Introduction

If you are a commercial producer of food, fiber, forage, or horticultural crops, you probably rely on pesticides, among other practices, to protect your crops from destructive pests. You recognize that these chemicals continue to be an integral part of today’s efficient agricultural production technology; and you understand that mismanagement of pesticides can pose a risk to the environment and human health. Therefore, when using pesticides in your pest management program, it is in your best interest to follow correct safety measures, label directions, regulations, and recommended practices.

If users of agricultural pesticides are aware of the hazardous nature of these chemicals and are using good management practices, why revisit this subject? The toxic nature of this group of chemicals is reason enough for both private and commercial pesticide users and other applicators to occasionally assess their pesticide management practices. No one should become so complacent in using pesticides that they become careless and begin to use “short-cut and hurry-up” management practices. A lack of respect for the hazardous nature of many pesticides can only increase the possibility of personal injury and environmental pollution.

Regular reviews can provide users/applicators with updates on government regulations or label changes that may affect the use and handling of particular pesticides from one year to the next. Failure to stay up-to-date with current regulations and product label directions can expose the pesticide user to serious liability should environmental pollution and/or personal injury occur from noncompliance with these federal regulations.

Why Be Concerned?

In broad terms, pesticides are chemicals used to kill many types of plants (herbicides), insects (insecticides), rodents (rodenticides), and fungi (fungicides). The suffix -cide means killer of something. Therefore, the word pesticide means killer of pests. Pesticides are among the few products used intentionally as poisons. Pesticide labels include signal words that indicate the material’s toxicity or corrosiveness, that is, its capacity to damage eyes, nasal passages, or other tissues. Labels also contain statements warning of risks to pets, wildlife, birds, aquatic life, and the general environment.

Because of the toxic nature of pesticide chemicals, it is very important to use special care in the storage, handling, use, and disposal of unused material and empty containers.

Careless handling of pesticides can pose a serious human health risk from direct contact, from inhalation of spray mist, and from ingestion of contaminated food and drink. Pesticides can also be carried indoors on clothing and footwear used during application. Severely contaminated clothing should be abandoned and disposed of properly. Slightly contaminated clothing should be washed separately from other laundry. Contaminated footwear should not be taken indoors at all. Symptoms of exposure may include headache, burning eyes, skin irritation, muscular weakness, and nausea. Prolonged exposure to or ingestion of materials that are labeled highly toxic can result in more serious health risks.
Areas of Concern and Risk

The following paragraphs highlight key areas where investigations have most frequently identified agricultural pesticides as the primary cause or contributing factor to contaminated surface and groundwater (which might be a source of drinking water), fish kills, wildlife damage, and cases of personal injury and illness. Pesticide applicators, both private and commercial, must focus on these areas of concern in order to achieve maximum pest control results, while keeping environmental and human health risks to a minimum. More detailed information is available from local Extension System offices, Alabama Department of Agriculture and Industries, representatives of pesticide dealers, and other agricultural professionals. Look in your local telephone book under your county for the Extension telephone number, or click on http://www.aces.edu/counties/ to contact your county agent.

Pest Identification and Control Decisions—
Many producers waste time and money on chemical control measures that are not effective for the target pest; or the level of population infestation did not justify treatment at the time; or worse, the insect treated turned out to be beneficial. The following steps provide a sound management approach for pest identification and control decisions:

• Identify the pest (insect, disease, etc.) and study its life cycle before undertaking control measures.

• Determine the number of pests present in a specified area. Has the population or infestation reached a level to justify treatment?

• Consult the economic threshold for the pest to determine when a control treatment is economically justified. (Refer to Extension publication ANR-500A, Alabama Pest Management Handbook; see “Publications” list in this publication.)

• Evaluate all possible control options to include chemical, mechanical, biological, cultural changes, or some combination. Choose the practice shown to be most effective, least costly, and most environmentally sound.

• Seek out qualified assistance for information or help in determining what action to take, when to start, and how to carry out the control practice.

• Make sure you stay in compliance with local, state, and federal regulations that apply to your situation.

Understanding and Following Label Directions—Always read and follow label directions when selecting and using a pesticide. This sounds simple enough, but many mistakes in pesticide storage, handling, application, cleanup, and disposal can be traced to failure to carefully read and follow label directions. Agricultural producers who use a given brand product year after year often assume that label information is the same as the year before. This is not necessarily so. Active ingredients, formulating rates, and times of application may change as a result of research and field trials. Additional restrictions and directions may appear as a result of new information on the product’s potential impact on the environment and water quality, health risks to the user and others, and danger to domestic livestock and wildlife. Don’t assume that the “old standby” pesticide product that did the job yesterday will do it tomorrow. Label information can tell you if the product is effective at the target pest level you have identified. Read the label before you buy. Each pesticide has a water solubility, leachability, and persistence characteristic. You can match pesticides to best fit your field and climatic conditions to minimize pollution potential. Further guidelines are found in the Alabama Pest Management Handbook under the section “General Pesticide Information: Maintaining Water Quality.”

Worker Protection Standards—Responsible management begins with a commitment to ensure that all who handle pesticides in your operation are thoroughly trained. It is also important to ensure that they rigorously follow directions and practice common sense safety when handling these materials. Hired workers must be trained according to worker protection standards (WPS). Most label directions begin with a directions-for-use statement: “It is a violation of federal law to use this product in a manner inconsistent with its labeling.” Ignoring these statements is a label violation, and the applicator can be fined for misuse.

The U.S. Environmental Protection Agency (EPA) regulates the use of pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). This law requires Extension to conduct training in the safe and proper use of pesticides for private and commercial applications. All pesticides used in the United States must be registered by the EPA and be properly labeled. For more information on FIFRA, visit the EPA Web site: www.epa.gov. For information about pesticides and pest control, call the National Pesticide Telecommunications Network (NPTN) at (800) 858-7578, 6:30 A.M. to 4:30 P.M. eastern standard time, Mondays through Fridays. The NPTN is also a good resource for a pesticide emergency.

Personal Safety—Individuals who routinely use pesticides should not forget that these chemicals could be hazardous to their health. All actions involved in storage, transporting, mixing, field application, cleanup, and disposal provide opportunities for the applicator and other workers to have direct contact and exposure to these toxic materials. Exercising caution and safety when using pesticides should be a management priority.

The signal words on the front of each pesticide label indicate the potential toxicity of the product. Tests are performed on laboratory animals and birds to establish the toxicity ratings for a pesticide product when inhaled or ingested or from contact with eyes and skin. Potential health risks to humans from pesticides depend
largely on the toxicity of the active ingredient, type of contact, as well as amount and length of exposure to the product.

Absorption through the skin is the most common form of pesticide poisoning affecting agricultural workers. Contact and absorption can happen from accidental spills and splashes; from particle drift during mixing, application, or disposal; and during equipment cleaning operations. Poisoning from oral exposure is usually due to accidental ingestion (hand-to-mouth, etc.) or carelessness in consuming contaminated foods or from storing pesticides in unlabeled containers. After handling pesticides, always wash your hands before eating, drinking, or smoking.

The use of protective clothing and safety equipment can significantly reduce pesticide contact with the skin and eyes and absorption through the lungs. Regardless of the level of pesticide toxicity, keep the body covered by wearing a hat, long-sleeved shirt, coveralls over other garments, and socks and shoes. Wearing rubber boots, gloves, and an apron are recommended when handling and mixing moderately to highly toxic materials. Use goggles to protect the eyes when there is any chance of contact from accidental splash, drift, etc. A respirator protective device or gas mask should be used when there is risk of breathing pesticide dust and chemical vapors. The label tells which respirator to use for the product being applied when there is risk of inhalation.

By law, all pesticides must have instructions on the label for the physician in case of pesticide poisoning. Each pesticide product label also carries a statement of practical treatment. These instructions should be taken seriously. They could save your life and the lives of other workers. The WPS applies to agricultural workers performing tasks related to field operations such as cultivation and harvesting of agricultural plants (including fruits). The law also applies to employees who handle pesticides (i.e., mix, load, apply, and repair application equipment). The WPS mandates specific restricted entry intervals (REIs), personal protective equipment (PPE), emergency assistance, employee pesticide safety education, and worker access to display information. The WPS for a specific product can be found in the Agricultural Use section of a product’s Directions for Use. The WPS require agricultural employers to display certain information on individual pesticide applications at a central location during the REI and 30 days following the REI.

**Mixing and Loading**—Prevent spillage onto the soil when mixing and loading pesticide concentrates, especially near a wellhead or other water source. Mix at different field locations to avoid concentrating spilled material at one site, especially near a well or water supply, and to avoid accidental spills and splashes en route to the treatment area. If you must mix and load pesticides near a water source or storage site, consider constructing a liquid-tight, curbed concrete mixing or containment pad. Temporary containment equipment is also available. See Extension publication ANR-731, “Portable Containment System,” online at http://www.aces.edu/department/crd/publications/ANR-731.html. Carefully measure the pesticide concentrate each time you mix. Never exceed label application rates. Use a high quality measuring device for accuracy. Overdosing will increase per-acre-material cost and introduce unneeded pesticides to the environment and may result in crop damage.

**Calibrating Equipment**—Failure to correctly calibrate your sprayer can result in the application of a higher amount of pesticide than the labeled rate; this is illegal. In addition, uncalibrated equipment can lead to increased costs or control failures. Prior to the spray season, you should service sprayers and replace worn valves, nozzles, gauges, and other parts. Check to make sure there is uniform output of material from each nozzle. Water can be used to measure output unless the pesticide application is greatly different from water in weight and flow characteristics. Regularly check the spray pattern and nozzle flow. Keep spray boom at the recommended height above the sprayed surface for the nozzle spacing used in order to achieve uniform coverage and to control drift. Make sure the pH of spray water is within recommended parameters, as some pesticide chemicals decompose rapidly at a pH greater than 8.

**Pesticide Application**—Decisions on the application methods used should be guided by label directions and other considerations, including soil and environmental conditions, your pest and crop situations, and proximity of treatment area to surface water. Weather conditions and buffer zones should also be considered when spraying near residential housing or well-traveled roads, since applied material could drift and present health risks to humans and animal life. Leave a no-spray buffer strip at least 100 feet wide from surface water and at least 50 feet wide near abandoned wells and irrigation ditches. Delay application to avoid wind drift or off-site transport by heavy rain or runoff from irrigation. Use markers to prevent excessive application overlap, and be prepared to handle spills from accidents or equipment failure.

**Handling Excess Pesticides**—The best solution for storage of leftover pesticide materials is to buy only what you need. Holding unused pesticides in storage for another pest control cycle presents unnecessary risks and represents an unproductive investment of operating funds. All stored pesticides should be kept in their original containers. An inventory should be maintained of all stored material.

To safely store pesticides and retain effectiveness, you will need storage space that can be adequately
secured, where products are kept a safe distance from activities that could damage containers or cause spills. The storage area must be waterproof and preferably have the capability to maintain temperatures above freezing. Actions you can take that will greatly reduce environmental and personal injury risks from the disposal or storage of pesticide chemicals are listed below:

- Plan on mixing a specific volume so that you have empty tanks when the application job is finished. You may spray any labeled crop or site up to the labeled rate, even if pests are not present. This may help you empty a tank when you have leftover spray.
- Do not buy more material than you need. If you do, you can always take unopened containers back to the dealer for credit.
- Don’t continue to keep dated products in storage if you no longer have a use for them in your pest control program. Find someone who can legally use your excesses to avoid a waste disposal problem.
- Be alert for special days set aside for collecting leftover hazardous or other unused or unwanted materials. This will provide an opportunity for you to dispose of pesticide materials under supervision of regulatory agency personnel, who will package and transport the materials to a hazardous waste facility.

Cleaning Equipment and Containers—Cleaning spray equipment, mixing tanks, and pesticide containers at the same site over time can result in a concentration of pesticides in the soil, thereby increasing the risk of surface and groundwater contamination. Use a concrete mixing pad or a plastic temporary pad where wash and rinse water can be collected and recycled in further spraying operations. If you don’t have a pad, carry a tank of clean water to the field for an initial rinse, where wash from pesticide containers and tanks can be sprayed on site. Pressure wash or triple rinse pesticide containers immediately after emptying them, and add this rinse water to your spray tanks.

If you have been using agricultural pesticides for some time, you probably have a dealer who will take properly cleaned empty plastic containers or bags for recycling or disposal. If not, contact your local Extension office to participate in a pesticide container-recycling program. Many public and private landfills will accept clean pesticide containers that meet their disposal requirements. Burning or burying pesticide containers around the farmstead is not recommended. Either of these practices can pollute air and water, thereby affecting the health of humans, domestic livestock, and wildlife. Keep pesticides and containers away from sinkholes. All sinkholes provide a direct connection to underground aquifers that may supply water to drinking water wells.

Pesticide Management Practices in Agriculture

A Self-Assessment

The preceding discussion has highlighted those actions most frequently identified as causing environmental pollution, personal injury, and public health risks from use of agricultural pesticides. A close look reveals that, other than for occasional accidental spills, most environmental and human health risks associated with agricultural pesticide use can be eliminated or greatly reduced. Personal attitude is the key, that is, a willingness to recognize the risks involved in using pesticides and then to adjust one’s mode of operation to reduce those risks.

The following series of statements will provide you a means for evaluating whether your approach and operating practices will eliminate most risks associated with the use of pesticides. The assessment is purely confidential and solely for your benefit and use. So be hard on yourself. If you are performing a recommended practice, check Yes. But if you only perform the practice part of the time, check No; this might indicate that it is a practice and risk area that needs more attention. You are encouraged to complete all parts of the assessment and go to the last section, which provides suggestions on how to use your responses to develop a better self-help plan for safe and effective use of pesticides in agricultural production.

### How to Use This Information

The information presented here provides you, the agricultural pesticide user, with a brief review of risk areas and recommended practices to prevent environmental pollution and personal injury. The self-assessment section presents a series of statements concerning pesticide handling and storage practices. Responses to these statements will provide a useful assessment of your overall management of pesticides and will highlight those areas you should modify to further reduce your risks. The last section focuses on developing an action plan to fit your specific situation and needs, as determined by the self-assessment. The Alabama Farm*A*Syst program is strictly voluntary and confidential. It is intended solely for your use to help provide you with useful information and resources.
Understanding and Following Label Directions

Yes  No
☐  ☐ Label directions for pesticide products are read, understood, and followed when handling, using, and storing these materials.
☐  ☐ Label safety precautions are observed for cleaning equipment and for protecting myself and my workers from contact and injury.
☐  ☐ In addition to label information, I rely on the current *Alabama Pest Management Handbook* and other information from University research and Extension scientists.

Personal Safety

Yes  No
☐  ☐ I, along with others involved in my operation, have available and use all personal protective equipment (PPE) as listed on the pesticide label.
☐  ☐ Workers in my operation who handle pesticides or otherwise might have contact with these chemicals have been informed and trained according to the worker protection standards (WPS) outlined by EPA.
☐  ☐ I stay current with pesticide certification requirements and regularly attend educational meetings on pesticide management and safety.

Pest ID and Control Decisions

Yes  No
☐  ☐ Before purchasing a pesticide, I first identify the pest.
☐  ☐ Prior to using a pesticide, I always determine the extent of infestation/economic threshold and then rely on my assessment to support a pesticide treatment that complements biological, cultural, and other management practices in use.
☐  ☐ I determine that the pesticide product being used targets the specific pest of concern and is recommended by Extension personnel.
☐  ☐ Consideration is given to leachability, persistence, depth of water table, and other site conditions that could affect potential environmental impacts when selecting a pesticide product.

Mixing and Loading

Yes  No
☐  ☐ A concrete containment or portable plastic pad with curb and collection sump is used for mixing and loading operations. Spilled pesticide materials and wastewater from cleaning are collected and recycled to sprayers or applied to a site listed on the pesticide label.
☐  ☐ Field sites are used to mix and/or transfer pesticides to application equipment in order to avoid concentrating spilled material at one location and to reduce the possibility of accidental hauling mishaps.
☐  ☐ In the absence of a containment pad, mixing and loading jobs are performed at least 50 feet from and downslope of wellheads and other water sources.
☐  ☐ Pesticides are carefully measured for each mixing and loading operation, so they can be applied at rates based on the label and Extension personnel recommendations for level of pest infestation and field conditions.

Calibrating Equipment and Pesticide Application

Yes  No
☐  ☐ Routine checks are made to see that spray equipment calibration settings are correct and that spray nozzles are spraying evenly.
☐  ☐ Application of pesticides through irrigation systems (when used) is monitored closely by qualified individuals.
☐  ☐ Buffer zones of at least 100 feet are used to prevent pesticide applications from reaching surface water, irrigation ditches, abandoned wellheads, or sinkholes.
☐  ☐ Weather forecasts and other environmental conditions are used to schedule pesticide applications to avoid contamination risks from wind drift and stormwater runoff.

Yes  No
☐  ☐ Children, livestock, and pets are kept away from treated areas until the restricted entry interval (REI) has expired (see label).
Recommended basic cleanup materials are always available on site to deal with spills or personal exposure due to accidents, negligence, or equipment failure.

### Handling Excess Pesticides

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- Excess pesticide mixtures are applied at an appropriate rate to a legal site as approved by the label.
- I only buy the amount of material needed for the control treatment, and unopened containers and bags are returned to the dealer for credit.
- Old or outdated pesticides are disposed of at an approved disposal site or given to someone who can legally use them.
- I take advantage of special collection days for hazardous chemicals, where waste pesticide products are received and processed for disposal under supervision of responsible agency personnel.

### Cleaning Equipment and Containers

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- Equipment and spray tanks are triple-rinsed, and all rinsate is applied in the field.
- I always follow label instructions for cleaning (if listed) and never wash equipment or containers near well-heads, ditches, sinkholes, or other surface water sources.
- A concrete mixing/loading or temporary plastic pad is used for cleaning application equipment.
- Containers are pressure-washed through a punctured hole in the bottom or triple-rinsed at the time they are emptied and then returned to the dealer or taken to a collection site for recycling or to an approved landfill for disposal. Bags are bundled and returned to a supplier or to an approved disposal site.

### How Am I Doing?

#### A Self-Help Action Plan

Your responses to the practices and actions in the self-assessment section should help you identify things to incorporate into a plan of action to lower your risks. Developing a written plan is recommended, and it does not need to be a complicated nor time-consuming task. Using the risk area headings in the self-assessment section, list those positive practices you need to keep doing. Now, identify those actions you are doing that represent potential environmental and human health risks. These are the practices and actions to eliminate or change. There may be one or more practices in the self-assessment section you are not currently doing, but if put to use could improve your own pest management program. For example, you may construct a concrete pad with curbs where mixing, loading, and cleaning can be done without spilled material, rinsates, and wastewater contaminating the surrounding soil. If this is beyond your means, you might consider purchasing a cheaper plastic pad.

Set priorities! Some actions you are not following can be accomplished by simply exercising more caution, following label directions more closely, or training workers more thoroughly. Other high priority actions may require a modest monetary investment; for example, providing PPE (personal protective equipment) is required by law. Still other risk situations, such as the need for a more secure and weatherproof storage area, may be more expensive.

Your management plan will be a mirror of your commitment to protect the environment and human health from pesticide practices used in agriculture. It should also demonstrate your understanding of the issues, technology, regulations, and pest management strategies that can be used to sustain a productive agricultural operation, while maintaining a safe and wholesome environment. Focusing on the following concepts may enhance specific actions in your plan:

- **Practice integrated pest management (IPM).** Make a plan for a pest-control program that incorporates all available options such as crop rotations, resistant cultivars, and biocontrol agents, instead of relying strictly on pesticides.

- **Base your pest management decisions on current information and recommendations.** Make use of pest scouting information, including economic thresholds and beneficial insect populations. Set aside time to participate in pesticide education training, and read applicator study manuals provided through the Alabama Cooperative Extension System.

- **Keep records.** Every plan should place a high priority on record keeping in accordance with state and federal (USDA) laws and regulations. Private applicators of federally restricted use pesticides must maintain...
records of their applications for 2 years following application. Recording must be done no later than 14 days after application. Commercial applicators must provide the required information to growers within 30 days of the application. Information required to be reported is included in Extension publication ANR-1040, “Field Records for Restricted Use Pesticides” and is available at county Extension System offices.

✓ **Follow pesticide laws and regulations.** If you rely on pesticides as a pest control option, you must, for your own protection, keep up-to-date on laws and regulations concerning the use and handling of these toxic chemicals. Private and commercial pesticide applicators should interact regularly with the following state agencies or institutions in order to stay current on legal liabilities, changes in regulations, new developments, and recommended practices for using pesticides in agriculture:

- The Alabama Department of Agriculture and Industries enforces both state and federal pesticide regulations, issues licenses to firms selling restricted use pesticides, and oversees the certification process by which private (farmers) and commercial applicators receive permits to use pesticides that carry Restricted Use labels. The Commissioner of the Department has the sole discretion to set penalties under civil assessment, revoke permits, or assess civil fines for violation of existing laws and regulations.

- The Alabama Department of Environmental Management (ADEM) has responsibility for regulating the disposal of toxic waste. This also includes investigations of contaminated sites and pollution of surface and groundwater. Incidences of damage to aquatic organisms and wildlife should be reported to the Alabama Department of Conservation and Natural Resources (ADCNR).

- The Alabama Department of Public Health (ADPH) has responsibility for solid waste disposal. Pesticide containers that have been pressure-rinsed or properly triple-rinsed can be legally disposed of in most sanitary solid waste landfills; however, any solid waste facility can deny access if it so chooses.

- The Alabama Cooperative Extension System (ACES) provides information and education programs through local Extension offices on aspects of pest management in agricultural production. Extension also maintains up-to-date publications and electronic data on pesticide products used in Alabama.

✓ **Update Plan.** Shifts in plant and animal production practices, the growing use of pest resistant cultivars, urban encroachment, new regulations, new products, adjustments in cost and benefit analysis, and other considerations may necessitate a modification of your pest management program and plan. Periodic reviews and updates of your plan will help you make needed adjustments to maintain good practices of environmental and personal health management, while using pesticide chemicals as part of your pest control option.

### Laws regarding pesticide use include monetary penalties for misuse and are as follows:

#### 1. Civil penalties

a. Proven misuse (other than specified on the label) of restricted use pesticide: up to $10,000.

b. Using restricted use pesticide without a permit: up to $5,000.

c. Misuse of nonrestricted pesticide: up to $5,000.

#### 2. Criminal penalties

a. This generally applies to pesticide application made with the intention to cause harm financially or physically. This carries a maximum fine of $25,000 and one year in prison.

#### 3. Federal law regarding record keeping

a. Failure to comply with certified private applicator record keeping requirement.

   1. First offense: not more than $550.
   2. Subsequent offenses: not less than $1,100 for each violation.

**For More Information**

**Poison Control Center**
Nationwide 1-800-222-1222
Alabama 1-800-462-0800

**Alabama Cooperative Extension System**
http://www.aces.edu
(334) 844-4444

For more information on specific topics, call your county Extension office. Look in your telephone directory under your county’s name to find the number, or check the Extension Web site, and click on County Offices to find your county.

**Small Farmers Outreach & Technical Assistance Program**
http://saes.aamu.edu/Agb/Farmers.htm
The Small Farm Research Center
P.O Box 356
Normal, AL 35762
(256) 858-4970
The Small Farm Program at the Cooperative State Research, Education, and Extension Service (CSREES), an agency within the U.S. Department of Agriculture (USDA), is committed to meeting the needs of the small farm community.

Farm*A*Syst National Office
http://www.uwex.edu/farmasyst/
(608) 262-0024

Alabama Farm*A*Syst is a partner with the national Farm*A*Syst/Home*A*Syst (the Farm Assessment System and Home Assessment System) program, an environmental package designed to help farmers and homeowners evaluate pollution and health risks around their property.

Alabama Department of Environmental Management (ADEM)
http://www.adem.state.al.us/
(800) 533-ADEM

ADEM administers all major federal environmental laws, including the Clean Air, Clean Water, and Safe Drinking Water Acts and federal solid and hazardous waste laws.

U.S. Environmental Protection Agency (EPA)
The National Agriculture Compliance Assistance Center
http://www.epa.gov/agriculture
(888) 663-155

The Ag Center offers easy-to-understand information about environmental regulations for people in the agricultural community. It is offered by the EPA with the support of the U.S. Department of Agriculture (USDA). Information is offered about pesticides, animal waste management, surface and groundwater, tanks/containment, and solid/hazardous waste. The Ag Center also supports regional and state regulatory agencies and can provide referrals for local sources of help.

USDA Cooperative State Research, Education, and Extension Service
(USDA/CSREES)
http://www.reeusda.gov/
(202) 720-7441

CSREES is a program under the U.S. Department of Agriculture (USDA) that helps link research and scientific information at land-grant colleges to families and communities. Areas covered include agriculture, nutrition and health, youth and families, environmental stewardship, and community economic development.

USDA-Natural Resources Conservation Service (NRCS)—Alabama
http://www.al.nrcs.usda.gov/
(334) 887-4539

NRCS is the USDA agency that works at the local level to provide technical assistance to farmers and ranchers to develop conservation systems that reduce erosion, conserve and protect water, and solve other resource problems. The Alabama State Office is located in Auburn, Alabama. Look in your telephone directory for your county NRCS office.

Soil and Water Conservation Districts
http://www.nacdnet.org (National Office)
(334) 745-2511 (Lee County Office)

Soil and Water Conservation Districts work closely with the NRCS. The NRCS actually plans projects, and the Soil and Water Conservation Districts help put those projects on the ground. Soil and Water Conservation Districts are located in all of Alabama’s 67 counties. Each year county landowners are offered grant money to help install conservation practices. Offices are co-located with NRCS offices. Look in your telephone directory under your county’s name to find the number.

Alabama Department of Agriculture and Industries
http://www.agi.state.al.us/
334-240-7100

This agency enforces both state and federal pesticide regulations, issues licenses to firms selling restricted use pesticides, and oversees the certification process for permission to use pesticides that carry Restricted Use labels.

Publications

Alabama Cooperative Extension System (ACES)
http://www.aces.edu/pubs
(334) 844-1592

ACES has many publications that can be downloaded from the Extension Web site by searching for the following publication numbers. Look under Publications, and enter the publication number in the “search our site” window. These publications also may be ordered by calling (334) 844-1592 or by e-mailing publications@aces.edu for information on availability and cost:


Other Useful Web Sites

**Integrated Pest Management**
http://www.aces.edu/dept/ipm/

**Alabama Water Quality Program**
http://www.aces.edu/waterquality
Enter “Publications” and search for the following articles:

“Pesticide Management to Protect Water Quality”
“Understanding Pesticides and How They Affect Water Quality”
“Regulating Pesticide Registration and Tolerances”
“Integrated Pest Management”
“Using Pesticides on the Farm: From Selection to Disposal”
“Structural Controls and Land Management Strategies for Minimizing Pesticide Losses”
“Chemigation Safety”
“Common Sense Tips for Safe Aerial Spraying”

**Auburn University Department of Entomology and Plant Pathology**
http://www.ag.auburn.edu/dept/ent/ent.html

**Auburn University Pesticide Information**
http://www.aces.edu/department/ent/
This site contains information about laws and regulations for private applicators, pesticide labels, and links to other important information.

**EPA Office of Pesticide Programs**
(800) 535-PEST
http://www.epa.gov/pesticides/consumer.htm

**Pesticide Action Network (PAN) Pesticide Database Web Site**
General information about current toxicity and regulatory information for pesticides.
http://www.pesticideinfo.org/

**The National Pesticide Telecommunications Network**
(800) 858-PEST (7378)
General questions about pesticides are answered from 9:30 A.M. to 7:30 P.M. EST.
Fax: (202) 720-6568
e-mail: rad@nhq.nrcs.usda.gov

**Pesticide.Net**
Up-to-date news, regulatory information, registration forms and files, pesticide products, etc.
http://www.pestlaw.com/

**USDA Pesticide Record Keeping Requirements for Certified Private Applicators of Federal Restricted Use Pesticides**
USDA Pesticide Records Branch
Science Division, Agricultural Marketing Service
8700 Centreville Road, Suite 200
Manassas, VA 22110

**New Mexico Farm*A*Syst**
New Mexico State University Extension
Agricultural Information
Las Cruces, NM 88003
(505) 646-2701
Improving Pesticide Use and Integrated Pest Management
http://www.cahe.nmsu.edu/pubs/farmasyst/fasfacts.html
Also available, an online interactive risk-assessment quiz to rate your farm practices: Farm*A*Syst Pest Control Risk Assessment Quiz
http://www.cahe.nmsu.edu/pubs/farmasyst/risk_assess.html
Acknowledgments

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