



GEORGIA GREEN*A*SYST



**GREEN IND.
ASSESSMENT
SYSTEM**

Environmental Checklist for Nurseries, Greenhouses and Turfgrass Producers

Adam Speir & Sheryl Wells, Public Service Representatives
Biological and Agricultural Engineering

PRE-ASSESSMENT:

Why Should I Be Concerned?

Georgia's nurseries, greenhouses and turfgrass businesses are major contributors to Georgia's growing economy, to the beauty of Georgia homes and businesses, and to a better quality of life. When used appropriately, the products and services provided by these businesses enhance the environment of their customers. Thus, it only makes sense that these businesses should use management practices that are not damaging to natural resources and the environment.

Using "best management practices "BMPs" that are protective of the environment can provide businesses with tangible and intangible benefits. Many BMPs benefit businesses by decreasing irrigation, fertilizer, pesticide or fuel expenses. In the long-term, these BMPs may decrease labor expenses and enhance the recycling or reuse of other materials. Advertising good environmental stewardship can serve as an effective marketing tool and help build good neighbor and community relations.

Green industry businesses may impact the environment through their use of energy, water, fertilizers, pesticides and disposable products. Land management practices associated with plant and turf production can impact air, water and soil quality. Maintaining an environmental management checklist can help you monitor, assess and then work to enhance your environmental stewardship. In addition, employee training and good communications are critical for ensuring that the stewardship objectives of the business are implemented.

How Does This Assessment Help Protect Drinking Water and the Environment?

This publication is one tool that green industry companies can use to evaluate their management practices and design strategies for environmental compliance and pollution prevention.

This checklist contains the following sections:

- **Communication**
- **Production of Plants and Planting Materials**
- **Storage, Use and Disposal of Pesticides**
- **Storage and Use of Fertilizers and Petroleum Products**
- **Waste Management**
- **Monitoring and Documenting Environmental Practices**

ASSESSMENT:

Assessing Your Management Practices

The following checklists have three columns. The first column is a checkbox. The second column has a question regarding a specific environmental management practice. The third column contains either specific actions required to address the environmental management practice or a reference for this information. Questions highlighted in light green are related to a mandated state or federal regulatory requirement. References are located at the end of the publication. **If certain questions do not apply to your operation, leave them blank and do not count them in your evaluation at the end of the publication.**

After completing the checklist, look over the results and decide what environmental impacts need to be addressed within the production facility. Priorities can be set to minimize environmental impact.

SECTION 1: COMMUNICATION

Good communication means that employees at all levels have the necessary knowledge to do their jobs in a way that reflects well on the business. This is just as important for activities and actions that impact the environment as it is for conveying the right marketing messages. The actions of an employee represent the business, and a business is responsible for the actions of its employees. An employee who is not knowledgeable about environmental regulations or environmentally sound practices may use practices that are out of character for the environmental ethic of the business or farm. An uninformed employee may also do things that are either out of legal compliance or that raise concerns of clients or neighbors. Either of these instances could be costly to a business's finances and reputation.

Communication and employee education are the keys to preventing or avoiding undesired activities that are not in compliance or that could cause neighbors or clients to question a company's environmental ethic. Employees need to be informed about changes in environmental regulations and new environmental management practices. When new information is available, employees should be provided the information they need to know through training meetings or informal discussion sessions (depending on the size of the business). Employees need to be involved with recordkeeping to the extent they are able. They also need to have access to information needed to stay in compliance. This ensures that employees are aware of the changes they need to make in their job responsibilities, know where to look for information and know how to keep adequate records.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you stay informed of changes in green industry environmental regulations?	The Georgia Environmental Protection Division is responsible for enforcing state environmental regulations while the U.S. Environmental Protection Agency is responsible for enforcing federal environmental regulations. The Georgia Department of Agriculture is responsible for enforcing commercial pesticide use.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you stay informed of changes in environmental best management practices?	Cooperative Extension programs and industry organizations can provide you with updated BMP recommendations.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Are all appropriate employees trained in regulated practices and best management practices?	Providing comprehensive and understandable trainings to all relevant employees for regulated practices and best management practices is critical for them to adhere to implementing these practices correctly.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are all appropriate employees trained in the proper storage, handling, disposal and cleanup of pesticides and fertilizers?	Employers should also work to develop clear and open communication with all employees by providing them with understandable, easy-to-follow and well prioritized instructions. Employers should encourage their employees to provide recommendations to increase the effectiveness of operations and enhance compliance with regulations and best management practices.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are all appropriate employees trained to keep accurate records of fertilizer and pesticide use?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are all employees encouraged to report environmental concerns?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are employees encouraged to recommend changes in management practices to enhance environmental stewardship or efficiency of environmental practices?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you keep accurate records of employee participation in training activities?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	If you store more than 10,000 pounds of hazardous substances or more than 500 pounds of extremely hazardous substances, do you provide the State Emergency Response Team and the local fire department with a list of the hazardous substances stored?	Good recordkeeping of employee trainings helps employers ensure effective delivery of information on regulations and best management practices. These records should track both the education and competence of employees. In case of an accident or noncompliance, these records provide documentation of training. A simple way to do this with several employees is to have a sign up sheet with the date and the subject of each training.
<input type="checkbox"/> Yes <input type="checkbox"/> No		The Community Right-to-know rules, administered by the Georgia Department of Natural Resources (GDNR) require that citizens and communities be informed of chemical hazards in their area. For information on the Community Right-to-Know regulations see: www.epa.gov/emergencies/docs/chem/title3_Oct_2006.pdf To file a report with the GDNR, see: www.gaepd.org/Documents/tier2.html



Communicating information to workers helps ensure implementation of regulations and BMPs

SECTION 2: PRODUCTION OF PLANTS AND PLANTING MATERIALS

If your business produces some or all of your planting stock, the following questions will help you identify environmental concerns associated with erosion control, water management and nutrient management.

CONTROL OF EROSION AND RUNOFF

Nurseries have a high potential for runoff and erosion because of the amount of unregulated land. Roadways, greenhouse roofs and plastic container nursery pads are all impervious surfaces. Irrigation water or rainfall can readily flow off from these surfaces, carrying with it sediments, nutrients, pesticides, fuels and lubricants leaking from equipment, and other contaminants. If not directed through grassed filter strips and channels or storage basins, runoff water can contaminate ground and surface water. Many larger nurseries are designed to have runoff water directed into storage basins. Besides providing protection against water contamination, storage basins can serve as a source of recirculating irrigation water.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Have you left 25 feet of natural vegetation or allowed re-growth of native vegetation for 25 feet next to streams?	An undisturbed natural vegetative buffer of 25 feet measured from the edge of stream banks is required adjacent to any state waters with base flow that are not classified as trout streams. For trout streams, the required buffer distance is 50 feet. A stream with base flow will have water flowing in it that is not stormwater. The width of a buffer is measured horizontally from the edge of the stream channel, which means steeper slopes require more actual land to be in the buffer.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is all soil kept covered with either plastic, permanent or temporary vegetation, mulch or some other erosion control method, such as erosion blankets?	The potential for erosion is reduced if soil is covered with vegetation, plastic or mulches. The soil cover makes the soil less subject to rain drop impact, detachment and transport off-site and into water bodies. There is still potential for erosion underneath plastic.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Have you installed berms, diversions or ditches at the top of your fields to minimize the amount of water and sediment coming onto your field from neighboring fields?	Water pollution is best prevented by keeping clean water clean. Berms or diversions around production fields, compost piles, storage areas or other areas of potential contaminants can direct water away and reduce the potential for contamination.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you have means for collecting and managing stormwater runoff from parking lots, building and greenhouse roofs, and other impervious surfaces?	Stormwater can contain pollutants from land, roofs or pavement. Storage basins or areas where the runoff can infiltrate on-site are primary means for reducing the potential for chemical-laden water leaving container nursery sites. Most non-soluble pollutants will settle out in the first few days after a storm, so that water from storage basins can be reused to irrigate nursery plants. It is most effective to regularly check for nutrients in the recycled water to prevent over-application of fertilizer. Storage basins should be constructed with clay materials with good sealing characteristics or lined with an acceptable membrane liner. They should also be constructed with an emergency overflow to prevent dike damage in the event of an overflow.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you direct runoff to storage basins, constructed wetlands or infiltration areas?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are your stormwater structures and features designed to absorb, transform or otherwise reduce contaminants in runoff water?	

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do your stormwater measures and structures have the capacity to collect the first 1.2 inches of stormwater?	Water should be directed to storage basins with drainage channels or subsurface drainage tile. Storage basins should be designed to detain at least the first 1.2 inches of stormwater.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use practices such as sediment barriers or cover crops to intercept runoff and erosion as close to the source as possible?	Runoff water gains momentum as it moves downslope. Establishing barriers or vegetation at the source of runoff reduces the potential for sheet or rill erosion.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are vegetative buffers installed at field or property boundaries?	While not required, buffers between fields and at property boundaries minimize movement of contaminants between fields or into off-site drainage systems.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are vegetative buffers monitored and maintained to minimize nutrient and sediment buildup and prevent rill or channel formation?	Buffers, particularly those on wooded slopes surrounding streams, can have gullies and channels that allow runoff water to flow, unfiltered, into streams. For wooded areas where gullies have formed, placement of appropriately sized riprap in the gully will stabilize the gully and prevent further erosion. Better still, if the source of the channelized runoff can be redirected to a ditch or spread into sheet flow again, the gully might be filled in with soil, the area re-graded and vegetation planted to stabilize the buffer area. To prevent the formation of gullies, newly constructed slopes and other barren areas should be seeded or sodded as soon as possible after grading. Applying mulch over the seeded area will help control erosion while vegetation is being established. Earthen ditches should be grassed and designed to prevent excessive water velocities that would result in erosion of the channel sides (less than 5 feet per second average velocity).
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you manage existing rills and gullies by diverting water flows away from them by stabilizing them with vegetation or structural measures?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	When you replace ground cover plastics in your nursery area, do you install sediment fences, compost berms or other practices to capture and retain sediment eroded from your fields?	The potential for erosion is highest when ground cover plastic is removed from nursery areas since the soil is bare and not stabilized by vegetation.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you return captured sediment to the nursery?	Sediments captured in silt fences or other erosion control measures should be removed periodically and re-used as fill dirt or placed back where they came from. Sediment fences and other similar barriers should have the sediment removed when the buildup rises to one half the height of the barrier. Continued buildup of sediments can cause erosion control measures to fail.
<input type="checkbox"/> Yes <input type="checkbox"/> No	If you have stockpiled growing media or soil, do you keep it covered or have berms or silt fences around it to prevent movement of the material offsite or into waterways?	To prevent contamination of waterways, do not place piles of topsoil on roads, in gutters or on slopes where runoff is in direct contact with soil. Sweep up spilled soil at the end of the day. Do not wash soil into storm drains.

WATER MANAGEMENT AND CONSERVATION

There are a number of options for water supply sources, and many nurseries have more than one source option. When an operation uses 100,000 gallons or more per day (daily use averaged over a month), that source requires an agricultural water permit. For sources composed of a storage basin that is filled at least in part from one or more wells, the system of the wells and storage together would require a single agricultural water use permit. In controlling costs of production, water conservation and eliminating water waste can be cost effective.

Irrigation systems are critical to the efficient management of plants in nurseries. Systems that use monitoring equipment such as moisture sensors in the media can substantially reduce irrigation water use and reduce water and nutrient leaching from containers. These reductions can lower production costs through savings in energy use, water use and fertilizer needs. Another important consideration for irrigation is the use of appropriate applicators. Microirrigation applicators are more efficient than sprinklers, but are only appropriate for larger containers. For smaller containers in greenhouses, ebb and flow systems are very efficient. Sprinkler irrigation can be made more efficient by careful management and regular evaluation of the uniformity of the system.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you need an agricultural water use permit? If so, do you have it?	Agricultural producers are required to obtain an agricultural water use permit if they use a water source that supplies 100,000 gallons per day or more (averaged over the highest water use month of the year). If you use a well to fill a storage basin, then only one permit is required for this source. If irrigation water is taken from a storage basin that is filled only from surface water then a permit is required for that storage basin. www.gaepd.org/Documents/epdforms_wpb.html
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is your irrigation system properly designed for the needs of your plants?	Many factors impact the efficiency of an irrigation system, including bed size, water supply pressure, operating pressure of the equipment, water volume available and whether the system is automated or manual. Nozzle selection and spacing are particularly critical in ensuring uniform water distribution along with water use efficiency. To ensure efficient operation, irrigation systems should be designed by a certified irrigation designer, operated at the designated pressure, and not modified without professional advice.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you evaluate the performance of irrigation systems periodically to make sure you are applying the water effectively?	Irrigation system performance changes with age. It is useful to evaluate their performance. Auditing can be as simple as doing some calculations using flow meter readings for particular zones or as comprehensive as doing a catch can audit. Either way, determine the average depth of water being applied and use that information to determine irrigation schedules. Proper operation of irrigation systems is important to ensure plants are being irrigated properly, excess leaching is not occurring and irrigation water is used efficiently.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you regularly check nozzles or emitters for wear or clogging and other components for wear and leaks?	Wear and plugging can decrease the efficiency and uniformity of your irrigation system. Mist nozzles or microirrigation emitters can become clogged over time. Adjustment of water pH, deionization to remove salts, or filtration to remove sediments or other contaminants can decrease the potential for nozzle plugging. Washers, leaking hoses and pipes should be replaced to reduce water loss.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you manage overhead irrigation systems to enhance efficiency and reduce irrigation time?	Plug sprinkler heads that are not being used and place sprinkler heads vertically as close to the plants as possible.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you group container plants by water requirements as often as possible?	Group plants with similar water needs together, and then irrigate each group of plants according to their needs to optimize water use efficiency and improve plant growth. Water use groupings are determined by container size, substrate type and plant water needs.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you space containers under fixed irrigation to maximize plant irrigation and minimize waste between containers?	Spacing of container plants requires balancing several aspects of the plant for optimum growth and production, but closer spacing of plants reduces water waste between containers.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use irrigation practices that can be managed to meet the needs of your plants?	Programmable irrigation systems include irrigation booms with travel and flow rates adjusted to crop needs. Microirrigation systems can be set up to provide water based on moisture probes in selected plants. Sub-irrigation systems such as capillary mat irrigation apply water to the root zone.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you minimize leaching from container-grown plants?	Typical irrigation recommendations allow for 10 percent water leaching from containers during irrigation. For long hot, dry conditions, leaching is often necessary to prevent salt buildup. Measuring the soil electrical conductivity is one of many ways to monitor the salinity buildup in containers to manage the amount of leaching needed.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use rain shutoff devices to prevent irrigation system operation during or following a rainstorm?	Rain sensors on outdoor irrigation systems ensure that irrigation does not occur during rain or immediately after a rainstorm if enough rainfall was received. Many rain shutoff sensors can be set to require a certain amount of rain to fall before stopping the irrigation cycle, so that a very small amount of rainfall does not have to stop the irrigation system.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you reuse irrigation water from runoff storage basins?	Water from storage basins can be reused or recirculated for irrigation. This will reduce the need to pump water from wells, and will remove water from the storage basin so that it can capture future storm runoff.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you regularly test water in your storage basins to determine levels of nutrients, salts or pesticide residues?	Water in storage basins may contain salts, chemicals and nutrients that may adversely affect plant growth. To mitigate concerns, test irrigation water at least three times per year for salts, chemicals, nutrients and pH. Base fertilizer application rates on these results. If salt buildup occurs, blend the storage basin water with fresh water.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use the required anti-siphon devices for irrigation systems that apply chemicals or pesticides?	The Anti-Siphon Act of Georgia specifies the safety equipment required where chemicals, including fertilizer, are injected into irrigation systems. This act is enforced by the Department of Agriculture. The anti-siphon equipment must be installed between the water pump and the chemical injection system.

NUTRIENT MANAGEMENT

Careful monitoring of fertilizer applications, plant health and nutrient loss through leaching can help reduce fertilizer application needs. Irrigation practices that reduce water leaching from pots as well as ebb and flow irrigation systems can substantially reduce fertilizer losses and fertilizer needs. Slow-release fertilizers can lower labor costs associated with fertilizer applications while enhancing nutrient availability and reducing risks of nitrate contamination of ground water and phosphate contamination of surface water.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you group plants with similar nutrient needs so that they can be fertilized at the same time?	Grouping plants together according to fertilizer need is especially important if fertilizer is being applied through irrigation water.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use fertilizer application practices, such as incorporating fertilizers into the growing media, that do not favor fertilizer application to areas between containers?	Broadcasting fertilizers into containers wastes money and risks loss of fertilizer between plants, contamination of runoff water and damage to plant foliage.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use irrigation practices that minimize nutrient leaching from container plants?	Over-irrigation combined with over-fertilization can result in nutrient leaching from container-grown plants. Micro-irrigation methods with irrigation sensors result in low leaching from containers, thereby reducing fertilizer loss. Also, ebb and flow or capillary mat irrigation technologies can reduce fertilizer needs by 50 percent.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you monitor the planting media in your containers to determine nutrient levels, pH and/or electrical conductivity?	During the growing season, container substrates should be monitored every two to four weeks. The Virginia Tech Extraction Method (VTEM, or the pour through leachate collection method) enables rapid sample collection. This method involves pouring sufficient water through sample plants to collect a pre-determined amount of leachate. The electrical conductivity of the leachate is then measured.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you keep records of fertilizer application times, rates, method of application and plants receiving fertilizers?	Records are important for troubleshooting problems, tracking product use and ensuring that best management practices are being followed.



Proper irrigation and fertilization practices reduce nutrient leaching and production costs.

SECTION 3: STORAGE, USE AND DISPOSAL OF PESTICIDES

Except for those business that specialize in production of organic products, nurseries, landscape agencies, and other green industry businesses will have one or more persons on staff who have a commercial pesticide applicator’s license. Most of the questions listed in this section should be familiar to anyone holding this license. This section is subdivided into pesticide storage, pesticide mixing, pesticide use, pesticide disposal and spill cleanup. Extension bulletin 1152-7, “Pesticide Storage and Handling,” may also be used as a source of information and risk assessment.

PESTICIDE STORAGE

Pesticide storage should be designed to prevent ground or surface water contamination, minimize the potential for fires or explosions and protect the health of employees, visitors or animals.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you store your pesticides at least 100 feet from the nearest water body or well?	Providing a buffer between pesticide storage areas and water sources protects against contamination of these sources.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is your pesticide storage area locked?	Pesticides should be stored in a place that is locked and out of reach of children, animals and unqualified people.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Does your pesticide storage area have signs saying, “Pesticide Storage. Keep Out! No Smoking”?	Pesticide storage areas should be labeled clearly and contain warning signs to prevent health or safety hazards.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is your pesticide storage facility made out of fire-resistant material?	Some pesticides are flammable. If pesticides are stored with fertilizers, be aware that some fertilizers (such as ammonium nitrate) are explosive.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is the floor of your pesticide storage facility either cement or impervious to leaching?	Having a floor that is impervious to leaching protects the environment in case of pesticide spills. An impervious floor also facilitates spill cleanup.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you regularly check pesticide containers for leaks or breaks?	Check containers regularly to avoid spills. Transfer pesticides from damaged containers to a labeled container that contained exactly the same pesticide.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are dry materials stored above wet materials to minimize contamination?	Dry materials should be stored above wet materials to avoid wetting of dry materials and cross contamination. Storage shelves should be made of metal or plastic to facilitate cleaning of any spills.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you maintain an inventory of your pesticides?	Maintaining an inventory of pesticides helps you track product use and availability. It also provides documentation in case of fires, explosions or insurance claims.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is your pesticide mixing and loading area located near the storage facility to minimize the distance chemicals are carried?	Locating the storage area near the mixing and loading area minimizes the potential for spills during transport. Also, collection systems for the mixing and loading area can serve to manage spills from the storage area.

PESTICIDE MIXING

Pesticide mixing is the stage of pesticide use that has the greatest potential for causing health risks and environmental damage. This is because containers of concentrated pesticides are open and subject to spilling. Mixing can result in spills, splashing of material or backflow through water hoses. Accidental mixing of incompatible materials can result in explosions or the release of poisonous gases. To minimize risks and ensure legal use of pesticides, read pesticide labels carefully and follow instructions exactly. Always use practices that will allow spills to be contained and have spill cleanup materials on hand in case a spill occurs.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Is your pesticide mixing facility located at least 100 feet from the nearest water body or well?	Providing a buffer between mixing areas and water sources protects against contamination of these sources. If possible, locate mixing areas downslope from water bodies or wells.
<input type="checkbox"/> Yes <input type="checkbox"/> No	When mixing and loading pesticides, do you use an impermeable area that is large enough to contain spills?	Pesticides should be mixed in an area where spills can be contained. If possible, use a closed mixing and loading system.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you keep an air gap when filling pesticide tanks with water to prevent source water contamination?	To prevent back siphoning when filling tanks and potential contamination, keep the end of the water hose above the tank opening, maintaining an air gap between the hose and the changing water level in the tank.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use rinsate from sprayers or from cleaning empty containers to mix subsequent loads?	Using rinsate from sprayers and from cleaning empty containers to mix pesticides allows this contaminated water to be used productively rather than needing to be disposed of on targeted plants. (Be careful that chemicals mixed together have compatible chemistries.)
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you only apply unused pesticides and rinsate to plants listed on the label?	Unused pesticides and rinsate should be disposed of according to label directions on plants that are listed on the label.

PESTICIDE USE

Only apply pesticides according to uses designated on the label. As much as possible, minimize the need for pesticide use by planting pest- and disease-resistant varieties and using cultural practices to reduce sources of disease inoculums and maintain plant vigor. Before applying pesticides, check application equipment to make sure there are no leaks, all nozzles are functioning properly and the equipment is properly calibrated.

<input type="checkbox"/> Yes <input type="checkbox"/> No	If you or someone under your supervision applies pesticides to the land of another person, do you have a Commercial Pesticide Applicator's License?	A Commercial Pesticide Applicator's License is required for a person who applies pesticides to the lands of another for hire or directs the application of pesticides by subordinates. The Georgia Department of Agriculture is responsible for licensing www.agr.georgia.gov .
<input type="checkbox"/> Yes <input type="checkbox"/> No	If you contract for pesticide application, do you have a Pesticide Contractor's License?	A Pesticide Contractor's License is required of a person or firm that engages in contracting for pesticide application. The Georgia Department of Agriculture is responsible for licensing www.agr.georgia.gov .

<input type="checkbox"/> Yes <input type="checkbox"/> No	Does everyone who has a Pesticide Applicator's License keep their license current by obtaining the required continuing education credits each year?	Education credits must be obtained regularly to keep your license current. For a list of credit hours that you need to obtain, see: www.pestnetwork.com/continue/new%20state/georgia1.html
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you only use pesticides according to the label?	It is a violation of federal law to use any pesticide in a manner that is not prescribed on the label. Nearly all pesticide accidents occur when pesticides are not used according to label directions.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are restricted-use pesticides applied only by certified pesticide applicators or people under their supervision?	Restricted-use pesticides will have the words "Restricted-Use Pesticide" in a box at the top of the front panel of the container. Only people with a pesticide applicator's license or the people they manage can purchase or apply these pesticides.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you apply pesticides according to plant needs and only in required areas?	Use integrated pest management practices, such as scouting and monitoring weather conditions that favor pest infestations, to ensure that pesticides are applied only when needed, not according to a pre-set timetable. Using IPM practices reduces the costs of pesticides and their application and decreases pollution risks associated with pesticide applications.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you avoid use of surface-applied pesticides when rains are expected?	Applying pesticides when rains are expected reduces their potential effectiveness. It also increases the potential for pesticide residues to be carried by runoff water into water bodies. (Some chemicals may require application before rain.)
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use pesticides with low toxicity levels?	If possible, select pesticides with low toxicity or LD ₅₀ levels. By selecting low toxicity pesticides, you are protecting your health, the health of your employees and the environment. Selection of pesticides that are specific to pest species protects against disruption of populations of beneficial organisms.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use cultural control methods, such as using composts and modifying fertilization practices, to reduce the need for pesticides?	You can use various cultural practices to reduce the need for pesticides. These practices include selecting of pest-resistant planting materials, managing water conditions to minimize rots, providing conditions for good plant health by using proper soil amendments and fertilizers, and using management practices that favor plant health.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you regularly clean and calibrate pesticide spray nozzles and spreaders?	Cleaning and calibrating pesticide spray nozzles ensures that these products will be applied according to specifications, thus potentially protecting against product waste, adverse crop impacts and environmental contamination. Carry a toothbrush or toothpicks to clean nozzles.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you avoid drift by not spraying on windy days and using the largest practical droplet size?	Pesticides should not be applied on days when the wind speed is greater than 5 mph. High wind conditions can cause drift of pesticides into neighboring fields or into areas where wells or water bodies may be contaminated. Lower pressure and larger droplet size reduce the potential for drift. Also, position the sprayer/boom as close to target plants as is practical.

PESTICIDE DISPOSAL

Empty pesticide containers are hazardous waste. They should be stored with other pesticide containers until they can be properly disposed of in landfills or through recycling. Any residues from rinsing pesticide containers should be added to pesticide mixing tanks for application to appropriate plants following label directions. Plastic liquid pesticide containers should be rinsed and bags should be folded as soon as they are emptied of the pesticide.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you store empty pesticide containers securely until proper disposal is available?	Empty pesticide containers contain residues that may contaminate the environment or be a health hazard to people or animals. Maintain a space in your pesticide storage area to store empty pesticide containers until they can be disposed of properly.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you triple-rinse, puncture and crush empty containers?	Rinse empty pesticide containers three times to clean out residues. Cap container and shake to remove residues from throughout the container. Empty rinse water into the spray tank. Puncture and crush the container after rinsing to ensure that the container is not used to store food, feed or water.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you properly dispose of used containers and bags?	If there is a program in your area, recycle empty plastic pesticide containers. All other containers and bags should be disposed of in a landfill. Pesticide containers may be recycled by USAg Recycling. For more information, see www.usagrecycling.com
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you properly dispose of cancelled, suspended, or unused pesticides as hazardous waste?	It is illegal to possess, store or use canceled pesticides. Check with your Cooperative Extension agent, EPA or pesticide dealers for pesticide recalls.

SPILL CLEANUP

While care is used during all stages of pesticide storage, mixing and use, occasionally spills happen. Since you never know when a spill might happen, you should be prepared at all times to handle a spill. This means knowing how to treat spills according to the material that was spilled, having the proper tools and safety equipment on hand to immediately clean up the spill, and then safely and properly using or disposing of contaminated materials. All employees should be aware of the operation's emergency management plan and know who to call in the event of a spill.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you have Material Safety Data Sheets (MSDS) for every pesticide?	Each pesticide has an MSDS, which may be printed on the pesticide container or available through pesticide dealers. The MSDS has technical information regarding pesticide properties, toxicity and cleanup specifications.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you have spill cleanup equipment such as clean water, fire extinguishers, leak-proof containers, dustpan, shovel, detergent, bleach and absorbent materials?	Spill cleanup equipment should be readily available and accessible from pesticide storage and mixing areas in the event of a spill. Having spill containment and cleanup materials available will minimize risks of contamination while protecting the health of people working with the pesticides.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you properly dispose of residues from small spills by applying the absorbent to plants listed on the label?	Soil or other absorbent material containing spilled pesticides can be applied to target plants as long as applications do not exceed rates listed on the label.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you have an emergency management plan, including a list of emergency phone numbers, posted in areas where pesticides are stored and mixed?	Be prepared in the event of a spill or other pesticide emergency by having an emergency management plan. Make sure that all of your employees are aware of this plan and who to contact in the event of an emergency. If the spill is large or you do not know what to do, contact the pesticide company or CHEMTREK at 800-424-9300 (24 hr).
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you have a notice posted stating that spills of “reportable quantities” of certain (stated) pesticides need to be reported to Georgia Department of Natural Resources?	Pesticide fires or large spills must be reported to the Georgia DNR Response Team at 800-241-4113.

SECTION 4: STORAGE AND USE OF FERTILIZERS AND PETROLEUM PRODUCTS

Fertilizer spills, fertilizer leached out of container plants, over-application of fertilizers to plants or turf, or the accidental application of fertilizers to roads or other impervious surfaces can result in nutrient leaching or runoff - processes that can contaminate ground or surface water.

Petroleum products can contaminate soil and water. Protecting all containers of petroleum products against leakage can protect against potentially irreversible soil and water contamination, fires or explosions.

For more information and assistance, see Extension bulletin 1152-9 “Fertilizer Storage and Handling” and bulletin 1152-7 “Petroleum Storage and Handling” and contact your local UGA county Extension agent.

FERTILIZER STORAGE AND USE

<input type="checkbox"/> Yes <input type="checkbox"/> No	Are all fertilizers stored out of the rain and on impervious surfaces?	Fertilizer leaks and spills can contaminate ground and surface water.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is efficient use of fertilizers in nurseries ensured by reducing the amount of leaching during irrigation?	Using irrigation systems that apply water according to monitored moisture needs of plants reduces over-watering and leaching from container plants. Leached water contains fertilizers that can contaminate water bodies if the water is not directed to storage basins. Ebb and flow irrigation systems can reduce the need for fertilizers by 50 percent.

STORAGE TANKS

<input type="checkbox"/> Yes <input type="checkbox"/> No	Are all fuel storage tanks located as far away as possible from surface water and wells?	While only larger tanks are subject to state and federal regulations, all containers storing petroleum products are subject to leaks, explosions or burning. To protect the environment and your investments, transport and store petroleum products in a manner that they do not contaminate the soil or water. Also, store petroleum products and rags contaminated with petroleum in contained conditions away from furnaces, areas where people smoke or other sources of flames.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are all fuel storage tanks located at least 40 feet from any building?	National Fire Protection Association (NFPA) code 395 For more information, see http://pubs.caes.uga.edu/caespubs/pubcd/B1136/B1136.htm
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are plans for the installation of fuel storage tanks that contain more than 60 gallons of Class I liquids or 120 gallons of Class II or Class III liquids submitted to the State Fire Marshal for approval?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do your storage tanks have secondary containment able to hold spills or leaks from the tanks?	The EPA Spill Prevention, Control and Counter-measures Act states that tanks exceeding 660 gallons singly or groups of tanks with more than 1,320 gallons of total capacity that could pollute surface waters of the United States must have secondary containment. The owner of these tanks shall have a spill prevention plan, implement spill prevention practices, and be liable for the damages caused as a result of any spill.
<input type="checkbox"/> Yes <input type="checkbox"/> No	If you have underground tanks of 1,100 gallons or more, are they registered with the Georgia Environmental Protection Division?	EPA rules covered in Title 40 of the Code of Federal Regulations Part 280 regulate substances stored in underground tanks. Underground tanks of 1,100 gallons or more need to be registered with the Georgia Environmental Protection Division. Information required by the Georgia EPD includes information about the tank, certification that the tank has a leak detection procedure and that the owner will notify the EPD within 24 hours of detection of a leak.



You should make sure that all above- and below-ground storage tanks follow any state and federal regulations.

EQUIPMENT MAINTENANCE, MATERIALS AND STORAGE

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you store gas, oil, lubricants, cleaning fluid and other materials for equipment maintenance in sealed and labeled containers?	Petroleum products spilled on the ground can contaminate soil. Allowing these products to enter storm drains can pollute lakes and streams.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you recycle used oil?	Used oil can be returned to garages and oil dealers for recycling. Used oil can also be used as a fuel for heating greenhouses or storage buildings.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you properly dispose of used equipment parts and rags used for cleaning equipment?	Cleaning rags can be flammable. Proper disposal minimizes fire risks while decreasing risks of environmental contamination.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you collect and properly dispose of contaminated water and cleaning fluids used to clean engines and other equipment?	Water and cleaning fluids used to clean engines and equipment should be disposed of as hazardous waste. Pouring these fluids into the soil can contaminate both soil and water.

SECTION 5: WASTE MANAGEMENT

Nursery and landscape businesses generate waste including paper, plastic sheeting, plastic containers, wooden stakes, pallets and waste oil. Paper and plastic containers can be recycled. Waste oil can be recycled or used as a heating source. Some firms recycle used pallets. Currently, there are few, if any, markets for used agricultural plastics.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you purchase containers made from recycled materials?	<p>For information on waste recycling, contact the GA DNR Sustainability Division program at 404-651-5120 or 800-685-2443 or the visit the Waste Reduction Resource Center website at http://wrrc.p2pays.org/</p> <p>For recycling of pesticide containers, please see USAg Recycling at www.usagrecycling.com.</p>
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you recycle used or damaged containers?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use plastic sheeting made from recycled materials?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you recycle used plastic sheeting?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you recycle paper and plastic containers used in the operation?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you recycle pallets?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you compost, reuse or recycle waste soil or growing media?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you recycle large quantities of obsolete metal racks?	

SECTION 6: MONITORING AND DOCUMENTING ENVIRONMENTAL PRACTICES

Recordkeeping is a critical management tool. Good management records protect you against liability in the event of a spill or fire. Good recordkeeping can also help you make cost-effective and environmentally sound management decisions.

<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you monitor employee activities to ensure that they are properly following environmental regulations and using best management practices?	Good employee training, mentoring and monitoring is critical to ensure that practices are being implemented as planned or required. Poorly implemented practices can result in fines, lawsuits or other damages. Since you are responsible for the actions of your employees, monitoring their actions is critical to your operation.
<input type="checkbox"/> Yes <input type="checkbox"/> No	If you sell products or services to clients, do you inform them of good environmental management practices?	Many people obtaining landscape plants or landscape services are interested in using environmentally sound management practices. Providing them with recommendations on how they can best use your products to save water and inputs may help you to build a regular clientele.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you keep records of regulated practices?	Keeping accurate records of regulated practices may be necessary to ensure compliance with these regulations. Where it is not required, having records can protect you against liability or fines.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you keep records of best management practice use?	Keeping accurate records of your best management practice use can serve as a good marketing tool. It can also help you monitor the impact of the use of these practices on water, energy, fertilizer, pesticide and labor use.
<input type="checkbox"/> Yes <input type="checkbox"/> No	Do you use recordkeeping to help you track potential savings in labor or input use?	Good records can help you make management decisions that are cost-effective and environmentally sound.



Keeping accurate records of best management practices can serve as a valuable marketing tool and can help you monitor impacts of practices.

EVALUATION:

After completing the checklist, review the document and total the number of “yes” and “no” answers for each section. First sum by subsection, if applicable, then total by section. This will help you determine which areas of production need addressing to reduce environmental risk and improve performance.

Section 1: Communication	Total Yes: _____ Total No: _____
Section 2: Production of Plants and Planting Materials Section Total: Yes: _____ No: _____	<i>Control of Erosion and Runoff</i> Total Yes: _____ Total No: _____
	<i>Water Management and Conservation</i> Total Yes: _____ Total No: _____
	<i>Nutrient Management</i> Total Yes: _____ Total No: _____
Section 3: Storage, Use and Disposal of Pesticides Section Total: Yes: _____ No: _____	<i>Pesticide Storage</i> Total Yes: _____ Total No: _____
	<i>Pesticide Mixing</i> Total Yes: _____ Total No: _____
	<i>Pesticide Use</i> Total Yes: _____ Total No: _____
	<i>Pesticide Disposal</i> Total Yes: _____ Total No: _____
	<i>Spill Cleanup</i> Total Yes: _____ Total No: _____
Section 4: Storage and Use of Fertilizers and Petroleum Products Section Total: Yes: _____ No: _____	<i>Fertilizer Storage and Use</i> Total Yes: _____ Total No: _____
	<i>Storage Tanks</i> Total Yes: _____ Total No: _____
	<i>Equipment Maintenance, Materials and Storage</i> Total Yes: _____ Total No: _____
Section 5: Waste Management	Total Yes: _____ Total No: _____
Section 6: Monitoring and Documenting Environmental Practices	Total Yes: _____ Total No: _____

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CONTACTS:

Organization	Responsibilities	Address	Phone Number/Website
Agricultural Pollution Prevention (AgP2)	Questions regarding pollution prevention practices that can save you money.	BAE Department, UGA Driftmier Engineering Center Athens, GA 30602	706-542-3086 www.agp2.org
County Extension-UGA	Research-based information for the family, farmer and homeowner.	Local County Extension Office	Check your local telephone directory blue pages under "County Government." 1-800-ASK UGA1
Georgia Center for Urban Agriculture	Provides information and resources on various issues related to urban agriculture in Georgia.	1109 Experiment Street Griffin, GA 30223	770-233-6107 www.gaurbanag.org
UGA Center for Applied Nursery Research	Provides funding and facilities for research beneficial to green industry and nursery production.	4904 Luckey's Bridge Rd., SE Dearing, GA 30808	706-836-7385 www.canr.org
Georgia Environmental Protection Division	Nonpoint source pollution and water quality.	4220 International Pkwy. Suite 101 Atlanta, GA 30603	404-675-6420 www.gaepd.org
Georgia Soil and Water Conservation Commission	Best management practices and implementation of erosion and sediment control activities in Georgia.	4310 Lexington Road P.O. Box 8024 Athens, GA 30603	706-542-3065 www.gaswcc.georgia.gov

The Georgia Green Assessment System is a cooperative project of the Sustainability Division, Georgia Department of Natural Resources, the University of Georgia, College of Agricultural and Environmental Sciences, Cooperative Extension, the State Soil and Water Conservation Commission and the USDA, Natural Resources Conservation Service.



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