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TURFGRASS TRENDS

ENVIRONMENTAL PROTECTION

Mowing Practices Reduce Runoff From Turf

By Greg Bell and Justin Moss

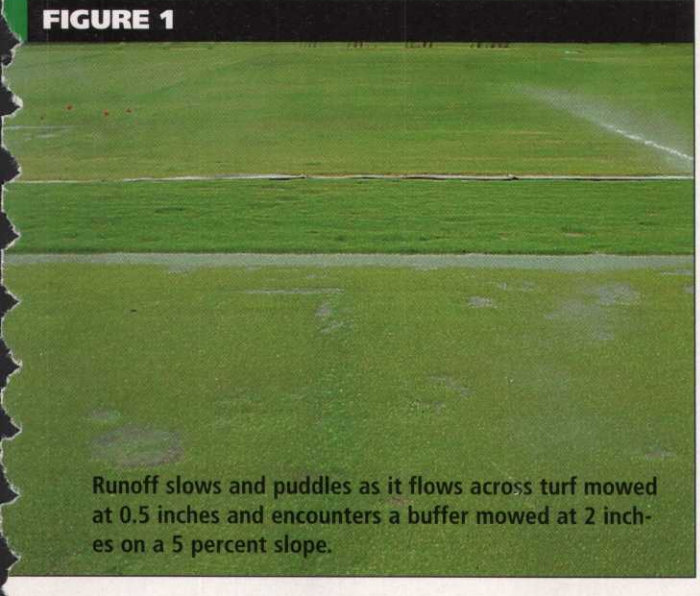
We have known for some time that grasses forming a contiguous ground cover are very effective for reducing runoff and sediment losses from agricultural areas. Managed turfgrasses tend to prevent runoff extremely well because they form a dense cover near ground level due to regular mowing. In fact, researchers at the University of Maryland found that tall fescue sod was more effective for reducing runoff than manmade materials designed specifically for that purpose (Krenitsky et al, 1998).

Although turf makes an excellent surface for runoff reduction, it does not prevent runoff entirely. A small portion of the nutrients and pesticides applied to turf for general maintenance are occasionally lost in runoff and end up in streams, lakes and other surface water. These chemical losses help to contaminate drinking water and to form the "dead zones" that occur in the Chesapeake Bay, Mississippi Delta and many other water features throughout the world. By using sound chemical application practices and an effective runoff management plan, most of these runoff losses from turf can be prevented.

Management practices as simple as mowing height can improve our environment and reduce our losses of nutrients and pesticides. Practicing environmentally sound management can improve our environment and help prevent criticism of our industry.

As turfgrass managers, we have a responsibility to our environment as well as to our clients and colleagues. We should be aware of management techniques that help reduce runoff and environmental contamination.

FIGURE 1



Runoff slows and puddles as it flows across turf mowed at 0.5 inches and encounters a buffer mowed at 2 inches on a 5 percent slope.

A good runoff prevention program is a combination of common-sense practices, management experience and attention to research results. For instance, applications of fertilizers or pesticides to saturated soil, frozen soil or non-target surfaces such as concrete or plastic are likely to increase chemical runoff dur-

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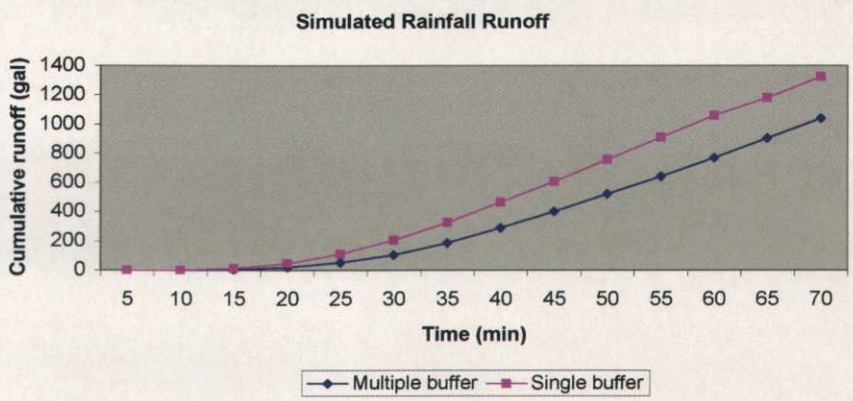
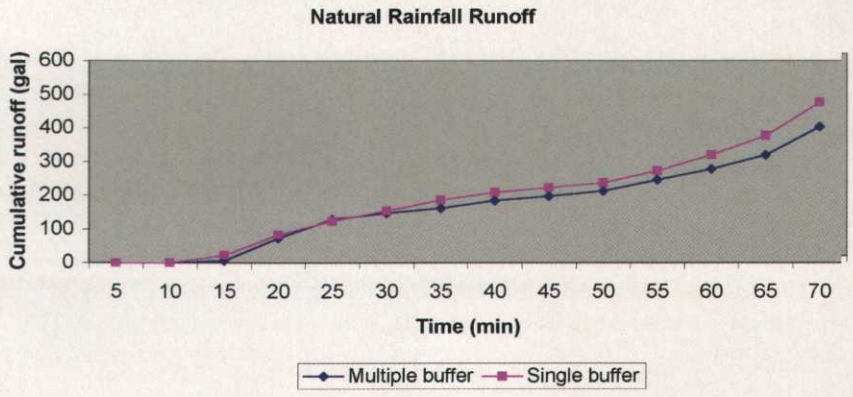
FIGURE 2





Runoff from bermudagrass bordered by a single-height buffer compared with runoff from a multiple-height buffer during 70 minutes of precipitation.

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ing subsequent rainfall events.

Maintaining dense turf inhibits runoff, but maintaining dense turf through a program of over-fertilization or unnecessary pesticide applications not only wastes money but encourages chemical losses to run off. Soil tests and growing conditions determine when fertilizer is required. Environmental conditions or symptoms determine when pesticide applications are necessary. Application timing is critical to environmentally sound management.

Good planning can result in application windows that allow us to apply chemicals when weather conditions are most suitable for chemical activity and runoff losses are least likely to occur. Post-application weather forecasts should not be overlooked. A major rainstorm following a chemical application is quite likely to result in chemical losses to runoff.

The use of slow-release nitrogen and phosphorus fertilizers and aerification should be part of the runoff prevention program. Slow-release nitrogen and phosphorus sources only provide a small amount of soluble nutrient at any given time, reducing the potential for nutrient runoff.

Aerification helps to increase the surface infiltration rate and slows soil saturation that results in runoff. It could be argued, however, that aerification results in a greater leaching potential by moving chemicals through the soil more quickly. However, the soil is a great filter and can provide some resistance to nutrient or pesticide losses.

One of the most effective management practices for reducing runoff is mowing. As long as the mowing height remains in the range of species adaptability, turf tends to increase in density as the mowing height is lowered.

A dense turf provides a complex system of shoots and stems that slow runoff and allow more time for surface infiltration. High mowing heights can also deter runoff when prop-

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erly used. The United States Department of Agriculture Natural Resources Conservation Service recommends grassed vegetation buffers for preventing runoff from agricultural lands (USDS-NRCS, 2001). In turf, a vegetation buffer is simply an area of higher-mowed turf that is used to slow runoff and help prevent nutrient and pesticide losses.

Turfgrass scientists in Oklahoma have studied the runoff-reducing effects of vegetation buffers for many years. According to Cole et al (1997), vegetation buffers are effective for reducing nutrient and pesticide losses from turf. Their findings indicated that a strip of bermudagrass from 4 feet to 16 feet wide mowed at 1.5 inches down the slope from an area of bermudagrass mowed at 0.5 inches resulted in less runoff and lower chemical losses than bermudagrass that was not bordered by a buffer. The width of the buffer did not seem to make a substantial difference in the amount of runoff that occurred.

Baird et al (2000) tested different buffer heights and determined that the effectiveness of the buffers used in the Cole study could be improved if the buffer mowing height was increased from 1.5 inches to 3 inches. These results led to the Moss et al (2005) project.

Although turf density can be expected to increase with lower mowing height and have a negative effect on runoff, the work of Baird indicated that when a buffer strategy is employed, the shoot height of the buffer vegetation has a greater effect on runoff than turf density. Furthermore, Cole demonstrated that buffer width had little effect on runoff. These results led the Moss group to reason that the effectiveness of a turf-type vegetation buffer is primarily a result of the initial low-cut to high-cut obstacle encountered by runoff as it flows from one height of turf to another (Fig. 1).

Consequently, the group hypothesized that a series of buffer strips mowed at increasingly higher heights, from 1.0 inches to 1.5 inches to 2.0 inches, might further inhibit runoff by presenting multiple low-cut to high-cut obstacles. After two years of testing irrigation and natural rainfall runoff, the researchers found that the multiple-height buffer strategy was indeed more effective than a single-height buffer (Fig 2).

Vegetation buffers help to reduce runoff and chemical losses. This buffer runoff reduction strategy is already used at most golf courses. Areas of high-cut turf called primary rough are usually used to define golf course fairways and present a challenge to golfers who miss the fairway. These areas of rough act as buffers for the lower-mown fairways.

Many golf courses incorporate an intermediate height of cut between the fairway and the primary rough that inadvertently presents a second obstacle to runoff.

Given the existing scenario, a third height of cut consistent with the Moss strategy would be relatively easy to employ. Buffer strategies, either single height or multiple height, can be used anywhere turf exists near water features. A simple mowing height adjustment for turf bordering a water feature is enough to reduce the amount of runoff that enters the feature.

Dr. Greg Bell is an associate professor of turfgrass science at Oklahoma State University, Stillwater, Okla. His research focus includes management practices that reduce runoff from turf and the use of spectral sensing for practical turf management. Dr. Justin Moss is an assistant professor and director of the University of Wyoming Sheridan Research Station.

QUICK TIP

DO NOT use excessive nitrogen during the summer on cool-season turfgrasses that have gone into dormancy. But keep in mind that some nitrogen may be necessary to prevent nitrogen deficiency and promote turfgrass recovery from play. The key is to apply only enough nitrogen for reasonable turfgrass quality during the spring and summer. Fall fertilization is the critical time to focus on adequate fertilization. It is during these "cooler" growing conditions that cool-season turfgrasses exhibit their greatest growth, not to mention fix carbohydrates.

REFERENCES

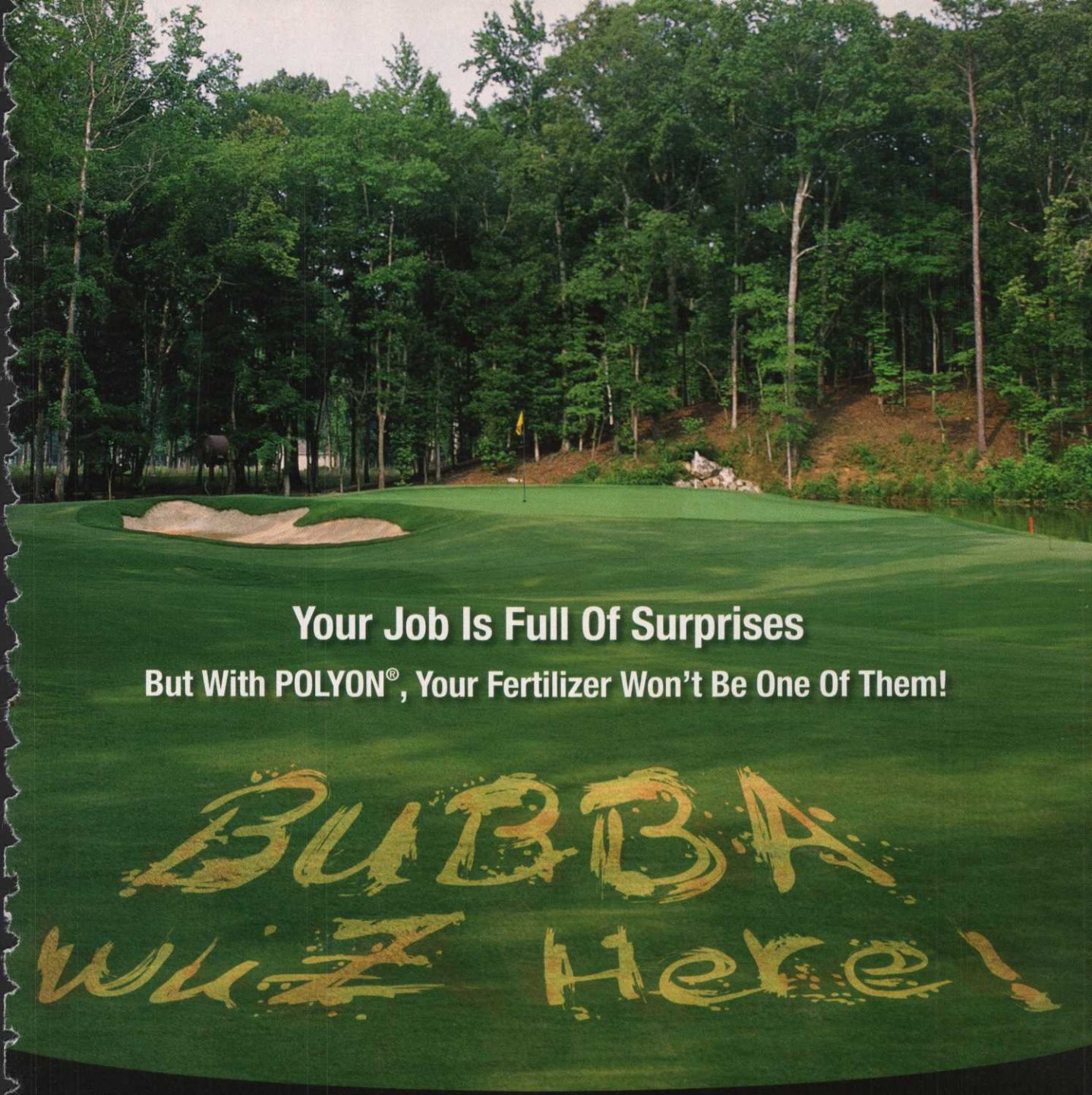
Baird JH, Basta NT, Huhnke RL, Johnson GV et al. "Best management practices to reduce pesticide and nutrient runoff from turf." In Clark JM and Kenna MP (ed.) Fate and management of turfgrass chemicals. American Chemical Society. 2000. Washington.

Cole JT, Baird JH, Basta NT, Huhnke RL, Storm DE, Johnson GV et al. "Influence of buffers on pesticide and nutrient runoff from bermudagrass turf." *J Environ Qual.* 1997;26:1589-1598.

Krenitsky EC, Carroll MJ, Hill RL, Krouse JM. "Runoff and sediment losses from natural and man-made erosion control materials." *Crop Sci.* 1998;38:1042-1046.

Moss JQ, Bell GE, Kizer MA, Payton ME, Zhang H, Martin DL. "Reducing nutrient runoff from golf course fairways using grass buffers of multiple heights." Crop Sci. 2005;46:72-80.

Buffer strips: common sense conservation. [Online]. USDA-NRCS. 2001. Available at http://www.nrcs.usda.gov/feature/buffers/ (verified Nov.30, 2005).



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Cultivars, Cutting Heights Affect Black Cutworm Feeding

By Cale A. Bigelow and Douglas S. Richmond

Throughout much of the cool-humid region and upper-transition zone of the United States, the most widely planted species for golf course roughs and lawns has been Kentucky bluegrass (*Poa pratensis*). This is due to its pleasing dark-green color, wear tolerance and recuperative capacity.

The recuperative capacity of Kentucky bluegrass is attributed to its underground rhizomes that if not properly managed may form a dense, thick, thatch layer. Thatch provides an ideal habitat for various disease causing fungi and insect pests. Therefore, to ensure turf persistence in economically important areas, turf managers preventatively apply insecticides each year.

Although pesticides may be an important and periodically necessary tool to sustaining a perennial turf, ideally they are not the first line of defense in pest management.

Two other turfgrass species, perennial ryegrass (*Lolium perenne*) and tall fescue (*Festuca arundinacea*), are also well adapted and frequently used for lawns either in combination with Kentucky bluegrass or alone. Both of these species germinate and establish much more quickly than bluegrass, but because they are bunch-type grasses, they do not spread and recover as well as Kentucky bluegrass and are generally regarded as less desirable species where a uniformly dense, durable and persistent turf is wanted. During the past decade the fungal disease gray leaf spot (*Magnaporthe oryzae*) has devastated many perennial ryegrass stands, and this species has therefore lost favor with turf managers.

By comparison, tall fescue has been underutilized because of its association with pasture and forage use and the fact that early cultivars (e.g. Kentucky-31 and Alta) were deemed unattractive for high-quality turf areas. These early fescue cultivars have a light-green color, wide leaf blade, low shoot density, poor traffic recovery and do not tolerate relatively close mowing heights (under 2.5 inches) as well as Kentucky bluegrass.

Photo 1. Four TTTF cultivars with various endophyte infection levels were maintained at two mowing heights.

Recent advances in turf-type tall fescue breeding, however, have produced superior cultivars that are very dark green, fine-leaved and possess high shoot densities and wear tolerance comparable to many Kentucky bluegrass cultivars. Many of these improved turf-type cultivars have been popular for lawns throughout the transition zone and much of the southeastern United States. They are widely planted throughout this warmer climate because they perform well in a variety of growing environments, including full sun and moderate shade, are generally easy and inexpensive to establish from seed, tolerate prolonged heat, drought and low fertility soils. Most importantly, though, they do not turn brown because of winter dormancy like the warm-season species.

Another characteristic which makes tall fescue more desirable than Kentucky bluegrass or perennial ryegrass is a deeper and more extensive root system enabling it to extract water and nutrients from a larger soil volume. Thus, this species may require less supplemental irrigation and fertilizer to maintain an equivalent level of appearance. Lastly, tall fescue may be more desirable than Kentucky bluegrass because of its bunch-type growth habit, which does contribute to a thatch layer and some of the problems often found with thatch. In terms of resist-

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