

Table 1. Comparison of fall and spring applications of Anthem Flex for weed control in spring wheat at Hettinger, ND, 2022-23.

Herbicide treatment ^a	Rate oz/A	Time ^b	Kochia ^v			green foxtail			Wheat yield bu/A
			16DAE	36DAE	86DAE	16DAE	36DAE	86DAE	
			percent control						
1 Untreated			0 d	0 d	0 d	0 d	0 c	0 d	62 a
2 Glyphosate	22	Fall	0 d	0 d	0 d	0 d	0 c	0 d	55 ab
3 Glyphosate	22	Spring	0 d	0 d	0 d	0 d	0 c	0 d	58 a
4 Anthem Flex	4	Fall	85 b	90 b	83 bc	90 ab	90 a	77 b	63 a
Glyphosate	22	Fall							
5 Anthem Flex	4	Spring	99 a	99 a	95 a	89 ab	90 a	82 ab	60 a
Glyphosate	22	Spring							
6 Anthem Flex	2.5	Fall	98 a	95 ab	83 b	92 a	88 a	88 a	62 a
Glyphosate	22	Fall							
Anthem Flex	2	Spring							
Glyphosate	22	Spring							
7 Anthem Flex	4	Fall	85 b	90 b	97 a	85 b	90 a	78 b	48 bc
Glyphosate	22	Fall							
Bison	32	POST							
Starane Flex	13.5	POST							
8 Glyphosate	22	Spring	70 c	73 c	85 b	72 c	72 b	71 c	46 c
Bison	32	POST							
Starane Flex	13.5	POST							
9 Fierce	6	Fall	80 b	81 c	74 c	90 ab	87 a	87 a	59 a
Glyphosate	22	Fall							
LSD P=.05			7.62	7.07	9.2	5.47	4.5	6.56	8.06
Standard Deviation			5.25	4.86	6.32	3.76	3.03	4.51	5.42
CV			9.1	8.32	10.95	6.51	5.47	8.42	9.08
Treatment F			282.88	333.82	191.73	541.43	763.35	321.88	3.85
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0083

^a Glyphosate, Roundup PowerMax; Anthem Flex, carfentrazone plus pyroxasulfone; Bison, bromoxynil plus MCPA; Starane Flex, fluroxypyr plus florasulam; Fierce, flumioxazin plus pyroxasulfone. AMS was included at 8.5 lb/100gal for all glyphosate treatments; HS-MSO (Destiny HC) at 1% v/v was added to treatments 4-7 and 9.

^b Fall application was 10/19/2022; Spring application was 5/1/2023; POST application was 6/12/2023.

^c Weed control was evaluated at 16, 36, and 86 days after emergence (DAE) for wheat.

Table 2. Description of herbicide application and equipment for treatments applied for weed control in spring wheat at Hettinger, ND, 2022-23.

Application Description				Application Equipment			
Date	10/19/22	5/1/23	C	Date	10/19/22	5/1/23	6/12/23
Start Time	11:56 AM	10:37 AM	6/12/23	Sprayer type	Tractor	Tractor	Tractor
Stop Time	12:15 PM	11:07 AM	11:48 AM	Pressure	38 PSI	38 PSI	38 PSI
Air Temp	69 F	57 F	11:48 AM	Nozzle Model	DG11002	DG11002	DG11002
Rel Humidity	29	27	75 F	Nozzle Spacing	20 IN	20 IN	30 IN
Wind Velocity	8.3 MPH	3.6 MPH	6.2 MPH	Spray Swath	100 IN	100 IN	100 IN
Soil Temp	43 F	50 F	58 F	Boom Length	100 IN	100 IN	100 IN
% Cloud Cover	0	0	10	Boom Height	20 IN	20 IN	20 IN
				Ground Speed	3.8 MPH	3.8 MPH	3.8 MPH
				Applic Amount	10 gal/A	10 gal/A	10 gal/A
				Propellant	CO2	CO2	CO2

A trial was conducted to compare and evaluate fall and spring applications of Anthem Flex for weed control in spring wheat. Fall applications were applied on October 19, 2022 and spring applications were applied on May 1, 2023. Spring wheat ‘Lang’ was planted on May 1, 2023 using a no-till drill at a depth of 2 inches and a seeding rate of 120 lbA; wheat emerged on May 9. At the time of planting, soil conditions were dry due to low precipitation during the month of April. In the two weeks following planting and PRE application, over 6 inches of rainfall occurred. This was more than sufficient to activate preemergence herbicides applied in this trial. Fall and spring application of glyphosate did not control kochia or green foxtail in this trial. Spring application of Anthem Flex provided slightly greater control of kochia, but not green foxtail. A split application of Anthem Flex where 2.5 oz/A was applied in the fall followed by 2 oz/A in the spring provided similar control of kochia and better control of green foxtail, compared with fall application alone. Anthem Flex in the fall followed by a POST application of Bison plus Starane Flex resulted in the greatest control of kochia, but was not significantly better than Anthem Flex applied alone in the spring and provided similar control of green foxtail. Glyphosate alone at planting followed by Bison plus Starane Flex postemergence resulted in the lowest control of both kochia and green foxtail. Fall application of Fierce resulted in an intermediate control of kochia at 80% at 16 DAE falling to 74% at 86 DAE, but provided the greatest control of green foxtail in the trial, compared with other fall applications. Fall application of preemergence herbicides allows for both fall and spring rainfall to activate in the soil. In years where dry conditions persist in the spring it can improve weed control compared with spring applications that do not receive sufficient rainfall for activation. In this trial, there was more than sufficient rainfall for activation of both spring and fall herbicide applications. Thus there was no advantage to the fall application in this trial.