



ANR-790-4.5.6

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Pesticide Management To Protect Water Quality Chemigation Safety

The application of agricultural chemicals, including fertilizers and pesticides, through irrigation systems is becoming more popular every year as farmers, greenhouse managers, nurserymen, golf course operators, and turf producers discover the convenience of chemigation. But improper operation of a chemigation system can lead to surface water and groundwater contamination.

Recommended Practices For Chemigation Safety

- Check the agricultural chemical label at each use. The label must state that the chemical can be applied through an irrigation system.

- Use agricultural chemicals only on those crops or sites for which they are labeled and in the manner listed on the label. Do not exceed labeled chemical rates.

- Post warning signs at usual points of entrance to the field to indicate that an agricultural chemical is being applied in the irrigation system.

- Observe legal reentry waiting periods and pre-harvest intervals.

- Use the least amount of water possible to apply the chemicals. Excess water may lead to surface runoff and increased leaching into groundwater. The result could be long-term contamination of drinking water. Don't chemigate when the intent is to irrigate.

- Use field borders around treated areas to catch runoff water. Vegetated field borders can prevent runoff to surface waters. Such borders allow gradual movement of the water containing pesticides, giving bacteria and sunlight more time to degrade the chemicals.

- Use erosion and runoff controls. Practices such as conservation tillage, terraces, strip-cropping, contouring, and sediment catch-basins (or farm ponds) generally reduce runoff either by increasing the infiltration of water into the soil or by catching and storing the runoff water before it can reach streams and rivers. Close-growing crops such as grass or small

grains are especially effective as cover strips to catch runoff and retain pesticides.

- Avoid wind drift by considering equipment and weather. Do not use chemigation when wind speed exceeds 5 mph.

- Gun-type sprinklers should not be used. They spray a fine mist high into the air which is more likely to be carried by the wind.

- Center-pivot, linear traversing, solid-set, or drip/trickle systems are acceptable for chemigation if they have the proper nozzle size and water pressure to provide large water droplets. Large droplets are resistant to wind drift.

- Overhead sprinkler systems can be made more efficient for chemigation by using drop pipes to place nozzles closer to the ground and by reducing line pressure.

- Locate the irrigation equipment to cover the entire field but do not place sprinklers near field boundaries. This reduces the likelihood of pesticide runoff or drift into nontarget areas.

- Make sure your equipment is in good operating order at all times. Check for water leaks in the system, proper operation of the antisiphon system, proper setting and function of relief and check valves, and clogged nozzles. Check calibration for proper chemical and water application rates.

Chemigation regulations require that any defective components be repaired or replaced before any agricultural chemical is introduced into the system. Regulatory agency representatives may at any time inspect an irrigation system utilizing chemigation to make certain that it is in compliance with state regulations.

- Do not connect your irrigation system directly to a public water supply when using chemigation. This is illegal in most states. Instead, collect the public water into a reservoir or tank and pump it from there. The pH of public water supplies may be too high for certain chemicals.

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- Do not inject an agricultural chemical into your irrigation system on the suction side of the irrigation pump. This is illegal and defeats all the safeguard devices of the system.

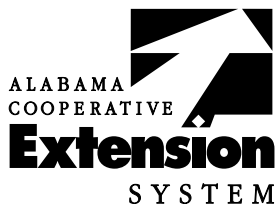
- Do not apply pesticides through an irrigation system if the soil is already wet. Wet or saturated soil is more likely to allow surface runoff than drier soil. If the runoff contains harmful pesticides, the likelihood of surface water contamination is increased. If 1 inch or more of irrigation or rainfall has occurred within the past 24 hours, the soil is probably too wet to apply pesticides.

A complete listing of specifications, inspection requirements, and methods of operation of a chemigation system may be obtained from the Alabama Department of Agriculture and Industries.

References

Chemigation Safety. 1993. Fact Sheet. Alliance for a Clean Rural Environment. Washington, DC.

Williams, Ray S., and Len C. Stanley. 1988. Chemigation Practices To Prevent Groundwater Contamination. Fact Sheet 1. North Carolina Cooperative Extension Service. Biological and Agricultural Engineering Department. North Carolina State University. Raleigh, NC.



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ECP, **Reprinted Nov 1999**, Water Quality 4.5.6