

WEED SURVEY AND CONTROL OF KEY WEED SPECIES IN SMALL GRAINS – 2014-2015

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Weed Survey

As part of the project we surveyed small grain fields for weeds, identifying them by species and relative abundance in the fall of 2014. In the fall we sampled 21 fields and a total of 22 weed species were observed. The most frequently observed species were henbit and common chickweed, present in 19 fields. Field pansy was in fourteen fields and annual blue grass was in 10 fields.

Henbit density ranged 165 plants/m² to a few random plants. No other weed species was found at such high densities. Besides annual bluegrass, roughstalk bluegrass was the only other grass species present.

The average field had five weeds species present in the field. One field had 9 species present, while six fields had 5 or fewer species present.

In the spring, 19 of the 21 fields were sampled a second time. This sampling occurred after the spring herbicides were applied. Common chickweed was the most frequent weed species. All but two fields had low weed densities. One of the field with high weed density only had common chickweed present and the second field had both common chickweed and annual bluegrass. We did not test to determine if any of the fields were infested with herbicide-resistant biotypes.

On-Farm Trials

We conducted two replicated on-farm trials examining control of ALS-resistant common chickweed.

The first trial included Axiom at the spike stage (Nov 5) and combinations of Glory, Starane Ultra, Huskie, and Harmony Extra applied either at 1-leaf stage (Nov 11) or 3-leaf stage (Nov 25) or spring applications (April 16) (Table 1). In general, Glory injury was higher when applied in the fall than in the spring. Injury from spring applications did not seem to slow the growth of the wheat, whereas injury from fall applications were still evident in May. Control of common chickweed was good to excellent for all treatments containing Axiom or Huskie, regardless of tankmix partners or other herbicides used. Harmony Extra plus Starane Ultra in the spring provided 77% control.

The second trial examined Glory (metribuzin) or Starane Ultra in combination with Harmony Extra (Table 2). Treatments were applied either in the fall (Nov 25) or in the spring (April 16).

Control ALS-resistant common chickweed was good to excellent for all treatments that included Glory, but only fair when Starane Ultra was used in combination with Harmony Extra.

Table 1. Axiom and postemergence combinations for control of ALS-resistant common chickweed

Trt No.	Treatment Name	Other Rate	Other Rate Unit	Growth Stage	Winter wheat	Winter wheat	Common chickweed
					4/15/2015	4/23/2015	4/15/2015
					Stunting %	Injury %	Control %
1	Untreated Check				0	0	0
2	Axiom Premix	6	OZ WT/A	Spike	8 c	2.3 cd	98.3 a
3	Axiom Premix	6	OZ WT/A	Spike	11.3 bc	6.7 bc	96 a
	Osprey	4.75	OZ WT/A	3lvs-1Tilr			
	NIS + 30% UAN ^a			3lvs-1Tilr			
4	Axiom Premix	6	OZ WT/A	Spike	10.7 c	2.3 cd	96.7 a
	Huskie Premix	15	FL OZ/A	3lvs-1Tilr			
	NIS + 30% UAN ^a			3lvs-1Tilr			
5	Huskie Premix	11	FL OZ/A	1LfWht	0 d	0 d	100 a
	NIS + 30% UAN ^a			1LfWht			
6	Huskie Premix	15	FL OZ/A	1LfWht	4 cd	0 d	100 a
	NIS + 30% UAN ^a			1LfWht			
7	Huskie Premix	15	FL OZ/A	3lvs-1Tilr	5.7 cd	0 d	100 a
	NIS + 30% UAN ^a			3lvs-1Tilr			
8	Huskie Premix	15	FL OZ/A	3lvs-1Tilr	36.7 a	25 a	87.7 b
	Glory.....metribuzin	4	OZ WT/A	3lvs-1Tilr			
	Nonionic Surfactant	2	QT/100 GAL	3lvs-1Tilr			
	NIS + 30% UAN ^a			3lvs-1Tilr			
9	Huskie Premix	15	FL OZ/A	Spring		0 d	100 a
	NIS + 30% UAN ^a			Spring			
10	Huskie Premix	15	FL OZ/A	Spring		2.3 cd	100 a
	Glory.....metribuzin	4	OZ WT/A	Spring			
	NIS + 30% UAN ^a			Spring			
11	Harmony Extra SG Premix	0.75	OZ WT/A	Spring		0 d	76.7 c
	Starane Ultra	6.4	FL OZ/A	Spring			
	NIS + 30% UAN ^a			Spring			
12	Anthem Premix	4	FL OZ/A	Spike	18.3 b	9.7 b	95 ab
	Huskie Premix	15	FL OZ/A	3lvs-1Tilr			
	NIS + 30% UAN ^a			3lvs-1Tilr			
	LSD P=.05				7.5	5.28	7.69
	Standard Deviation				4.28	3.08	4.51
	CV				36.21	70.09	4.73
	Treatment Prob(F)				0.0001	0.0001	0.0001

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

^a NIS= Nonionic surfactant (80:20) at 2 qt/100 gal; 30% UAN is liquid nitrogen at 2 qt/A

Table 2. Herbicide combinations with Harmony Extra for control of ALS-resistant common chickweed.

Trt No.	Treatment Name	Other Rate	Other Rate Unit	Growth Stage	Winter wheat 4/15/2015		Winter wheat 4/23/2015		Common chickweed 5/12/2015	
					Stunting %		Stunting %		Control %	
1	Harmony Extra SG Premix	0.75	OZ WT/A	3 lvs	9.7	c	8	b		
	Nonionic Surfactant	1	QT/100 GAL	3 lvs						
2	Glory.....metribuzin	2	OZ WT/A	3 lvs	14	ab	20.7	a	100	a
	Harmony Extra SG Premix	0.75	OZ WT/A	3 lvs						
	Nonionic Surfactant	1	QT/100 GAL	3 lvs						
	3	Glory.....metribuzin	3	OZ WT/A	3 lvs	16.7	a	22.3	a	100
	Harmony Extra SG Premix	0.75	OZ WT/A	3 lvs						
	Nonionic Surfactant	1	QT/100 GAL	3 lvs						
	4	Starane Ultra	0.3	PT/A	3 lvs	11.3	bc	9.7	b	78.5
Harmony Extra SG Premix		0.75	OZ WT/A	3 lvs						
	Nonionic Surfactant	1	QT/100 GAL	3 lvs						
	5	Huskie Premix	15	FL OZ/A	3 lvs	0	d	0	c	100
Nonionic Surfactant		1	QT/100 GAL	3 lvs						
6	Harmony Extra SG Premix	0.75	OZ WT/A	Spring			0	c	23.3	c
	Nonionic Surfactant	1	QT/100 GAL	Spring						
7	Glory.....metribuzin	3	OZ WT/A	Spring			9.7	b	86.7	ab
	Harmony Extra SG Premix	0.75	OZ WT/A	Spring						
	Nonionic Surfactant	1	QT/100 GAL	Spring						
	8	Glory.....metribuzin	4	OZ WT/A	Spring			9	b	100
Harmony Extra SG Premix		0.75	OZ WT/A	Spring						
	Nonionic Surfactant	1	QT/100 GAL	Spring						
	9	Starane Ultra	0.4	PT/A	Spring			5.7	b	100
Harmony Extra SG Premix		0.75	OZ WT/A	Spring						
	Nonionic Surfactant	1	QT/100 GAL	Spring						
	10	Untreated Check				0		0		0
	LSD P=.05				3.51		4.75		19.07	
	Standard Deviation				1.87		2.74		10.48	
	CV				18.06		29.05		12.18	
	Treatment Prob(F)				0.0001		0.0001		0.0001	

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

Summary

The on-farm trials have increased our experience for management of this important weed biotype in Delaware. Common chickweed was one of the most frequently observed species in our survey of small grain fields in 2014/2015. Additional work is necessary to understand the consistency of these results on controlling common chickweed and improve our recommendations. We seldom rely on a single trial for weed control recommendations.

While Glory (metribuzin) was effective for control in many of these trials, we know some varieties are sensitive to this herbicide and we need more work on crop safety to understand the safest rates and timing to use. Overall, spring applications of Glory provided better crop safety than fall applications.