2017 PGR Options for Tall Fescue Management (2018 Assessments)

Tall fescue is a widely adapted species and is a common roadside and other unimproved turf cool-season grass. Frequent mowing is the most common management regime for departments of transportation. Plant Growth Regulators (PGRs) are potential tools to reduce turf growth and aid in keeping our roadways safe for travelers. PGRs are currently classified into six categories, Classes A – F, based on their mechanism of action. This trial includes examples of Class A, C, and D PGRs and was established to evaluate some PGR options for roadside management. Class A are late GA synthesis blockers, Class C are mitotic/cell division inhibitors, and Class D are herbicidal. Seedhead suppression is an effective means to reduce mowing for the first cycle. PGRs for this are normally applied in the early spring. This trial was established to evaluate some PGR options for roadside management. Fall application of PGRs may also have a benefit with seedhead suppression the following spring.

Materials and Methods

A trial was established in 2017 at Spindletop Research Farm in Lexington KY arranged as a complete block design with 21 PGR treatments and three replications. Plots were 7 ft by 20 ft with running unsprayed checks (3 ft wide) between each of the plots. The treatments were five PGRs applied before the first mowing and one to two weeks after each of the three mowings plus control. Products tested were Embark 2S (mefluidide) [Class C], Plateau (imazapic) [Class D], Opensight (aminopyralid + metsulfuron methyl) [Class D], Anuew (prohexadione calcium) [Class A], and Perspective (aminocyclopyrachlor + clorsulfuron) [Class D] (Table 1). All applications were at 25 gallons per acre and included a non-ionic surfactant at 0.25% v/v. Application dates were 4/26/2017, 6/1/2017, 8/8/2017, and 10/6/2017. Mowing dates were 5/22/2017, 7/26/2017, and 9/26/2017.

Plots from the fourth application date were assessed for seedhead density, seedhead height, and foliage canopy height in 2018; 220 (5/14/2018), 235 (5/29/2018), and 255 (6/18/2018) days after that application (DAT4). Data were analyzed using ARM software and treatment means were compared using Fisher's LSD at $p = 0.05$.

Results and Discussion

The spring after fall applications of these PGRs most treatments had reductions in seedhead heights but only Embark, Plateau, and Perspective had lower seedhead densities than control at the first assessment date (5/14/2018) 220 DAT4 (Table 2). At the next two assessments (235 and 255 DAT4) the Embark (Class C) and Plateau (Class D) treatments had the lowest heading density (13 to 21%) while the other Class D treatments (Opensight and Perspective) had less seedhead suppression (63 to 87% seedhead density). Anuew (Class A) had no effect on heading at these assessments.

The Embark and Plateau treatments may have reduced tall fescue heading enough to delay the first mowing but other grass species on the roadside may not have been affected equally by the PGR treatments. In a previous trial by our group (Omielan and Witt, 2012) fall application of a higher rate of Plateau (4 fl oz/ac) + 2,4-D as a safener had similar reductions in tall fescue

seedheads. The most consistent seedhead suppression was with spring application but fall applications may have the "benefit" of seedhead suppression perhaps as a result of fall herbicide applications to control biennial weeds at the fall rosette stage. With Class D PGRs they may be applied primarily for growth regulation or primarily for weed control, depending on the desired management outcome(s).

Literature Cited:

Omielan, J and Witt, W. 2011/2012 Fall Spring Tall Fescue Seedhead Suppression Trial (IVM 2012 Annual Research Report)

Table 1. Herbicide Treatments, Active Ingredients and Application Rates.

Product (s)	Rate (per Acre)	Active Ingredient(s)	ai Rate (per Acre)
Embark 2S	24 fl oz	mefluidide	6 oz ae
Plateau	2 fl oz	imazapic	0.5 oz ae
Opensight	2.5 oz	aminopyralid + metsulfuron methyl	1.3 oz ae + 0.24 oz
Anuew	1 lb	prohexadione calcium	4.4 oz
Perspective	4.75 oz	aminocyclopyrachlor + chlorsulfuron	1.9 oz + 0.75 oz
Unsprayed Control			

All herbicide treatments contained the adjuvant, Activator 90 at 0.25% v/v.

Table 2. Herbicide Treatments, Heading Density, Seedhead Height, and Canopy Height after Fourth PGR Application the Following Spring

Product (s)	Rate (per Acre)	Timing	May 14, 2018		May 29, 2018		June 18, 2018		
			Heading	Ht (in)	Heading	Ht (in)	Heading	Ht (in)	Canopy (in)
			(220 DAT4[1])		(235 DAT4)		(255 DAT4)		
Embark 2S	24 fl oz	after third mowing	23 c[2]	23 b	21 d	41	15 c	41 b	13 ab
Plateau	2 fl oz	after third mowing	10 d	21 b	20 d	41	13 c	41 b	13 ab
Opensight	2.5 oz	after third mowing	80 ab	26 ab	87 b	42	70 b	41 b	14 a
Anuew	1 lb	after third mowing	85 ab	23 b	100 a	42	100 a	41 b	13 ab
Perspective	4.75 oz	after third mowing	75 b	23 b	63 c	41	72 b	41 b	12 b
Unsprayed Control			90 a	29 a	100 a	41	100 a	44 a	14 a

[1] DAT4 = Days after treatment after third mowing

[2] Means within a column followed by the same letter are not different according to Fisher's LSD at P < 0.05.