

Herbicide Effects on Perennial Ryegrass Transition to Bermudagrass

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Without a doubt golfers like overseeded fairways during the winter and early spring months. The attractive green color, improved playing surface and sharp contrast to dormant bermudagrass in roughs certainly have contributed to a dramatic increase in courses overseeded in Georgia. However, like most things in life there is always the other side, i.e. how can we get rid of overseeded cool-season grass in the late spring months. The improved heat tolerance of perennial ryegrass cultivars and the fact that *Poa trivialis* lives a lot longer in the spring months than what the textbooks suggest challenges the agronomic skills of superintendents. Both of these cool-season species are formidable competitors with bermudagrass during spring transition. Options that have been tried in the past to hasten the demise of overseeded cool-season species and encourage the spring green-up of bermudagrass include: a) limiting irrigation to stress the cool-season turfgrass, b) aeration and/or verticutting to increase sunlight penetration to bermudagrass, and c) the use of quick-release nitrogen fertilizers. While each of these options have had varying levels of success a small percentage of perennial ryegrass usually survives and later presents problems as “renegade” or “clump” ryegrass in fairways

Various herbicides and plant growth regulators (PGRs) have been tried through the years as a chemical transition aid. The ideal chemical would be one that would kill or suppress the cool-season grass at the same rate that bermudagrass “greens-up.” In other words a “green-to-green” transition rather than a “green-to-brown-to green” transition. B. J. Johnson found that Kerb 50WSP at 1.0 lb. product/acre applied in mid-April slowly, but effectively, removed perennial ryegrass from an overseeded bermudagrass putting green without an adverse effect on turfgrass color. Additional work by B. J. under putting green conditions showed that Illoxan 3EC applied at 11.0 fl. ozs. product/acre applied in early April and again 2 weeks later was an effective chemical aid for transition.

Information on the use of herbicides and PGRs as a transition aid for overseeded fairways is very limited. Thus, an experiment was conducted at the Atlanta Athletic Club in 2000 to determine the effectiveness of various herbicides and Embark as a chemical transition aid on an overseeded fairway.

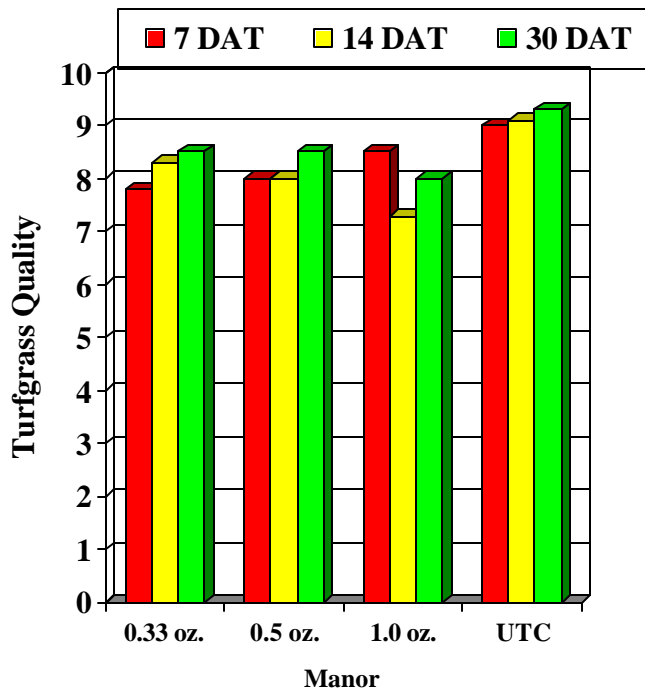
Methods. ‘Tifway’ bermudagrass was overseeded September 26, 1999 with a 85/15 Marvelgreen/Laser mix. The fairway was irrigated as needed and clipped at a height of 5/16 inch. Selected herbicides and Embark were applied on May 8, 2000 in a spray volume of 25 gpa. Herbicides and rates evaluated were Envoy at 8.5 and 17.0 fl. oz., Sencor at 0.33 and 0.66 lbs., Manor at 0.33, 0.5 and 1.0 oz., Corsair at 1.0 and 2.0 oz., and Kerb at 1.5 and 3.0 lbs. product/acre. Nonionic surfactant at 0.25% v/v was added to Envoy, Manor, and Corsair treatments. Embark was applied at 6.0 and 8.0 fl. oz. product/acre. At this date bermudagrass and ryegrass/*Poa trivialis* density was estimated

to be 50% each. Individual plots were 6.0 by 15.0 ft., and all treatments were replicated 4 times. Overall turfgrass quality, bermudagrass and perennial ryegrass/*Poa trivialis* density was recorded 7, 14 and 30 days after treatment (DAT). It was not possible to separate treatment effects on perennial ryegrass and *Poa trivialis*.

Results and Discussion. Envoy effectively eliminated perennial ryegrass/*Poa trivialis* but severely injured Tifway bermudagrass and drastically reduced overall turfgrass quality. The use of Envoy at these rates would not be advisable; however, additional

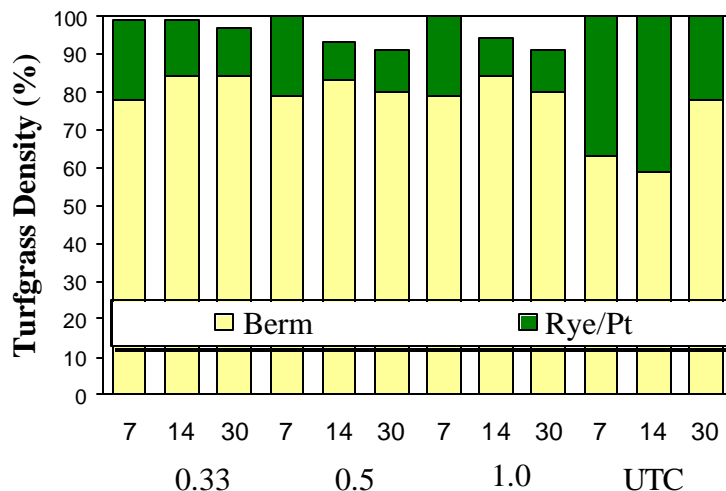
research should be done to evaluate lower rates of Envoy for this purpose.

Figure 1. Effect of Manor on turfgrass quality.



Overall turfgrass quality was acceptable with Manor at all rates at all evaluation periods compared to the untreated check plots (UTC) (Figure 1). Bermudagrass treated with Manor was lighter green in color than untreated bermudagrass; however, this effect was not objectionable.

Figure 2. Effect on Manor on turfgrass density.



Manor also reduced the density of perennial ryegrass/*Poa trivialis* (Rye/Pt) and increased bermudagrass density at all evaluations compared to the UTC plots (Figure 2).

Figure 3. Effect of Sencor and Corsair on turfgrass quality.

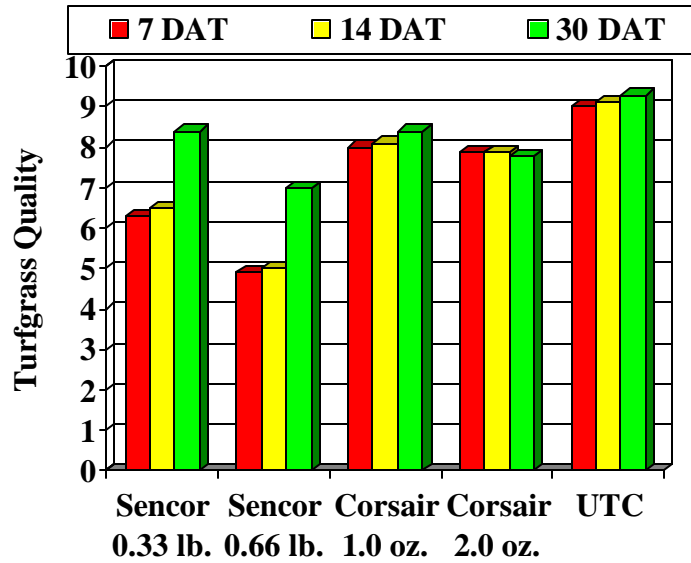
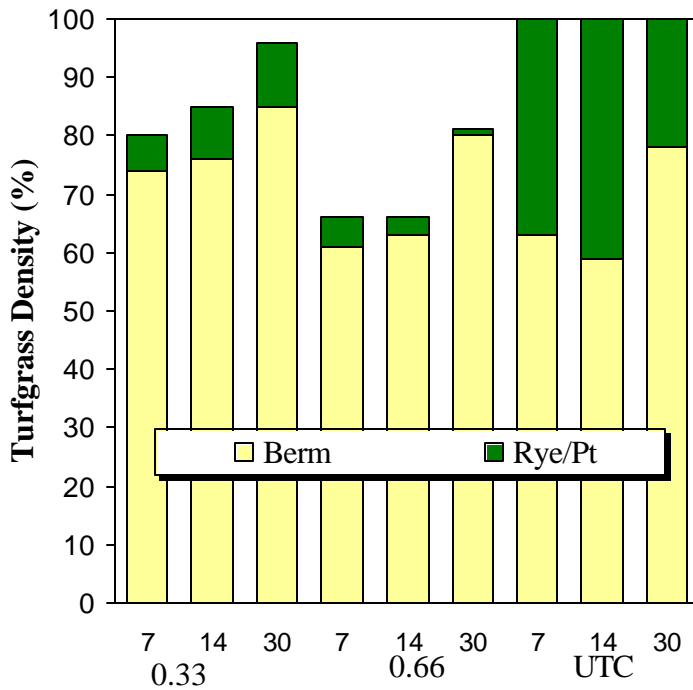


Figure 4. Effect of Sencor on turfgrass density.



Sencor adversely reduced overall turfgrass quality at all evaluations (Figure 3). Both rates of Sencor reduced perennial ryegrass density (Figure 4) but the rapid reduction of overall turfgrass quality and associated quick “brown-out” with Sencor would not be desirable on most golf courses. Similar to Manor, Corsair had minimal effects on overall turfgrass quality (Figure 3). However, Corsair at 1.0 to 2.0 oz. product/acre did not effectively perennial ryegrass/*Poa trivialis*. Future research needs to be conducted with rates of Corsair higher than those used in this experiment.

Overall turfgrass quality was slightly reduced with both rates of Kerb, but would be considered acceptable under fairway conditions (Figure 5).

Figure 5. Effect on Kerb and Embark on turfgrass quality.

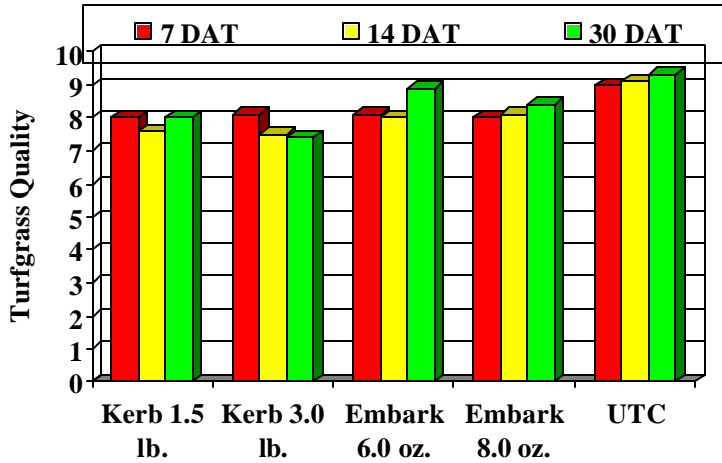
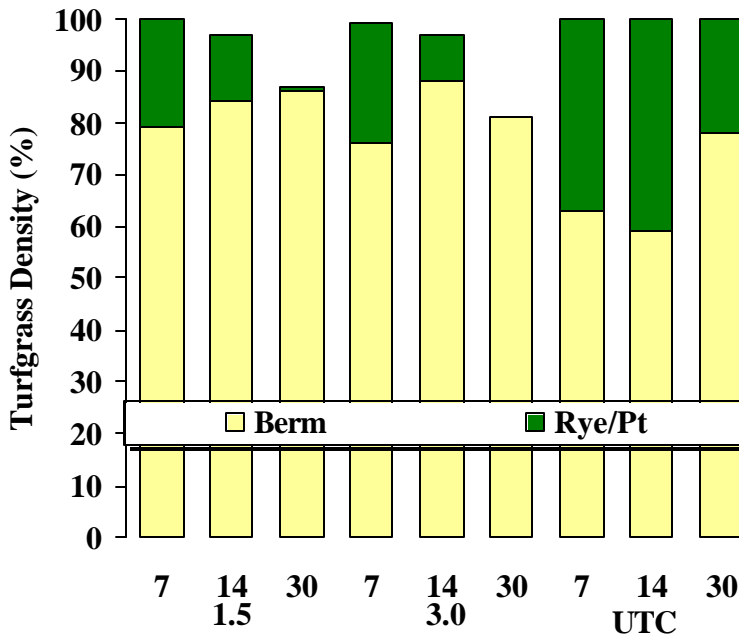
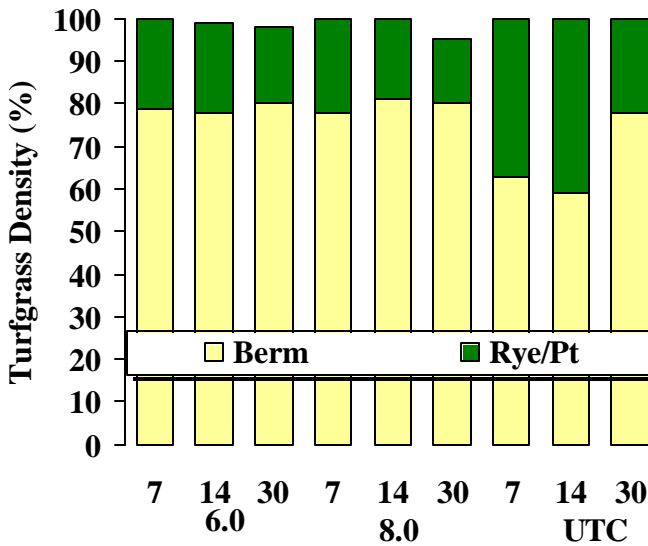


Figure 6. Effect of Kerb on turfgrass density.



Compared to UTC plots, bermudagrass density improved, and perennial ryegrass density decreased with the use of Kerb (Figure 6). Bermudagrass treated with Kerb was a darker blue-green color than untreated bermudagrass, but this effect was not considered to be objectionable.

Figure 7. Effect of Embark on turfgrass density.



Plots treated with Embark had a turfgrass quality similar to the UTC plots (Figure 5). Both rates of Embark reduced perennial ryegrass/*Poa trivialis* density at 7 and 14 DAT, but not at 30 DAT (Figure 7). Additional research need to be conducted with Embark to determine if repeat applications would reduce perennial ryegrass density.

In summary Manor and Kerb effectively reduced perennial ryegrass/*Poa trivialis* density with no adverse effect on

bermudagrass green or overall turfgrass quality. Both of these products are currently labeled for this use. The new Kerb label recommends that Kerb be applied at the 50% green-up growth stage of bermudagrass. At this stage of growth soil and air temperatures should be sufficiently warm to promote the growth of bermudagrass which would mask the effect of dying ryegrass. While timing of Manor applications was not investigated in this experiment, a similar application timing would be advisable at this time. Embark also should be further evaluated as chemical transition aid. While multiple applications may be required, the lack of injury to bermudagrass from Embark would be highly desirable.

Appreciation is extended to Ken Mangum and Michael Litton, Atlanta Athletic Club, for their cooperation in conducting this study.