

## Woolly Cupgrass Management in Corn

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### Introduction

Woolly cupgrass can be very difficult to control. Several management strategies may be necessary to achieve good results. Genetically modified crops with herbicide resistance provide growers with an additional strategy for managing woolly cupgrass. The purpose of this study was to evaluate various preemergence followed by postemergence and postemergence applied herbicides for crop phytotoxicity and weed control in genetically modified corn.

### Materials and Methods

The crop rotation was corn following soybean. The seedbed was prepared by disking prior to planting. Crop residue was 10 to 15 percent at planting. A randomized complete block design with three replications was used. Herbicides were applied in 20 gallons of water per acre. Visual estimates of crop injury and percentage weed control were made during the growing season. These observations are compared with an untreated control and are made on a zero to 100 rating scale (0 percent = no control or injury; 100 percent = complete control or crop kill).

'Garst hybrid 8539 BT/LL/IT' corn was planted on May 11 and preemergence (PRE) treatments followed. Early postemergence (EPOST) and postemergence (POST) treatments were applied on May 25 and June 8, respectively. Corn growth stage was V1 and 1.5 to 2 in. tall on May 25, and on June 8 corn was V4 to V5 and 4 to 7 in. tall.

Woolly cupgrass growth stage was one to three leaves and 0.25 to 1.5 in. tall on May 25. On June 8, weeds were one to four leaves, two to three tillers and 0.25 to 4 in. tall. Average cupgrass populations were 3 and 25 plants/ft<sup>2</sup> on May 25 and June 8, respectively. Other weed species occurring in this study were common waterhemp, and velvetleaf. These weeds were cotyledon to three leaves and 0.25 to 3 in. tall on May 25. On June 8 weeds were cotyledon to numerous leaves and 0.25 to 4 in. tall. Average common waterhemp and velvetleaf populations were 2 plants/ft<sup>2</sup> on May 25 and June 8.

### Results and Discussion

Summarized in Table 1 are the data on corn injury and percentage weed control as affected by herbicide treatment. Five percent corn injury was observed on June 8 from Prowl plus Marksman applied EPOST (data not presented). Significant corn injury occurred from many POST applications when observed on June 16. Balance Pro applied PRE at several rates provided 82 to 90% woolly cupgrass control on June 8, prior to POST applications (data not presented). This compared with other PRE treatments achieving 40 to 68%. Common waterhemp and velvetleaf control was good to excellent from Balance Pro applied PRE on June 8. Balance Pro applied PRE and followed by various combinations of POST applied herbicides continued to provide good to excellent control of woolly cupgrass, common waterhemp and velvetleaf when observed on July 18 and August 10. Common waterhemp was not adequately controlled by Balance Pro applied PRE and followed by Lightning POST when noted on July 18 and August 10.

**Table 1. Evaluation of preemergence followed by postemergence herbicide combinations for woolly cupgrass management in genetically modified corn.**

Treatment <sup>a</sup>	Rate Product/A	Appl. time	Injury Wocu <sup>b</sup>		Wocu Cowh		Cowh Vele		Vele	
			6/16 (%)	7/18 (%)	8/10 (% weed control)	7/18 (% weed control)	8/10 (% weed control)	7/18 (% weed control)	8/10 (% weed control)	
Control	-	-	0	0	0	0	0	0	0	0
Prowl 3.3EC+Marksman 3.2SC+NIS	3.6 pt+3.5 pt+0.25 %v/v	EPOST	8	60	53	90	87	70	67	67
Bicep II Magnum 5.5 L+ (Prowl 3.3EC+Basis Gold 89.5 DF+ COC+AMS)	1.58 qt+ (2.4 pt+14 oz+ 1.0 %v/v+2 lb/A)	PRE+ (POST)	30	72	68	87	83	98	98	98
Balance Pro 4 SC+(Lightning 70DG+ +NIS+AMS)	2.25 oz+(1.3 oz+ 0.25 %v/v+2.5 lb/A)	PRE+ (POST)	8	99	95	73	72	99	99	99
Lightning 70 DG+Distinct 70WG+ NIS+AMS	1.3 oz+4 oz+ 0.25 %v/v+2.5 lb/A	POST	8	90	90	90	88	99	99	99
Balance Pro 4 SC+ Atrazine 90DF WG+ (Liberty 1.67 SL+AMS)	1.75 oz+ 0.83 lb+ (24 oz+3 lb/A)	PRE+ (POST)	8	95	95	99	96	99	99	99
Balance Pro 4 SC+ (Liberty 1.67 SL+AMS)	1.75 oz+ (28 oz+3 lb/A)	PRE+ (POST)	5	96	95	96	93	98	98	98
Liberty ATZ 4.3 SC+AMS	1.25 qt+3 lb/A	POST	7	93	93	95	92	99	98	98
Guardman 5SE+(Celebrity Plus 70 WG+ NIS+28%N)	0.75 qt+(4.8 oz+ 0.25 %v/v+2.5 %v/v)	PRE+ (POST)	13	82	82	98	96	99	99	99
Leadoff 5SL+ (Basis Gold 89.5 DF+Clarity 4SL+ COC+28%N)	0.75 qt+ (14 oz+0.25 pt+ 1 %v/v+2 qt/A)	PRE+ (POST)	15	78	75	90	85	99	99	99
Leadoff 5SL+ (Accent Gold 83.8 DF+Clarity 4SL+ COC+28%N)	0.75qt+ (2.9 oz+0.25 pt+ 1.0 %v/v+2 qt/A)	PRE+ (POST)	20	60	53	88	85	99	99	99
Balance Pro 4 SC+ (Basis Gold 89.5 DF+COC+28%N)	1.5 oz+ (14+1.0 %v/v+2 qt/A)	PRE+ (POST)	15	96	93	96	96	99	99	99
Balance Pro 4 SC+ (Accent Gold 83.8 DF+ COC+28%N)	1.5 oz+ (2.9 oz+ 1.0 %v/v+2 qt/A)	PRE+ (POST)	27	96	95	86	80	99	99	99
Balance Pro 4 SC+ (Basis Gold 89.5 DF+ Clarity 4SL+Accent 75WG+ COC+28%N)	1.5 oz+ (14 oz+ 0.25 pt+0.38 oz+ 1.0 %v/v+2 qt/A)	PRE+ (POST)	13	98	95	98	96	99	99	99
Balance Pro 4 SC+ (Accent Gold 83.8 DF+ Clarity 4SL+Accent 75WG+ COC+28%N)	1.5 oz+ (2.9 oz+ 0.25 pt+0.38 oz+ 1.0 %v/v+2 qt/A)	PRE+ (POST)	20	93	93	96	93	99	99	99
LSD (0.05)			6	7	9	12	14	15	14	14

<sup>a</sup> NIS = Activator 90, a nonionic surfactant from Loveland Industries, Inc.; COC = Herbimax, an oil plus surfactant from Loveland Industries, Inc.; 28%N = mixture of urea and ammonium nitrate.

<sup>b</sup> Wocu = woolly cupgrass, Cowh = common waterhemp, Vele = velvetleaf.

The total POST applied treatment of Lightning plus Distinct provided good to excellent woolly cupgrass, common waterhemp and velvetleaf control when observed on the two dates.