Removal of Overseeded Ryegrass Best in Heat of Summer

By Travis Gannon and Dr. Fred Yelverton

On golf courses, overseeding of bermudagrass fairways, tees and approaches continues to be common practice because it allows for an actively growing and aesthetically pleasing turf all year long. This is of particular importance at golf clubs that rely on resort play. Although overseeding is aesthetically pleasing and provides an actively growing playing surface when bermudagrass is otherwise dormant, overseeding can be a maintenance and agronomic nightmare. Overseeding bermudagrass increases maintenance costs and poses agronomic issues that can threaten the health of the underlying bermudagrass.

Bermudagrass is a warm-season perennial turfgrass species commonly used on golf course fairways, tees and approaches. However, bermudagrass is shade intolerant. In low-light environments, bermudagrass develops narrow and elongated leaves, thin and upright stems, elongated internodes and weak rhizomes (Duble, 1996).

In the spring when temperatures begin to warm, ryegrass is very robust and actively growing. Unfortunately, this coincides with bermudagrass breaking dormancy and resuming active growth. During this time, overseeded perennial ryegrass is very successful in shading out the bermudagrass base. It is for this reason that in most turfgrass environments, it is essential for ryegrass to be chemically removed in order for bermudagrass to resume active growth and recover prior to overseeding in the early fall. Thinning of the bermudagrass base is exacerbated when overseeded perennial ryegrass is not removed and allowed to persist year after year.

Research trials were initiated at North Carolina State University to evaluate herbicide application timing for control of perennial ryegrass in overseeded areas to assist during transition in spring. Trials were initiated on overseeded golf course fairways on April 17, 2003. Herbicide applications began April 17 and occurred every two weeks thereafter (April 17, April 28, May 15 and June 2). Evaluated sulfonylurea herbicides included trifloxysulfuron (Monument), rimsulfuron (TranX-it), metsulfuron (Manor or Blade) and foramsulfuron (Revolver) at 0.3 ounces, 1 ounces, 0.5 ounces and 17.4 fluid ounces per acre, respectively. Pronamide (Kerb) was also included for comparison. All sulfonylurea herbicides, excluding Revolver, included a non-ionic surfactant at 0.25 percent volume by volume.

Continued on page 72
These data indicate sulfonylurea herbicides are great transition aids to remove overseeded perennial ryegrass from bermudagrass. However, we observed varying levels of perennial ryegrass control with different application timings. Manor, Monument, Revolver or TranXit applied April 17 resulted in less-than-optimum perennial ryegrass control July 1 with control ranging from 0 to 61 percent (Table 1).

However, when applied April 28, all sulfonylurea herbicides provided good to excellent perennial ryegrass control ranging from 78 percent to 96 percent control. When applications were made May 15, poor perennial ryegrass control (38 percent to 58 percent) was obtained. Conversely, all evaluated sulfonylurea herbicides applied June 2 provided excellent perennial ryegrass control (91 percent to 95 percent) by July 1. Additionally, Kerb treatments did not provide acceptable ryegrass control by July 1 with control varying from 0 percent to 40 percent.

A common question pertaining to the use of sulfonylurea herbicides for transition from perennial ryegrass to bermudagrass is: “Why are results variable?” Our experience with sulfonylurea herbicides suggests obtained results are largely dependent on the temperature at time of application and shortly thereafter (within one week). Willis et al. (2007) reported similar results with research conducted at Virginia Tech.

We noted poor results within our research trial most notably with herbicide applications on May 15. Although air temperature at application on May 15 was 71 degrees F (daily average 67 degrees), we experienced a cooling trend after application with average daily temperatures decreasing 11 degrees to 56 degrees within three days of application. Hence, reduced perennial ryegrass control compared to other application timings (Table 2).
TABLE 2

Average Daily Temperature

<table>
<thead>
<tr>
<th>Date</th>
<th>Average Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/1/03</td>
<td>65</td>
</tr>
<tr>
<td>4/15/03</td>
<td>70</td>
</tr>
<tr>
<td>4/29/03</td>
<td>75</td>
</tr>
<tr>
<td>5/13/03</td>
<td>80</td>
</tr>
<tr>
<td>5/27/03</td>
<td>85</td>
</tr>
<tr>
<td>6/10/03</td>
<td>55</td>
</tr>
<tr>
<td>6/24/03</td>
<td>50</td>
</tr>
</tbody>
</table>

Early applications typically result in less-than-optimum perennial ryegrass control with sulfonylurea herbicides.

With that said, applications earlier in the growing season typically result in less than optimum perennial ryegrass control with sulfonylurea herbicides. Reduced perennial ryegrass control — and other weeds for that matter — under relatively cool conditions are likely due in part to the relatively short half-life of sulfonylurea herbicides in soil. Under cool ambient conditions characteristic of early applications, ryegrass plants might not be actively growing and might not absorb the herbicide.

Because the half-life of sulfonylurea herbicides in soil is relatively short, they do not persist. When active ryegrass resumes growth, lethal amounts of the herbicide are no longer present resulting in less than optimum ryegrass control.

Data from this research as well as other trials conducted at North Carolina State University confirms sulfonylurea herbicides (Manor, Monument, Revolver and TranXit) are a great transition aid to control perennial ryegrass provided they are utilized as a late-season transition aid.

Additionally, Monument, Revolver and TranXit provide postemergence control of annual bluegrass. When using sulfonylurea herbicides, extreme caution must be used around other cool-season grasses, including bentgrass. Sulfonylurea herbicides are water-soluble, hence if they are applied upslope of susceptible species, then one must be mindful of the possibility of lateral movement.

Sulfonylurea herbicides are subject to tracking with foot and equipment traffic. Therefore, it is suggested to apply sulfonylurea herbicides after foot and equipment traffic have left for the day followed by a light irrigation the following morning (and perhaps an additional morning or two) to remove suspended herbicide from the leaf surfaces prior to traffic.

Travis Gannon and Dr. Fred Yelverton are weed science specialists in the Department of Crop Science at North Carolina State University.

REFERENCES