

Effects of adjuvants tank-mixed with Liberty or Steadfast + Callisto in corn at Lamberton, MN in 2006.

Getting, Jodie K. The objective of this study was to evaluate the effects of adjuvants tank-mixed with Liberty or Steadfast + Callisto for annual grass and annual broadleaf weed control in corn. This study was conducted on a Normania loam soil containing 4.2% organic matter, pH 6.5 and soil test P and K levels of 34 and 370 lb/A, respectively. A randomized complete block design with four replications and a plot size of 10 by 30 ft was used.

The site was planted to oats in 2005 and was fall chiseled. The area was fertilized with 150-100-100 on April 14, 2006. On May 17, 2006, Pioneer '38H69' glufosinate resistant/glyphosate resistant field corn was planted in 30-inch rows at a seeding rate of 33,000 seeds/A. Tefluthrin (Force) was applied at 5.0 oz/1000 row feet in a T-band for the control of northern corn rootworm larvae. All treatments were applied with a tractor-mounted sprayer delivering 20 gpa at a pressure of 40 psi. The sprayer was equipped with 8002 flat-fan nozzles spaced 15 inches apart on the boom. Application dates, environmental conditions, plant sizes and rainfall data are listed below:

Date	June 2
Treatment	POST
Temperature (F)	
air	82
soil (4 inch)	86
Relative humidity (%)	30
Wind (mph)	N 10
Sky	clear
Soil moisture	dry
Corn	
leaf no.	V3
height (inch)	5
Yellow foxtail	
leaf no.	3 to 4
height (inch)	2 to 4
no./ft <sup>2</sup>	27
Tall waterhemp	
leaf no.	2 to 3
height (inch)	2 to 3
no./ft <sup>2</sup>	2
Rainfall after application (inch)	
1 week	4.26
2 week	1.63
3 week	2.30

May precipitation totaled 2.44 inches compared to the long-term average of 3.34 inches. Above normal precipitation in June resulted in 9.39 inches compared to the long-term average of 3.77 inches. As a result, there was a heavy flush of new emerging weeds. The trial received 4.26 inches of rain and hail 4 days after application resulting in water ponding in the trial area. None of the herbicide treatments caused visible crop injury. The predominate weed species were yellow foxtail and tall waterhemp. On June 9, one week after herbicide application, Liberty applied alone at 20 and 32 oz resulted in 61 and 86% yellow foxtail control, respectively. The addition of Premium AMS or Cornbelt N-tense resulted in 90% or greater control. Steadfast + Callisto tank-mixed with any of the adjuvants resulted in 93 to 96% control. Liberty at 20 oz gave 78% tall waterhemp control; all other treatments gave 93% or greater control. Premium AMS and Cornbelt N-tense increased the efficacy of Liberty. The efficacy of Steadfast + Callisto was equal among all adjuvants tested. (Southwest Research and Outreach Center, University of Minnesota, Lamberton).

Table. Effects of adjuvants tank-mixed with Liberty or Steadfast + Callisto in corn at Lamberton, MN in 2006 (Getting).

Treatment <sup>a</sup>	Rate	Yellow foxtail		Tall waterhemp	
		6/9	6/19	6/9	6/19
<u>POST (3 to 4-inch weeds)</u>	(oz/A, pt/A, qt/A, lb/A or %)	-----(% control)-----			
Liberty	20 oz	61	71	78	83
Liberty	32 oz	86	83	95	93
Liberty + Premium AMS	20 oz + 3 lb	90	90	98	97
Liberty + Cornbelt N-tense	20 oz + 0.75%	92	91	98	96
Liberty + Premium AMS	32 oz + 3 lb	94	93	97	96
Liberty + Cornbelt N-tense	32 oz + 0.75%	90	88	99	97
Steadfast + Callisto	0.5 oz + 2 oz	93	94	99	100
+ Premium COC + Premium AMS	+ 1% + 8.5 lb/100 gal				
Steadfast + Callisto	0.5 oz + 2 oz	93	92	98	100
+ Premium COC + Cornbelt N-tense	+ 1% + 0.5%				
Steadfast + Callisto	0.5 oz + 2 oz	95	95	99	99
+ Trophy Gold + Premium AMS	+ 0.25% + 8.5 lb/100 gal				
Steadfast + Callisto	0.5 oz + 2 oz	96	95	99	100
+ Trophy Gold + Cornbelt N-tense	+ 0.25% + 0.5%				
Steadfast + Callisto	0.5 oz + 2 oz	95	94	99	100
+ Base + Cornbelt N-tense	+ 1% + 0.5%				
Weedy check	-	0	0	0	0
	LSD (0.10)	6.4	4.4	3.1	4.1

<sup>a</sup> Premium AMS = spray grade ammonium sulfate fertilizer; Cornbelt N-tense = water conditioning agent/pH adjuster; Premium COC = crop oil concentrate; Trophy Gold = alkalinated methylated seed oil; Base = seed oil derived nonionic surfactant.