

## Spring Wheat and Weed Control Response to Postemergence Herbicides

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A trial was conducted to evaluate different postemergence herbicide combinations for broadleaf weed control in spring wheat. Prior to planting, the field site was treated with glyphosate to control existing weeds on April 29 and urea fertilizer (50 lbs N/acre) was applied on April 15, 2020. The hard red spring wheat 'Shelly' was planted at a rate of 120 lbs seed per acre on May 1 using a no-till drill set to a depth of 2.5 inches. Wheat emerged on May 14. Weeds that emerged after planting were allowed to grow with the wheat crop until either the 3-leaf or jointing stage of wheat was reached. Herbicide treatments were applied using a tractor-mounted research sprayer at a spray volume of 10 gallons per acre using XR8002 flat fan nozzles. Herbicides were applied at the 3-leaf stage on June 5, 2020. Air temperature at time of application was 67 F, relative humidity was 40%, wind speed was 5 mph from the east, soil temperature was 46 F, and no dew was present on leaves. Weeds present at time of application included: kochia, 738/m<sup>2</sup>, 3 cm in height; common lambsquarters, 121/m<sup>2</sup>, 3.5 cm in height; bindweed, 12/m<sup>2</sup>, 24 cm runners. The second application timing was at the wheat jointing stage. These treatments were applied on June 17. Environmental conditions at time of application were: air temperature, 84 F; relative humidity, 41%; wind speed, 5 mph from north northwest; soil temperature, 58 F; no dew was present. Treatments were evaluated on June 24 (19 days after the first application timing and 7 days after the second application timing) and July 9 (34 days after the first and 22 days after the second application timing). Wheat was harvested on August 31 using a small plot combine (Kincaid 8XP).

Due to the dry conditions that occurred during the spring of 2020 where from May 1 through June 27 only 1.11 inches of rainfall occurred in Hettinger. During the final week of June and first week of July, 3.16 inches of rainfall occurred which saved the crop from complete failure. However, lack of rainfall resulted in poor incorporation of the applied urea fertilizer resulting in nitrogen deficiencies in some area and weed control was not as good as would be expected due to the drought stress. Also, wheat yields were highly variable and there was no clear response to the herbicide treatments. Kochia was best control with 3-leaf application of PerfectMatch (clopyralid+fluroxypyr+pyroxsulam) at 83%. Treatments similar to PerfectMatch were 3-leaf and jointing application of Quelex plus Starane Flex plus TeamMate (halauxifen+florasulam plus fluroxypyr+florasulam plus pyroxsulam) at 81 and 74%, respectively; 3-leaf and jointing application of Starane Ultra plus Varro (halauxifen plus thifencarbazone-methyl) at 80 and 77%, respectively; 3-leaf application of Talinor (bicycolpyrone+bromoxynil) at 80%; 3-leaf and jointing application of Starane Ultra plus Axial XL (fluroxypyr plus pinoxaden) at 78 and 75%, respectively; jointing application of OpenSky (flyoxypry+pyroxsulam) at 77%; and jointing application of PerfectMatch at 75%. Common lambsquarters was best control with the 3-leaf application of Talinor or Supremacy (fluroxypyr+thifensulfuron-methyl+tribenuron) both at 99%. Similar to these were 3-leaf applications of OpenSky at 92%; Quelex+TeamMate at 92%; Qulex plus Starane Flex + TeamMate at 95%; PerfectMatch at 92%. The only treatment that was similar when applied at the jointing stage was Supremacy at 96%. Field bindweed was best controlled with Starane Ultra plus Varro at 82 to 83%; Quelex plus Starane Flex plus TeamMate at 75 to 80%; and PerfectMatch at 76 to 80%. Wheat yield was highly variable and no differences in yield or test weight were found.

Table 1. Weed control and spring wheat response to postemergence herbicides applied at either the 3-leaf stage or at jointing.

Treatment			Kochia		Lambsquarters		Bindweed	Wheat		
Product name	Rate	Timing	19DAA	34DAA	19DAA	34DAA	34DAA	Yield	Test	
			% control					Bu/A	LB/Bu	
1	Untreated		0 h	0 f	0 f	0 f	0 g	12.9 -	49.7 -	
2	OpenSky	16	3-lf	82 ab	66 cd	89 ab	92 ab	64 bcd	18.3 - 56.3 -	
3	Quelex	0.75	3-lf	76 bcd	71 bcd	82 bc	91 ab	60 d	21.7 - 51.5 -	
	TeamMate	1								
4	Quelex	0.75	3-lf	79 a-d	81 ab	74 cd	95 ab	80 a	19.8 - 54.4 -	
	Starane Flex	13.5								
	TeamMate	1								
5	PerfectMatch	16	3-lf	76 bcd	83 a	78 bc	92 ab	80 a	17.5 - 49.6 -	
6	Starane Ultra	5.3	3-lf	80 abc	78 ab	36 e	0 f	63 cd	25.3 - 56.5 -	
	Axial XL	16.4								
7	Starane Ultra	5.3	3-lf	78 a-d	80 ab	80 bc	85 bc	82 a	24.7 - 58.3 -	
	Varro	6.85								
8	Supremacy	4	3-lf	65 f	61 de	79 bc	99 a	46 ef	18.8 - 46.7 -	
9	Talinor	13.7	3-lf	85 a	80 ab	97 a	99 a	43 f	19.0 - 52.8 -	
10	OpenSky	16	JNT	72 def	77 ab	71 cd	72 d	74 abc	18.9 - 52.2 -	
11	Quelex	0.75	JNT	72 def	74 abc	75 c	77 cd	75 ab	17.3 - 48.7 -	
	Starane Flex	13.5								
	TeamMate	1								
12	Quelex	0.75	JNT	66 f	53 e	68 cd	81 cd	57 de	20.0 - 55.1 -	
	TeamMate	1								
13	PerfectMatch	16	JNT	71 def	75 abc	73 cd	78 cd	76 ab	13.8 - 49.2 -	
14	Starane Ultra	5.3	JNT	74 cde	75 abc	25 e	0 f	83 a	19.4 - 56.5 -	
	Axial XL	16.4								
15	Starane Ultra	5.3	JNT	67 ef	77 ab	63 d	56 e	83 a	15.8 - 51.6 -	
	Varro	6.85								
16	Supremacy	4	JNT	67 def	77 ab	66 cd	96 a	55 de	14.7 - 45.0 -	
LSD P=.10				7.61	10.08	10.47	10.63	11.86	7.26	9.922
CV				9.34	12.29	13.55	13.08	15.75	33.06	16.02
Treatment F				37.453	22.493	30.070	63.770	18.234	1.216	0.799
Treatment Prob(F)				0.0001	0.0001	0.0001	0.0001	0.0001	0.2920	0.6793

-Spring wheat 'Shelly' was planted on May 1, 2020.

-Treatments were applied as either at 3-leaf on June 5 or at jointing on June 17.

-NIS (0.25% v/v) was included with treatments 2-8, 9-16; AMS (15 lb/gal) was included with treatments 2, 5-8, 10, 13-16; COC (1% v/v) and (CoAct+ 2.5 oz/A) was included with treatment 9.

-Kochia, common lambsquarters, and field bindweed were evaluated on June 24 [19 days after the application (DAA) to 3-leaf wheat or 7 DAA to wheat at jointing stage] and on July 9 (34 DAA to 3-leaf wheat or 22 DAA to wheat at jointing stage).

-Wheat was harvested on August 31 using a small plot combine (Kincaid 8-XP).