

## Final Report to the Delaware Soybean Board

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### **CONTROL OF GRAPE HYACINTH IN SOYBEANS**

#### **JUSTIFICATION AND PROCEDURES:**

Grape hyacinth is a perennial species that is becoming more common in soybean fields. It is an ornamental species that becomes established along field edges and spreads throughout fields. It typically is not a problem when fields are rotated to corn.

Grape hyacinth emerges in the fall and produces waxy, succulent leaves that will often get 6 to 8 inches tall. The plant overwinters and flowers in the early spring, then senesces and is dormant during the summer months. The plant is seldom present at densities to interfere with planting and it is senescing during the early portions of soybean growth, so it does not compete with soybeans. But the fall emergence and leaf development interferes with soybean harvest. At high densities the leaves interfere with the cutter bar, often requiring the operation at a height that prevents the lower pods from being harvested. It presents more of a harvest issue than a competitive weed issue.

The **research objective** is to evaluate the effectiveness of glyphosate rates, tankmixtures, and timings to reduce the number and size of grape hyacinth leaves at harvest time.

#### **Summary:**

A trial examining the benefit of spring herbicide applications and timing was established in a field with a natural infestation of grape hyacinth. Herbicides were selected based on limited trials in the past and preliminary research with Star of Bethlehem. Glyphosate was applied at two rates (1.0 and 1.5 lb ae/A), glyphosate plus Finesse, glyphosate plus Maverick, or sequential applications of glyphosate. Treatments were

made either April 10 or May 2, 2014. Soybeans were planted May 16, and treated with Canopy at 4 oz/A.

Grape hyacinth was evaluated shortly after soybean planting, in the fall of 2014, and early spring of 2015. When evaluated shortly after soybean planting, treatments applied April 10 showed better control than treatments applied May 2. However, with later ratings these differences were not observed. Treatments with Maverick consistently provided the highest level of control. Treatments with Finesse and two applications of glyphosate were also among the higher rated plots, but they were not as consistent.

No treatment was highly effective for controlling grape hyacinth one year after treatment. Management of this weed is going to require diligent efforts to achieve long-term control. While a single application of glyphosate "burndowned" grape hyacinth, it had limited impact in the fall and one year after application. Neither Finesse nor Maverick can be used prior to planting corn and both require planting STS soybeans after at least a 3 month interval. Neither are practical as a late spring treatment.

Table 1. Grape hyacinth control at different intervals following herbicide application.

Trt No.	Treatment Name	Growth Stage	Grape hyacinth 5/2/2014		Grape hyacinth 5/21/2014		Grape hyacinth 10/31/2014		Grape hyacinth 4/6/2015	
			Control %		Control %		Control %		Control %	
1	Glyphosate (32 fl oz)	Spring	47	c	78	b	60	c	47	cde
2	Glyphosate (32 fl oz)	10 EPP			43	d	57	c	37	e
3	Glyphosate (48 fl oz)	Spring	63	b	87	a	65	bc	47	cde
4	Glyphosate (48 fl oz)	10 EPP			57	c	57	c	40	de
5	Glyphosate (32 oz) + Finesse (0.4 oz)	Spring	63	b	83	ab	63	c	57	abc
6	Glyphosate (32 oz) + Finesse (0.4 oz)	10 EPP			50	cd	77	ab	53	a-d
7	Glyphosate (32 oz) + Maverick ( 0.7 oz)	Spring	50	c	85	ab	82	a	67	a
8	Glyphosate (32 oz) + Maverick ( 0.7 oz)	10 EPP			50	cd	80	a	63	ab
9	Glyphosate (48 oz) fb glyphosate (48 oz)	Spring fb 10EPP	75	a	89	a	78	a	50	b-e
10	Untreated Check		0		0		0		0	
LSD P=.05			9.57		7.97		12.73		16.19	
Standard Deviation			5.08		4.65		7.35		9.35	
CV			8.52		7.46		10.7		18.3	
Treatment Prob(F)			0.0008		0.0001		0.0001		0.0001	

Means followed by same letter do not significantly differ (P=.05, LSD)