

Flax response to application timing of postemergence herbicides. Blaine G. Schatz and Gregory J. Endres. (Carrington Research Extension Center, North Dakota State University, Carrington, ND 58421) The trial was conducted to evaluate flax response to three application timings of selected POST herbicides. The experimental design was a randomized complete block design with a split-plot arrangement (main plots=herbicide application timing and subplots=herbicide treatments) and three replicates. The trial was conducted on a conventional-tilled, loam soil with 7.6 pH and 3.0% organic matter at Carrington, ND in 2002. ‘Cathay’ flax was seeded on May 3 at the rate of 42 lb/A. Herbicide treatments were applied to the center 6.7 ft of 10- by 25-ft plots with a CO<sub>2</sub> pressurized hand-held plot sprayer delivering 17 gal/A at 30 psi through 8002 flat fan nozzles for the PRE treatment and 35 psi through 80015 flat fan nozzles for POST treatments. PRE sulfentrazone was applied on May 10 with 60 F, 24% RH, 70% clear sky and dry soil surface. No significant rain was received during May following sulfentrazone application. Early POST (POST A) treatments were applied on June 7 with 57 F, 69% RH, 0% clear sky, and 5 mph wind to 2-inch tall flax. Mid POST (POST B) treatments were applied on June 19 with 67 F, 84% RH, 10% clear sky, and 5 mph wind to 5- to 7-inch tall flax and emerging to 6-inch tall weeds. Late POST (POST C) treatments were applied on June 27 with 78 F, 59% RH, 50% clear sky, and 5 mph wind to 10- to 14-inch tall (initial flowering stage) flax and 4- to 10-inch tall weeds. Density of weed species was low, ranging from 0 to 3 plants/ft<sup>2</sup>. The trial was harvested on September 3 with a plot combine.

Grass and broadleaf weed control ranged from 80 to 99% with bromoxynil&MCPA or clopyralid&MCPA and clethodim tank mixtures, or the three-way tank mixture (Table 1). Weed control generally was not affected by timing of herbicide application. Averaged across herbicide treatments, flax growth reduction was higher with the first two herbicide application times compared to the late application (Table 2). However, first flower dates were delayed and seed yield was reduced as application timing was delayed. Physiological maturity was not affected by application timing (data not shown). Seed yield with POSTA application timing was 17% greater than POSTC yield. Herbicide treatments that included clopyralid&MCPA generally had significant flax growth reduction ranging from 3 to 47% (Table 3). Flax injury did not occur with sulfentrazone (data not shown). This was probably due to the extended delay of rainfall following application of sulfentrazone. While seed yield was improved with herbicides, application timing of the seven herbicide treatments did not impact seed yield or test weight (Table 4).

Table 1. Weed control in flax as impacted by three application timings of herbicides.

Treatment <sup>c</sup>	Herbicide	Rate	Weed control <sup>a</sup>					
			Grass			Broadleaf		
			Herbicide application timing <sup>b</sup>					
			POSTA	POSTB	POSTC	POSTA	POSTB	POSTC
		lb/A	%					
Sulfentrazone/Bromoxynil&MCPA+ clethodim+COC	0.19/0.23&0.23+ 0.08+2pt		95	95	92	99	98	98
Bromoxynil&MCPA	0.23&0.23		0	0	0	93	86	87
Clopyralid&MCPA	0.07&0.39		0	0	0	87	91	85
Bromoxynil&MCPA+clopyralid&MCPA	0.23&0.23+0.07&0.39		0	0	0	97	95	95
Bromoxynil&MCPA+clethodim+COC	0.23&0.23+0.08+2pt		96	95	89	95	87	90
Clopyralid&MCPA+clethodim+COC	0.07&0.39+0.08+2pt		98	92	90	80	90	90
Bromoxynil&MCPA+clopyralid&MCPA + clethodim+COC	0.23&0.23+0.07&0.39+ 0.08+2pt		99	92	91	97	93	85
Untreated check	x		0	0	0	0	0	0
Interaction of Timing x Herbicide: LSD (0.05)			NS			6		

<sup>a</sup>Grass=yellow and green foxtail; Broadleaf=Common lambsquarters, redroot and prostrate pigweed, common purslane, and wild buckwheat. Visual evaluation one month after herbicide application.

<sup>b</sup>POSTA=June 7; POSTB=June 19; POSTC=June 27.

<sup>c</sup>Bromoxynil&MCPA=Bronate Advanced; COC=Destiny, a methylated seed oil from Agrilience, St. Paul, MN.

Table 2. Flax response to herbicide treatments across three application timings.

Herbicide application timings <sup>a</sup>	Flax			
	Injury <sup>b</sup>	First flower <sup>c</sup>	Seed yield	Test weight
	%	days	bu/A	lb/bu
POSTA	18	56	21.0	54.4
POSTB	19	58	19.2	54.3
POSTC	6	63	17.4	54.3
LSD (0.05)	8	1	1.6	NS

<sup>a</sup>POSTA=June 7; POSTB=June 19; POSTC=June 27.

<sup>b</sup>Injury=% growth reduction by visual evaluation 7 days after herbicide application.

<sup>c</sup>Days from seeding date.

Table 3. Flax injury and days to first flower as impacted by three application timings of herbicides.

Treatment <sup>d</sup>	Herbicide	Rate	Flax						
			Injury <sup>a</sup>			Days to first flower <sup>b</sup>			
			Herbicide application timing <sup>c</sup>						
			POSTA	POSTB	POSTC	POSTA	POSTB	POSTC	
		lb/A							
Sulfentrazone/Bromoxynil&MCPA+ clethodim+COC	0.19/0.23&0.23+ 0.08+2pt		10	3	0	55	56	59	
Bromoxynil&MCPA	0.23&0.23		3	10	3	55	58	65	
Clopyralid&MCPA	0.07&0.39		8	13	3	56	58	65	
Bromoxynil&MCPA+clopyralid&MCPA	0.23&0.23+0.07&0.39		42	33	15	57	59	66	
Bromoxynil&MCPA+clethodim+COC	0.23&0.23+0.08+2pt		8	12	2	56	57	60	
Clopyralid&MCPA+clethodim+COC	0.07&0.39+0.08+2pt		25	38	12	56	59	66	
Bromoxynil&MCPA+clopyralid+MCPA+ clethodim+COC	0.23&0.23+0.07&0.39+ 0.08+2pt		47	43	12	57	60	66	
Untreated check	x		0	0	0	55	55	55	
Interaction of Timing x Herbicide: LSD (0.05)			9			2			

<sup>a</sup>Injury=% growth reduction by visual evaluation 7 days after herbicide application.

<sup>b</sup>Days from seeding date.

<sup>c</sup>POSTA=June 7; POSTB=June 19; POSTC=June 27.

<sup>d</sup>Bromoxynil&MCPA=Bronate Advanced; COC=Destiny, a methylated seed oil from Agrilience, St. Paul, MN.

Table 4. Flax seed yield and test weight as impacted by three herbicide application timings of herbicides.

Treatment <sup>b</sup>	Herbicide	Rate	Seed yield			Test weight		
			bu/acre			lb/bu		
			Herbicide application timing <sup>a</sup>					
			POSTA	POSTB	POSTC	POSTA	POSTB	POSTC
		lb/A						
Sulfentrazone/Bromoxynil&MCPA+ clethodim+COC		0.19/0.23&0.23+						
Bromoxynil&MCPA		0.08+2pt	22.3	21.0	20.4	54.8	54.5	54.6
Clopyralid&MCPA		0.23&0.23	18.9	19.6	17.3	53.8	54.1	54.1
Bromoxynil&MCPA+clopyralid&MCPA		0.07&0.39	21.3	18.9	19.6	54.6	54.2	54.1
Bromoxynil&MCPA+clethodim+COC		0.23&0.23+0.07&0.39	20.6	21.7	17.2	54.2	53.8	54.1
Clopyralid&MCPA+clethodim+COC		0.23&0.23+0.08+2pt	24.6	20.8	19.3	54.1	54.4	54.3
Bromoxynil&MCPA+clopyralid+MCPA+		0.07&0.39+0.08+2pt	23.4	20.6	16.2	54.7	54.7	54.1
clethodim+COC		0.23&0.23+0.07&0.39+						
Untreated check		0.08+2pt	24.0	18.8	17.5	54.7	54.5	54.6
		x	12.9	12.4	12.0	54.6	53.9	54.6
Interaction of Timing x Herbicide: LSD (0.05)			NS					

<sup>a</sup>POSTA=June 7; POSTB=June 19; POSTC=June 27.

<sup>b</sup>Bromoxynil&MCPA=Bronate Advanced; COC=Destiny, a methylated seed oil from Agrilience, St. Paul, MN.