Virginia Cooperative Extension

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Identification and Control of Annual Ryegrass in No-Till Corn in Virginia

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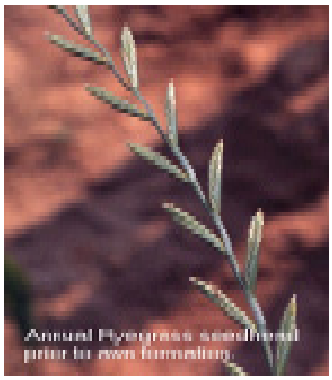

Identification

Annual ryegrass is a winter annual found throughout the United States that may reach 3 feet in height with a fibrous root system. Stems are often tinged red at the base, and leaves are rolled in the bud with claw-like auricles in the collar region. Leaf blades are 2-1/2 to 8 inches long, 1/8 to 1/4 inches wide, and have a membranous ligule. The seedhead is a 4- to 16-inch-long spike with spikelets that have long awns arranged alternately up the stem. The plant has a fibrous root system.

Objectives

In Virginia, annual ryegrass has become one of the most troublesome and difficult to control weeds in small grains, as well as in corn and soybeans grown in rotation with small grains. Annual ryegrass control has declined due to the development of resistance to Hoelon, which has been the only treatment available for control in wheat and barley. Lack of control in small grains has allowed annual ryegrass to proliferate and become problematic in no-till corn establishment where high rates of triazine herbicides or sequential applications of nonselective herbicides are frequently required for acceptable control. Bladex had proven effective for annual ryegrass control in no-till corn establishment, but loss of registration of this compound now severely limits control options in this crop. Experiments initiated in 2000 compared herbicide programs using transgenic corn hybrids for control of annual ryegrass in no-till establishment to traditional herbicide programs typically used in Virginia. Transgenic corn hybrids utilized included those with tolerance to Roundup Ultra, Liberty, Lightning, and Poast-Plus.

Table 1. Effect of Sequential Herbicide Application on Annual Ryegrass Control in No-till Corn in Virginia.

Herbicide	Rate/Acre	Control of Annual Ryegrass[1]	
		2 WAT[2]	8 WAT[3]
		%	
Roundup	1.5 pt	68	87
Roundup	3.0 pt	84	98
Roundup	1.5 pt + 1.5 pt	76	99
Liberty	20 oz	8	8
Liberty	34 oz	6	0
Liberty	20 oz + 20 oz	10	50
Poast Plus	1.5 pt	11	65
Poast Plus	2.25 pt	20	69
Poast Plus	1.5 pt + 1.5 pt	13	68
Lightning	1.28 oz	4	49
Lightning	1.28 oz + 1.28 oz	4	35
Gramoxone	1.5 pt	83	47
Gramoxone	2.5 pt	88	55

[1] Indicates visual ryegrass control (0-100%)
[2] WAT = weeks after treatment
[3] Sequential treatment applied 6 weeks after initial treatment

- *The use of trade names in this publication does not imply endorsement of the product named or imply criticism of similar ones not mentioned.*
- *Initial treatments applied to fully tillered annual ryegrass 1 to 2 days before planting. Sequential treatments applied to ryegrass regrowth or new seedlings.*

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Results

Evaluation of annual ryegrass control indicated that there was no advantage associated with using Liberty, Lightning, or Poast Plus. Roundup Ultra applied alone at either 1.5 or 3.0 pints per acre provided significantly higher levels of annual ryegrass control 8 weeks after treatment (WAT) than any of the other postemergence treatments applied alone, and provided excellent control with sequential early postemergence applications after corn emergence. Using Gramoxone alone provided rapid dessication of the aboveground portion of the plant and adequate control levels 2 WAT. Due to Gramoxone's lack of effect on roots, however, annual ryegrass regrowth occurred in subsequent weeks (Table 1). Gramoxone treatments applied in combination with atrazine with or without Bladex resulted in acceptable control 8 WAT (Figure 1). Gramoxone applied in combination with 1/2 ounce of Basis resulted in significantly decreased levels of control. Roundup Ultra applied alone at 1.5 or 3.0 pints per acre in combination with atrazine with or without Bladex provided excellent ryegrass control (Figure 2). Roundup Ultra applied at 1.5 pints per acre in combination with Basis also provided superb ryegrass control. Results indicated that standard Roundup and Gramoxone treatments containing atrazine and Bladex continue to be very effective.

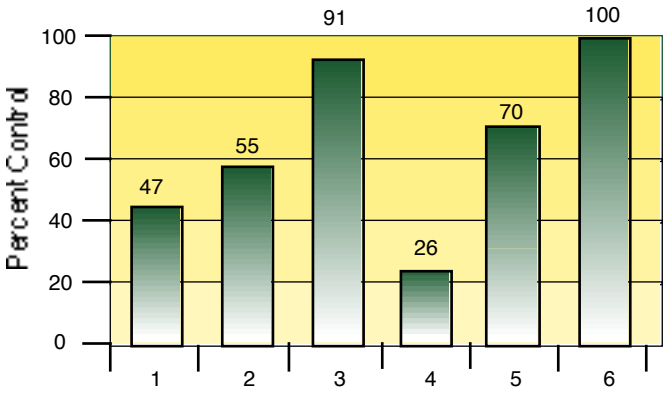
Conclusions

Results indicated that levels of annual ryegrass control similar to standard treatments containing Bladex can be realized through the use of Gramoxone plus atrazine or Roundup Ultra applied alone at 1.5 or 3.0 pints per acre in combination with either atrazine or Basis. Gramoxone treatments in combination with Basis are not advisable. Initial annual ryegrass control (1 WAT, data not shown) was much lower with Roundup Ultra treatments compared to Gramoxone treatments due to their respective modes of action. Therefore, chemical choice depends upon the grower's anticipated time of planting. Using Roundup-ready corn hybrids appears to give the grower the option of applying postemergence treatments of Roundup to control annual ryegrass. Using the other transgenic hybrids, however, does not seem to provide any potential benefit.

This research was done in cooperation with Randolph Aigner, Henrico County, and Rueben L. Blanton, Amelia County.

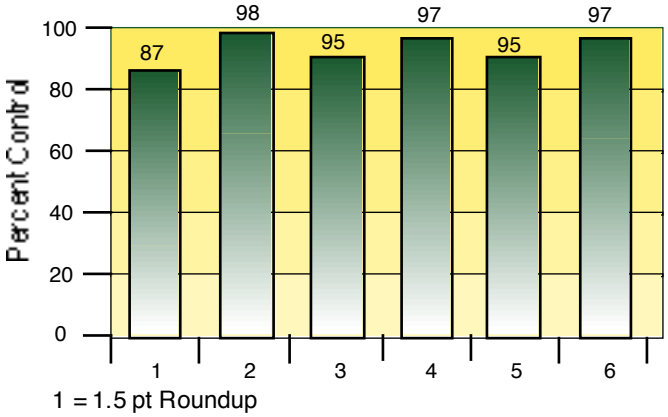
Reviewed by Edward S. Hagood, Jr., Extension specialist, Plant Pathology, Physiology, and Weed Science.

Figure 1. Annual Ryegrass Control 8 WAT with Gramoxone Treatments



1 = 1.5 pt Gramoxone
2 = 2.5 pt Gramoxone
3 = 1.5 pt Gramoxone + 3.0 pt atrazine
4 = 1.5 pt Gramoxone + 0.5 oz Basis
5 = 1.5 pt Gramoxone + 3.0 pt atrazine + 0.5 oz Basis
6 = 1.5 pt Gramoxone + 3.0 pt atrazine + 2.0 pt Bladex

Figure 2. Annual Ryegrass Control 8 WAT with Roundup Treatments



1 = 1.5 pt Roundup
2 = 3.0 pt Roundup
3 = 1.5 pt Roundup + 3.0 pt atrazine
4 = 1.5 pt Roundup + 0.5 oz Basis
5 = 1.5 pt Roundup + 3.0 pt atrazine + 0.5 oz Basis
6 = 1.5 pt Roundup + 3.0 pt atrazine + 2.0 pt Bladex