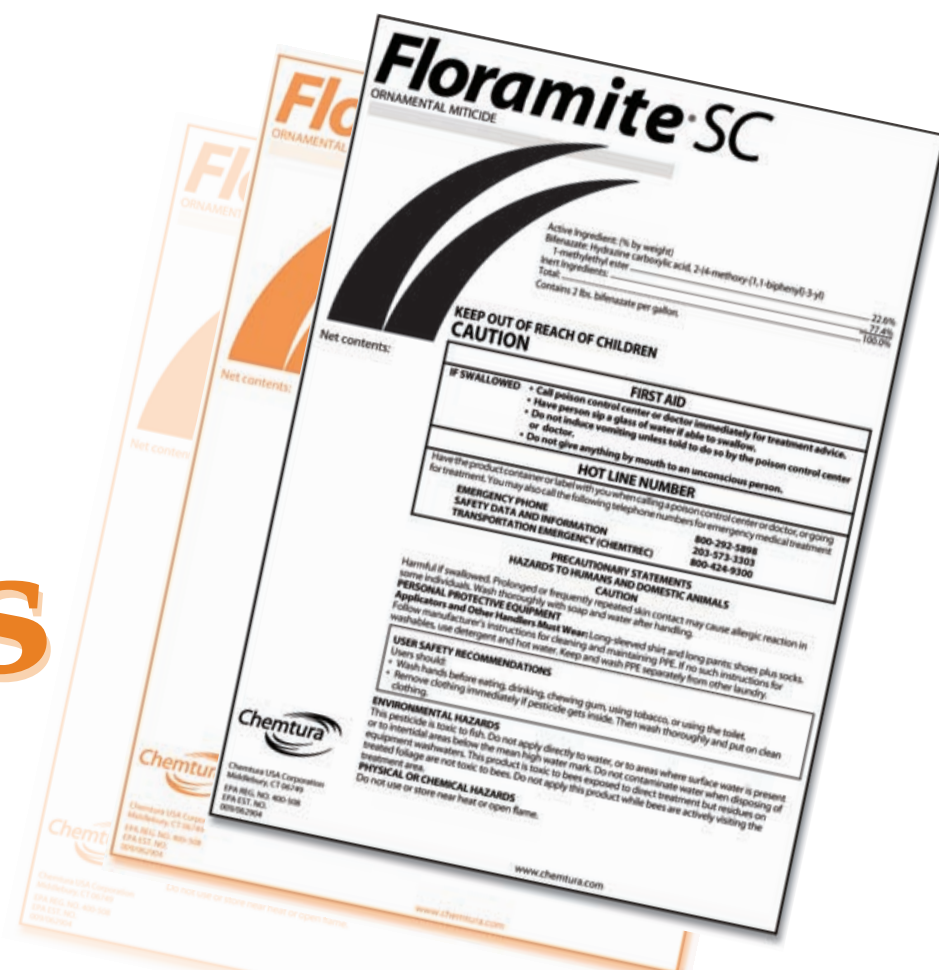


Grower 101:

Using Pesticides Correctly



The label is the primary information source for the chosen pest control product. It is the applicator's responsibility to carefully read and follow all directions on the product label.

Most growers know the importance of using pesticides in the greenhouse, but do they understand the importance of safe usage? From reading the label correctly to storing pesticides, there are many aspects growers need to consider to use pesticides properly.

By David Barcel
and Marla Faver

Pesticides are important tools in greenhouse production. Without them, it would be very difficult to produce the plant quality expected by consumers. While a greenhouse facility provides numerous benefits for producing high-quality, desirable ornamental plants, it's also an excellent place for pests. For this reason, the judicious and safe use of pesticides as part of an integrated pest management (IPM) program is an important production tool for growers.

The term pesticide is used often, but do we really understand what a pesticide is or what is included in the term pesticide? Pesticides are synthetic or natural chemicals that eliminate, prevent or control pests. What is considered a pest? A pest is a living organism that attacks us or competes with us for food, fiber or desirable plants and products.

Pests fall into five main groups: insects, including mites, ticks, spiders and nematodes; snails and slugs; vertebrates, such as rats and moles; plant disease agents, such as fungi, bacteria and viruses; and weeds, which are defined as plants out of place. The first step in successful pest control is accurate identification of the problem. The second step is identifying the appropriate method of control and then carrying out this method in the safest manner possible. If chemical control is appropriate, then the label for that chemical must be read and clearly understood before using the product.

Follow The Label

Successful pest control is the final goal for growers and applicators, but the most impor-

tant aspect of pest control is safety. It is the applicator's responsibility to carefully read and follow all directions on the product label. The label is the primary information source for the chosen pest control product. It describes the product's uses as well as its risks and benefits.

The product label includes the trade name used by the manufacturer, the common name accepted by the Environmental Protection Agency (EPA) to identify the active ingredient and the chemical name for the active ingredient. Manufacturers use trade names to sell products and distinguish them from other products containing the same active ingredient. When reading the label, you will find the active ingredient expressed as percent by weight or pounds per gallon contained in the package.

The trade name will oftentimes distinguish the type of formulation for the product. Products are available in different dry forms:

- Wettable powders (WP) are powders applied as suspensions after dispersion in water.
- Water dispersible granules (WG) are free-flowing granules that disperse or disintegrate in water to form a suspension or solution.
- Granules (GR) are free-flowing solids of defined size range that are ready to use.

Products are also available in other forms:

- Suspension concentrate (SC) is a stable suspension of active ingredient in water intended for dilution with water before use.
- Emulsifiable concentrate (EC) is a liquid, homogeneous form to be applied as an emulsion after dilution with water.
- Fumigants (FU) or aerosols (AE) release the active ingredients in the form of a smoke or very fine particle.

Also On The Label...

The name and address of the manufacturer is included on the label as well as the EPA registration number and EPA establishment numbers. The registration number verifies that the product has been registered with the U.S. EPA. The establishment number tells what facility made the product.

Each product label also contains a signal word designated by the EPA to give users an idea of the overall toxicity of the product. Pesticides are grouped into three categories based on relative toxicity. The signal words are danger (highly toxic), warning (moderately toxic) and caution (low toxicity). The skull and crossbones symbol and the word "poison" printed in red are required on all labels with the signal word danger. They may require a special permit for use.

Other precautionary statements found on the label specify hazards to humans and domestic animals along with first aid statements in the event of inadvertent exposure. Environmental hazards advise of the toxicity to wildlife and endangered species as well as water and soil.

When the EPA registers a pesticide, it determines whether the product may be sold for general or restricted use. It will be clearly stated on the label if the product is for restricted use only. Restricted-use pesticides are of greater toxicological or environmental concern

than general-use pesticides and, therefore, are more restrictive as to who can handle them.

Safe Usage

For all products labeled for use in agricultural crop production, the label contains a section called

the Agricultural Use Requirements. This section contains information about use of the Worker Protection Standard and its requirements for the protection of workers, such as training, decontamination, notification and emergency assistance. Of significant

importance is the specification of the re-entry interval (REI) in the Agriculture Use Requirement box.

Product-specific REIs can range from zero hours to upwards of seven days and determine the amount of time that must pass between pesticide application and

The World's Largest Supplier of Caladium Bulbs

Presents

The new graduating class of caladiums



Twist and Shout™, with a burnt orange background and olive spots and leaf margin, represents a new color for caladiums. It should be de-eyed to improve habit.



White Marble PAF, an improved Jackie Suthers, should be de-eyed to improve pot habit. In the landscape it can take full sun and reaches heights of 12 - 18".



Star Burst PAF, has shocking pink main veins and background with a light green margin that has dark green blotches. It is suited to all pot sizes and breaks well even without de-eying.



Raspberry Moon PAF, has a light green/yellow border and background with dark raspberry pink to red blotches which can cover up to 70% of the leaf.



Victoria PAF, with a highly ruffled margin and deep rose color, is a sport of Sweetheart. It is suited for all pot sizes and produces good habit without de-eying. It makes an outstanding basket variety.



Mt. Everest PAF, is a tall white variety with pink to red main veins. It should be de-eyed to improve pot habit. It can take full sun.



Pink Magic PAF, is a sport of the fancy-leaf variety Frieda Hemple. Similar to Frieda Hemple, it is suited for all pot sizes and has good habit without de-eying.



Candyland PAF, is a white variety with pink spots and pink or white main veins. It is suited to all pot sizes and breaks well even without de-eying. It can take full sun.



Rose Glow PAF, is a hybrid similar to Rosebud. As it matures, leaves develop white main veins that contrast well with its pink/rose background. This variety should be de-eyed to improve habit.



CALADIUMS ARE OUR BUSINESS, FROM START TO FINISH.

Abbott-Ipco, Inc.

P.O. Box 551329 • Dallas, Texas 75355-1329 • 214-341-1585 • 800-525-1379

Fax: 214-341-7873 • E-mail: abbott@abbott-ipco.com • www.abbott-ipco.com

Once applied, some pesticide products have re-entry intervals that can range from zero hours to upwards of seven days and determine the amount of time that must pass between pesticide application and the time it is permissible for a person to come in contact with the treated areas without the need for personal protective clothing.

management

the time it is permissible for a person to come in contact with the treated areas without the need for personal protective clothing.

Directions for use will tell you where the product can be applied,

what crops/plants the product can be used on, the pests it is registered to control, the use rates and the timing of applications. In the case of food crops, the label will also state how long to wait from

the time of application to harvest. The label may reference other documents for additional use directions, and it is the user's responsibility to read and follow all referenced directions as well as the



A full range of climate screens
to set your greenhouse ablaze...
— not on fire.

Svensson offers firebreak and flame retardant screens for most situations. Contact your installer – or our representative – to make your greenhouse a safer place.

 **svensson**

The fifth season.

Write in 713



Personal protective clothing is necessary when handling some products.

directions stated on the label. Additional directions and requirements can be found with pesticide dealers, company representatives, land-grant universities, extension agents, or commodity or industry organizations.

You should read the label before purchasing the product to determine if it is the correct product for the problem and if you can meet the stated requirements for safety and disposal, such as providing the required personal protective equipment for the mixer and applicator. The label should be read again just prior to use to ensure proper mixing, application, storage and disposal.

Pesticide Training And Safety

Many states require yearly worker safety training to ensure the proper use of pesticides. Employees should fully understand the product label information presented in this article, including product name, formulation and active ingredient, signal

word, precautionary statements, REI, pests controlled and labeled dosage rates. Additionally, they should know information regarding crop safety, application methods and application intervals. Equally important is having and understanding the Material Safety Data Sheet (MSDS), as this document provides important information regarding hazards, first aid measures, firefighting measures, accidental release measures, transportation and other regulatory information.

Safety training includes availability and use of required personal protective equipment (PPE), such as gloves, coveralls or spray suits, safety glasses or goggles, and respirators. For optimum protection, all PPE must fit properly and be regularly inspected for rips, tears and, in the case of respirators, air leaks. A strong odorant such as banana oil can be used to check the fit of respirators. A doctor's evaluation stating the respirator will not be an added stress to the heart or lungs may be required for some individuals. Other safety equipment should include spill containment kits, eyewash stand or bottles, and a first aid kit.

Mixing And Application Equipment

The user must know how to mix, load and apply products according to the label. Always read the label directions each time a pesticide is used. When handling pesticides, keep the pesticide container below eye level to help pre-

vent a spill on the handler. Always mix and load pesticides in a bright, ventilated area. To accurately measure pesticides for mixing, a variety of measuring equipment may be required. For dry materials,

scales that weigh in increments of ounces up to pounds will be needed. A small bucket is useful for pre-mixing dry products into slurries before adding to the spray tank. For liquid products, calibrated

measuring cups of various sizes are needed. And for products that use extremely low use rates, such as triazole plant growth regulators, you should have measuring pipettes on hand as well. ►



Top 10

"Highly Rated"
Penn State 2006

Torenia Yellow Moon®

MOON SERIES™

- Early to flower
- Wide range of exceptional colors
- Responsive to growth regulators
- Large flower and vigorous growth
- Blooms all year-round in moderate climate
- Suitable for growing in partial shade or full sunlight
- Looks outstanding in hanging baskets and containers

Torenia MOON series™



New 07

Torenia Magenta Moon®



New 07

"Highly Rated"
Penn State 2006

Torenia Velvet Moon®

The user must know how to mix, load and apply products according to the label.

Danziger - "Dan" Flower Farm Moshav Mishmar Hashiva 50297. P.O.Box 24 Beit-Dagan, Israel
Tel: 972-3-9602525, Fax: 972-3-9605896, E-mail: danziger@danziger.co.il www.danziger.co.il



Application equipment should be checked for leaks, plugged strainers, corroded fittings and worn hoses. Never leave the equipment unattended when filling. Application equipment should be calibrated on a regular basis to

ensure the pesticide is used as directed.

Referred to as a "bucket check," the user can calibrate spray volume for speed and area. One technique is to apply plain water over a given area, such as

100 sq.ft. First determine the time it takes the applicator to walk the given area, and then collect/measure the spray water applied into a bucket for that same amount of time. By doing this simple check, you will ensure that the proper

spray volume is applied, good coverage is obtained and optimum pest control is achieved.

Remember to mix only the amount of product that can be applied at the time, as having excess or shortfall only creates waste or wasted time. Be sure to clean all mixing and application equipment as well as safety equipment after each use. Empty liquid pesticide containers need to be triple rinsed before disposal, and all empty containers need to be disposed of properly.

Storing Pesticides

Pesticide products should not be left out in the open during or after mixing and applications. The package should be immediately resealed and placed in a storage container during the application. Locked chemical storage units or rooms are a must and are required by many states. Many growers have utilized ship containers for this purpose. They are strong and waterproof and have a good amount of storage area. Ventilation should be included in all storage areas to prevent a buildup of odors, maintain reasonable temperatures and provide for proper air exchange. Most products remain viable and usable for many years if kept reasonably cool and dry.

For proper understanding and use of pesticide products, be sure to make time for reading and understanding the product label and MSDS. The proper training of all employees on mixing, loading and application of products will help ensure their safe and responsible use in your operation. **GPN**

David Barcel and Marla Faver are technical sales support representatives with Chemtura Corporation, Middlebury, Conn. For more information on this article, contact Tim Hodson at thodson@sgcmail.com.

LearnMore For more information related to this article, go to www.gpnmag.com/lm.cfm/gp070704

Reader Interest Review Please write in the appropriate number on the Reader Service Card to indicate your level of interest in this article.

High 1509 Medium 1510 Low 1511

PASSION for BREEDING



Pentas lanceolata F₁

'Northern Lights Lavender'

Finally, a Pentas that thrives in both Northern and Southern regions. Tolerant to cooler temperatures with less pH sensitivity, 'Northern Lights Lavender' is a true breeding breakthrough.



Benary
www.Benary.com

Write in 736



WE KNOW MONEY DOESN'T REALLY GROW ON TREES.

That is why at Rounhouse, our pricing is as good as it gets for a quality greenhouse. That's a fact. We will meet or beat any written quotes from a certified greenhouse manufacturer. As the owners of Rounhouse, you have our word on it. Give us a call and find out how much greenhouse you can get for your dollar. You may be surprised.



Sincerely, Edgar Groce, Sonda Green & Jay Groce
Owners, Rounhouse Greenhouse Manufacturing



800.238.7289 | www.rounhouse.com
PO Box 1744, Cleveland, TX 77328

Write in 735