RESEARCH SUMMARY

Treatments of Petroleum Spills on Bermudagrass Turf

A field study was conducted on Tifgreen hybrid bermudagrass (*Cynodon dactylon* x *C. transvaalensis*) to determine the best corrective treatments and subsequent turf recovery rates from various petroleum spill damage. Five petroleum products commonly used in turfgrass maintenance equipment were applied as spill treatments to the turf growing on Lufkin fine sandy loam. Three replicate spray treatments of gasoline, motor oil, hydraulic fluid, and brake fluid, plus direct spreading of grease were made over 1-m^2 plots. Calcined clay fines, activated charcoal, and detergent were evaluated as potential corrective treatments. Each corrective treatment was applied within 20 minutes of each spill in three replications.

The detergent corrective treatment proved effective in enhancing turf recovery in 3 to 4 weeks from motor oil, hydraulic fluid, and brake fluid damage. None of the corrective treatments were effective on either the gasoline or grease-damaged turf. The turf recovered rapidly in 3 to 4 weeks from gasoline spills without corrective procedures. More than 10 weeks were required for turf recovery from grease spills.

Comments. The removal of spilled hydraulic fluid and motor oil by means of a detergent washing proved to be an effective corrective treatment for enhancing turfgrass recovery from the initial foliar injury. In both cases, complete recovery of the turf was achieved 3 to 6 weeks sooner than with the other corrective procedures, such as calcined clay, activated charcoal, or a water drench. Also, detergent washing enhanced turfgrass recovery by 1 week in the case of brake fluid spills.

The detergent is sprinkled over the spill area, then thoroughly drenched with water, and the suds are completely removed from the surface area, preferably with a vacuum. **Use of this corrective detergent treatment should be restricted to within the boundaries of the spill area to avoid transferring the spilled material to the surrounding turf, where additional turfgrass injury is likely to occur.** It is worthwhile to treat a petroleum spill even if the shoots are severely damaged, because **removal of the petroleum residue from the grass shoots enhances the turfgrass recovery rate from the nodes of lateral stems.** This situation would be negated in the less common occurrence where (a) large-volume spills are lethal to the auxiliary buds or lateral stems, (b) the underlying soil becomes saturated with the spilled petroleum, and/or (c) the grass species has a bunch-type growth habit.

Under field operating conditions, the heat from hydraulic fluid or motor oil could cause additional damage to the upper nodes of lateral stems and retard turf recovery. Although the hydraulic fluid and motor oil applied to the bermudagrass in this study were at ambient temperatures, death of leaves and some lateral shoots did occur. Thus, a corrective detergent washing could still be used effectively to enhance turf recovery. Field observations where the detergent washing technique has been used on high-temperature hydraulic fluid spills support this position. **Source: Effects and treatment of petroleum spills on bermudagrass turf. By D. Johns and J.B Beard. *Agronomy Journal,* 71:945–947.**

The Amazing Grass Plant

Continued from page 6

material. Grasses of all types represent a large source of biomass for production of methanol, an energy source.

Our perennial turfgrass species evolved more than 45 million years ago during the Paleocene Epoch of the Tertiary Period, which is relatively recent in the earth's history. They have been cultured by humans to provide an enhanced environment and quality-of-life for more than 10 centuries. The complexity and extent of the environmental benefits that improve our quality-of-life are now quantitatively documented (1, 2).

Functional Benefits Include:

- Excellent soil erosion control and dust stabilization, thereby protecting a vital soil resource.
- Improved quality protection and recharge of groundwater, plus flood control.
- Enhanced entrapment and biodegradation of synthetic organic compounds.
- Soil improvement via organic matter–carbon additions.
- Accelerated restoration of disturbed lands.
- Substantial urban heat dissipation and temperature moderation.
- Reduced noise, visual glare, and visual pollution problems.
- Decreased noxious pest problems and allergy-related pollens.
- Lowered fire hazard via open, green turfed firebreaks.
- Safety in vehicle operation on roadsides and engine longevity on airfields.
- Improved security provided by high-visibility turfed zones.

Recreational Benefits Include:

- A low-cost surface for outdoor sports and leisure activities.
- Enhanced physical health of participants.
- A unique low-cost cushion against personal impact injuries.

Aesthetic Benefits Include:

- Enhanced beauty and attractiveness.
- Improved mental health, with a positive therapeutic impact and social harmony.
- Improved work productivity.
- Complimentary relationship with the ecosystem of flowers, shrubs, and trees.
- An overall better quality-of-life, especially in densely populated urban areas.

Continued on page 8