Management of Brunswickgrass in Bahiagrass Seed Production Fields

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Figure 1. Represenation of a Brunswickgrass infestation in a bahiagrass pasture. Cattle tend to not graze mature Brunswickgrass, giving this species a patchy appearance in many grazed pastures. Photograph by Marcelo Wallau.

Brunswickgrass (*Paspalum nicorae*; Figure 1) is not necessarily new to Florida as it was tested as a forage at the USDA Plant Materials Center in Arcadia. However, it has recently been recognized as a weed contaminant in bahiagrass seed production fields, and mature Brunswickgrass is unpalatable to cattle. The presence of Brunswickgrass in these fields ultimately reduces bahiagrass seed yield because harvesters must avoid areas infested with Brunswickgrass so that bahiagrass seed lots are not contaminated with Brunswickgrass seeds. As bahiagrass and Brunswickgrass are in the same genus, finding a herbicide that would selectively remove Brunswickgrass from bahiagrass pastures appeared to be unlikely. However, some of the best ideas come from observations by our ranchers and growers, and this is how we started down the path of using hexazinone (Velpar/Hexar/Velossa) for Brunswickgrass management.

In late 2017, we were called by one of our clientele near Dade City that had attempted to kill smutgrass in their bahiagrass pasture using hexazinone. This particular grower knew that they had Brunswickgrass in their pasture, but the main target at that point in time was smutgrass. Although they did not achieve 100% smutgrass kill, we did observe that Brunswickgrass appeared to be dead. After digging the rhizomes of the plant, we also observed most of the rhizomes were also dead. This observation led to our experiments that we initiated in 2018.

In 2018 we established an experiment with hexazinone at 0.5, 1, 2, 3, and 4 pints/acre at four different locations in Sumter, Citrus, and Pasco Counties. Two locations were treated in mid-July and the other two in mid-August. Since it is extremely difficult to visually separate bahiagrass and Brunswickgrass without close inspection of the plants, we evaluated control by counting plants at two GPS-referenced locations in each plot at 0 and 30 days after treatment; additional counts will be recorded next spring. Counts were recorded by placing 1-m^2 quadrats with 100 subdivisions; if a plant was found in one of the subdivisions, it was recorded, and if any portion of the above-ground plant had green tissue it was considered to be living. Results presented here are expressed as percent control by the difference in the number of live plants at 30 versus 0 days after treatment.

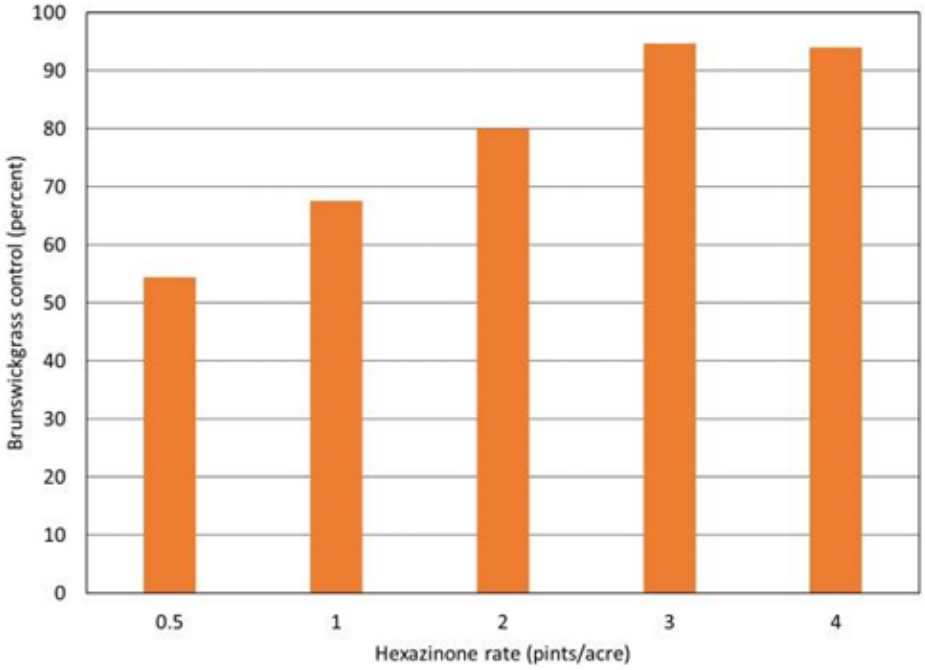

Figure 2. Percent control of Brunswickgrass 30 days after treatment in mid- to late-summer in 2018. Data are averaged over four locations.

Since there were no apparent differences among the 4 locations, we combined the control data across all locations. Brunswick-grass control at 30 DAT was surprisingly exceptional, even at lower rates normally utilized for smutgrass control (Figure 2). For example, 80% Brunswickgrass control was observed following an application of 2 pints/acre (Figures 3 -5). Increasing the application rate to at least 3 pints/acre resulted in approximately 94% control. We anticipate regrowth in plots treated with less than 2 pints/acre as control was less than 70%;

Figure 3. Photograph of untreated plot at 30 days after treatment. Photograph by Brent Sellers.

however, we will have a better understanding of long-term control using hexazinone at the beginning of the 2019 growing season.

While we have some good evidence that hexazinone will provide good to excellent selective control of Brunswickgrass in bahiagrass pastures, several questions remain to be answered. To date, we have only investigated control during mid- to late-summer. However, some growers have applied hexazinone in April and May with variable results. Our observations from those fields indicate that this early timing may not be sufficient to prevent Brunswickgrass seed formation by the time of bahiagrass seed harvest. Therefore, determining the optimum timing of hexazinone application to prevent Brunswickgrass seed production while not limiting bahiagrass seed production is necessary. Second, the viability of Brunswickgrass seeds remains unknown as our limited investigation of Brunswickgrass seed germination tests have resulted in little to no seed germination under laboratory conditions. Third, if seed is viable, we do not know how long seed remain viable in the soil. Fourth, if a pasture is reestablished, the best method to prevent reinvasion of Brunswickgrass remains unknown.

Figure 4. Photograph of plot 30 days after treatment with 3 pints per acre hexazinone. Green plant material is primarily bahiagrass. Photograph by Brent Sellers.

Figure 5. Photograph of plot 30 days after treatment with 4 pints/acre hexazinone. Green plant material is primarily bahiagrass. Photograph by Brent Sellers.

In a separate experiment that was established in late 2016 near Floral City, we treated an area of a pasture with 4 quarts/acre glyphosate. Half of this treated area was disked 2 times and the other half was left untilled. During the spring of 2017, we planted bahiagrass, forage soybean, iron claypea, or millet using a grain drill. In the fall/early winter of 2017, ryegrass was planted in plots planted to annual species earlier in the year after glyphosate was applied onto these plots. Our overall observations from this trial include increased regeneration of Brunswickgrass plants in tilled plots versus untilled plots. We also observed less Brunswickgrass plants in plots where bahiagrass or annual grasses were planted versus broadleaf crops. While it is too early to tell the long-term effects of our planting treatments, it appears that limited tillage results

in less reestablishment of Brunswickgrass and grass forage crops may be more competitive than annual broadleaf crops.

Although we were initially a bit pessimistic and, in some cases, a bit depressed about this issue, we believe we have evidence to support the fact that we will be able to overcome Brunswickgrass infestations. This species has been in the state since the 1940's, and is likely more widespread than we initially thought (two locations were found infested in Hardee County this year). So, our point is, it's been here for a long time, and it will take us some time to get this species under control. At least we believe we have the tools that we need to accomplish that goal. If you are unsure about your ability to identify Brunswickgrass, please see our EDIS fact sheet entitled "Brunswickgrass or *Paspalum nicorae*: A weed contaminant in southern pastures and bahiagrass seed production fields" at http://edis.ifas.ufl.edu/ag408.

If you have any questions please contact me at sellersb@ufl.edu or call 863-735-1314 ext. 207.