

Cultural and chemical weed management in native fine fescue roughs

Doug Soldat, Bruce Schweiger, and Paul Koch
University of Wisconsin-Madison

- Weed control in native areas composed of fine fescue presents agronomic and economic challenges.
- Three trials have been initiated to evaluate the impact of cultural and chemical practices on grassy and broadleaf weed control in native areas.
- Mowing and herbicide use resulted in the lowest weed populations, but if no herbicide is applied, mowing increases total weed population.
- Preliminary results indicate several products are effective for controlling weeds common to native areas in Wisconsin, including low rates of glyphosate when applied in May.

As native fine fescue rough areas grow, finding effective chemical and cultural management of weeds is becoming a high priority (Figure 1). These areas are intended or are perceived to reduce maintenance costs and environmental impact; however, a solid understanding of how to manage them is lacking which has led to possibly excessive inputs of chemicals and labor to obtain the desired visual effect. The objective of this project is to evaluate various cultural and chemical management strategies in a fine fescue rough.

This project is being conducted at Hawks Landing Golf Club in Madison, WI. At Hawks Landing, we have initiated three separate trials. The first trial investigates the impact of three cultural management strategies (mowing and removing material, mowing and returning material, and not mowing) on weed and desirable grass composition. Each strategy is evaluated either with or without chemical control. A second trial evaluates the performance of five different herbicides on weed composition. Finally, a third trial evaluates the efficacy of various rates and timings of glyphosate on spring weed control. The hypothesis is that glyphosate at low rates can be useful for controlling early season weeds (i.e. quackgrass) without harming desirable grasses such as fine fescue. For all three studies plot size is 6 ft. by 10 ft. with each treatment replicated four times and arrayed in a randomized complete block design. Visual estimates of plant populations are made in spring, summer, and fall. The trials will continue for at least three years after initiation.

For the cultural management trial, we observed that the combination of mowing and herbicide use resulted in the lowest weed populations. However, if no herbicide is applied, mowing increased weed populations (Table 1). The chemical efficacy trial showed good control of broadleaf weeds in the first two years of the study as all treatments resulted in substantially lower weed populations than the non-treated control (Table 2). The third trial (in its first year) has found that May-applied glyphosate (at a low rates) and Barricade resulted in similar weed control and increased playability than fall applied broadleaf herbicides in July (Table 3). However, these differences disappeared by October (Table 4).



Figure 1. Weed control in native areas remains problematic for many golf course superintendents.

Table 1. Grass and weed composition of plots under various mowing and chemical management on October 8, 2015. Mowing treatments and chemical applications were initiated on May 20, 2014.

| Mowing | Herbicide* Applied | Desirable Grasses | Bare Soil | Grassy Weeds | Broadleaf Weeds | Total Weeds |
|-----------------|-------------------------------|------------------------------|------------------|-------------------------|----------------------------|------------------------|
| Mowed, Returned | Yes | 92.5 A | 3.8 A | 2.5 A | 1.3 B | 3.8 C |
| Mowed, Returned | No | 49.5 C | 1.8 A | 11.3 A | 37.5 A | 48.8 A |
| Mowed, Removed | Yes | 88.8 A | 3.8 A | 6.3 A | 1.3 B | 7.5 C |
| Mowed, Removed | No | 62.5 BC | 3.8 A | 2.5 A | 31.2 A | 33.8 AB |
| Not Mowed | Yes | 82.5 AB | 5.0 A | 11.3 A | 1.3 B | 12.5 BC |
| Not Mowed | No | 82.5 AB | 3.8 A | 1.3 A | 12.5 B | 13.8 BC |

* Herbicide treatment included Barricade (1 lb/A), SpeedZone (1.5 oz/1000 sq. ft.), and Milestone (4.0 oz/1000 sq. ft.) in sprayed at 2 gallons/1000 sq. ft.

Table 2. Grass and weed composition on October 8, 2015 as affected by herbicide application. Chemical applications were made on May 20, 2014.

| Herbicide Treatment | Desirable Grasses | Bare Soil | Grassy Weeds | Broadleaf Weeds | Total Weeds |
|----------------------|-------------------|-----------|--------------|-----------------|-------------|
| Exp. Tmt 1 (4 pts/A) | 92.3 A | 2.5 A | 1.8 B | 0.5 B | 2.3 C |
| Confront (2 pts/A) | 90.8 A | 1.8 A | 3.8 AB | 3.8 B | 7.5 BC |
| Confront (4 pts/A) | 82.5 A | 1.3 A | 15.0 A | 1.3 B | 16.3 B |
| Milestone (6 oz/A) | 93.8 A | 1.3 A | 1.3 B | 3.8 B | 5.0 BC |
| SpeedZone (2 pts/A) | 88.8 A | 1.3 A | 2.5 B | 7.5 B | 10.0 BC |
| Non-treated control | 43.3 B | 1.8 A | 6.3 AB | 48.8 A | 55.0 A |

Table 3. Grass and weed composition on July 1, 2015 as affected by herbicide application. Chemical applications were made in Spring 2015 with the exception of ForeFront and Chapparral which were applied in Fall 2014.

| Herbicide Treatment | Desirable Grasses | Bare Soil | Grassy Weeds | Broadleaf Weeds | Total Weeds | Playability** |
|-----------------------------------|-------------------|-----------|--------------|-----------------|-------------|---------------|
| Non-treated control | 65 AB | 3 D | 10 A | 23 BC | 32 BC | 3 A |
| ForeFront (fall applied) | 82 A | 4 CD | 11 A | 3 D | 14 C | 2.5 ABC |
| Chapparral (fall applied) | 79 AB | 5 BCD | 7 A | 9 CD | 16 C | 2.75 AB |
| Glyphosate 1 lb AI/acre in April* | 36 C | 4 CD | 5 A | 55 A | 60 A | 2.75 AB |
| Glyphosate 2 lb AI/acre in April* | 45 C | 6 BCD | 9 A | 40 AB | 49 AB | 3.0 A |
| Glyphosate 1 lb AI/acre in May* | 75 AB | 10 B | 8 A | 8 CD | 15 C | 1.75 C |
| Glyphosate 2 lb AI/acre in May* | 57 ABC | 21 A | 3 A | 19 BCD | 22 BC | 2.0 BC |
| Glyphosate 1 lb AI/acre in June* | 63 ABC | 8 BC | 5 A | 24 BCD | 29 ABC | 2.75 AB |

* also included Barricade at 1 lb of product/acre

**A subjective assessment of the ability of an average golfer to play a shot out of the treatment and back into play with a reasonable chance of success. Rated on a 1 to 3 scale with 1 being playable, 3 being unplayable, and 2 intermediate.

Table 4. Grass and weed composition on October 8, 2015 as affected by herbicide application. Chemical applications were made in Spring 2015 with the exception of ForeFront and Chapparral which were applied in Fall 2014.

| Herbicide Treatment | Desirable Grasses | Bare Soil | Grassy Weeds | Broadleaf Weeds | Total Weeds | Playability** |
|-----------------------------------|-------------------|-----------|--------------|-----------------|-------------|---------------|
| Non-treated control | 75 A | 0.0 A | 15 A | 10 B | 25 A | 3.0 A |
| ForeFront (fall applied) | 65 A | 2.5 AB | 20 A | 13 AB | 33 A | 3.0 A |
| Chapparral (fall applied) | 80 A | 1.3 AB | 6.3 A | 13 AB | 19 A | 3.0 A |
| Glyphosate 1 lb AI/acre in April* | 53 A | 2.5 AB | 6.3 A | 39 A | 45 A | 3.0 A |
| Glyphosate 2 lb AI/acre in April* | 54 A | 10.0 A | 8.8 A | 28 AB | 36 A | 3.0 A |
| Glyphosate 1 lb AI/acre in May* | 83 A | 1.3 AB | 5.0 A | 11 AB | 16 A | 3.0 A |
| Glyphosate 2 lb AI/acre in May* | 74 A | 3.8 AB | 1.3 A | 21 AB | 23 A | 2.5 B |
| Glyphosate 1 lb AI/acre in June* | 79 A | 1.3 AB | 5.0 A | 15 AB | 20 A | 3.0 A |

* also included Barricade at 1 lb of product/acre

**A subjective assessment of the ability of an average golfer to play a shot out of the treatment and back into play with a reasonable chance of success. Rated on a 1 to 3 scale with 1 being playable, 3 being unplayable, and 2 intermediate.