AGRICULTURAL CHEMICALS AND GROUNDWATER PROTECTION

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Turf BMP Fact Sheet

Best Management Practices for Turfgrass Production

Public concern about groundwater quality has prompted closer scrutiny of the use of pesticides and fertilizers in turfgrass cultivation. The Colorado Legislature enacted the Agricultural Chemicals and Groundwater Protection Act (SB 90-126) to address activities which could result in agricultural chemicals contaminating our groundwater. This Act emphasizes preventive measures and a voluntary approach, but also gives the Commissioner of Agriculture authority to regulate the use of agricultural chemicals by all applicators, including the turfgrass industry and homeowners.

Research has indicated that well established turfgrass may actually deter chemical runoff and leaching. The thatch layer of turf acts to filter pesticides from water moving through the soil profile. In fact, filter strips of grass are an encouraged practice around agricultural fields that are subject to runoff and overland movement of agricultural chemicals. However, these research findings do not indicate that turfgrass prevents leaching; only that it is more effective than the bare soil conditions often found in crop production. Studies have shown that transport of pesticide applied to grass can be a problem on sandy soils when rain storms or heavy irrigations occur in the first few days after application. The turfgrass industry also has the same problems associated with mixing, loading, storing, and disposal of pesticides and fertilizers as other chemical applicators.

Best management practices (BMPs) are methods designed to reduce water contamination which may occur during routine operations. The BMP approach addresses pollution problems in a voluntary manner compatible with conventional practices. The objective of BMPs for turfgrass production is to achieve an attractive landscape in an environmentally and economically sound manner.

Best management practices are usually compatible with current operating procedures, but may entail a slightly higher level of management. Turfgrass BMPs include site specific management of pests, fertility, and water. The following list of BMPs is not exhaustive, but rather some key practices which can help you protect water quality.

Site Characteristics

- Determine the major site characteristics such as soil type, aquifer depth and vulnerability, and runoff potential.
- Promote optimum turf vigor and health (dense turf allows less runoff and leaching, and is more competitive against many pests).

- Select turf species such as buffalograss, blue grama, or fescue which require less fertilizer and water.
- Maintain a buffer zone of at least 50 ft. around wells or surface water where pesticides and fertilizers are not applied.

Pesticide Selection and Use

- Utilize an Integrated Pest Management (IPM) approach, incorporating careful scouting and monitoring, rather than the use of preventive sprays. Pesticides should be considered a last resort when other cultural, mechanical, and biological methods fail to control pests.
- Select pesticides best suited to the characteristics of the target site. Pesticide half-life, solubility, and adsorption should be compared to site characteristics to determine the safest chemical. Choose least toxic and less persistent sprays whenever possible.
- Do not apply pesticides during high temperatures or windy conditions.
- Employ application techniques which increase efficiency and allow the lowest effective application rate. Carefully calibrate application equipment and follow all label instructions.
- Consider spot treatments of pests rather than treating the entire area.
- Keep concentrated products away from wells and surface water. Dispose of containers, rinsate, and waste properly. Contact your county Department of Natural Resources prior to disposing of any pesticide.
- Keep precise pest and pesticide records.

Nitrogen Fertilizer Practices

- Base fertilizer rates upon soil analysis. Use conservative rates on sandy soils or over shallow groundwater.
- Utilize split applications of slow release forms such as IBDU, sulfur-coated urea, and natural organic based fertilizers.
- Allow grass clippings to remain on the site to recycle nutrients.
- Do not apply late season N applications on sandy soils over shallow groundwater.

Water Management

- Avoid application of any pesticide or fertilizer immediately prior to heavy rainfall or irrigation.
- Apply only enough irrigation to replace water loss by evapotranspiration. Match irrigation application to soil type and root depth. Avoid applying more water than can be contained in the root zone.
- Control surface water applications to minimize runoff.
- Maintain a minimum mowing height of at least 2 inches to increase drought tolerance and pest resistance, and reduce surface runoff.

The water quality hazards associated with good turfgrass management have been shown to be significantly less than other land uses. However, turfgrass managers can avoid negative environmental impacts and demonstrate a progressive response to public concerns by implementing best management practices for proper chemical use.

For more in-depth information or specific inquires about BMPs, contact CSU Cooperative Extension or the Colorado Department of Agriculture. They have publications, programs, and specialists that can help you prevent water pollution.

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