

## **ET Herbicide Tank Mixtures for Preplant Burndown in Wheat Stubble**

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Two field studies were initiated near Scottsbluff, Nebraska to compare herbicide performance for controlling weeds in wheat stubble. The experimental design was a randomized complete block with three replications. Individual plots were 11 feet wide by 50 feet long. The first study was initiated in August of 2006 approximately three weeks after wheat harvest. Herbicides were applied on August 10 to broadleaf weeds that were 4 to 10 inches tall. The second experiment was initiated in an adjacent field in April of 2007. Herbicides were applied on April 25 to volunteer winter wheat and downy brome that were 3 to 10 inches tall and actively growing. Herbicides were applied with a tractor mounted sprayer calibrated to deliver 20 gallons of water per acre at 36-psi pressure with Spraying Systems 11002 VS nozzles. Environmental conditions at the time of treatment are given in Table 1. The experiments were located on a sandy loam soil with a pH of 8, organic matter of 1%, and winter wheat stubble was 8 to 10 inches tall.

On August 10 volunteer winter wheat was just starting to emerge and continued to emerge for the next 2 weeks. Visual evaluations taken on August 15 indicated that all herbicide treatments provided some level of winter wheat control but by August 24 more wheat had emerged and none of the herbicide treatments suppressed later flushes of volunteer wheat. Five days after treatment there was a trend for a combination of ET plus 2,4-D amine to provide better weed control than Roundup WeatherMax. By August 24, 14 days after treatment all the herbicide treatments provided 95% or greater hairy nightshade control, 94% or greater common lambsquarters control, but only Roundup WeatherMax, Roundup WeatherMax plus 2,4-D, or Fallow Master provided 98% or greater kochia control. The combination of ET plus 2,4-D did not suppress stinkgrass.

On April 25 volunteer winter wheat, downy brome and tansy mustard were actively growing while kochia and common lambsquarters were just beginning spring growth. Five days after treatment, ET plus Roundup WeatherMax was providing about 10% more winter wheat and downy brome control than Roundup WeatherMax alone (Table 3). On May 18, 23 days after treatment winter wheat and downy brome control were similar between Roundup WeatherMax with and without ET. The combination of ET plus 2,4-D ester did not provide acceptable control of grasses but did provide excellent tansy mustard and kochia control.

Table 1. Environmental Conditions at the Time of Herbicide Application.

Date	Air temperature (F)	Humidity (%)	Wind speed & direction (mph)	Time of day	Weed heights (inches)					
					Winter wheat	Hairy nightshade	Kochia	Common lambs-quarters	Downy brome	Tansy mustard
August 10, 2006	81	28	6 W	8:30 - 10:00 am	0.5-1	8-10	6-8	4-6	None	None
April 25, 2007	58	28	2 NE	1:30 - 3:00 pm	2-10	None	0.5-1	0.5-3	3-10	3-11

No rainfall occurred within 3 days following herbicide treatment.

Table 2. ET Herbicide Tank Mixtures for Burndown of Weeds in Wheat Stubble Following Harvest in 2006.

Herbicide treatment <sup>a</sup>	Rate	Visual weed control ratings												Weed density					
		August 15 - 5 DAT				August 24 - 14 DAT				August 28 - 18 DAT				August 28 - 18 DAT					
		Winter wheat	Hairy night-shade	Kochia	Common lambs-quarters	Winter wheat	Hairy night-shade	Kochia	Common lambs-quarters	Stink-grass	Hairy night-shade	Kochia	Common lambs-quarters	Stink-grass	Winter wheat	Hairy night-shade	Kochia	Common lambs-quarters	Stink-grass
		----- (%) -----												----- (plants/95 sq.ft.) -----					
Roundup WeatherMax + Agridex + AMS	0.75	73	92	85	87	0	99	99	99	92	96	98	68	85	14	1	1	28	3
Fallow Master + AMS	0.685	83	87	83	86	0	99	98	99	92	78	98	87	72	18	8	1	9	7
ET + Roundup WeatherMax + X77 + AMS	0.0016 + 0.75	74	90	70	83	0	99	93	97	96	84	76	74	96	13	6	14	22	1
ET + Roundup WeatherMax + X77 + AMS	0.0024 + 0.75	62	89	76	81	0	95	84	95	99	88	64	87	92	9	4	22	9	1
ET + Roundup WeatherMax + Zenith	0.0032 + 0.38	93	88	70	85	0	97	78	94	97	82	61	72	95	9	6	22	41	1
ET + 2,4-D amine (Saber) + COC	0.0032 + 0.50	95	95	91	93	0	99	92	99	23	97	80	86	19	10	1	11	10	45
2,4-D amine + Roundup WeatherMax + AMS	0.25 + 0.56	92	93	86	91	0	99	99	99	97	83	98	79	90	10	6	1	15	2
Nontreated	—	0	0	0	0	0	0	0	0	0	0	0	0	0	10	38	56	73	18
LSD at 5%		54	8	11	18	—	13	11	11	23	28	27	30	34	—	—	—	—	—

<sup>a</sup> Herbicide treatments applied on August 10, 2006. Spray additives were combined with herbicides at the following rates: Agridex at 1% v/v, ammonium sulfate (AMS) at 17 lb/100 gallon of water, X77 nonionic surfactant at 0.25% v/v, Zenith at 15 lb/100 gallon of water, and crop oil concentrate at 2 pints/acre.

Table 3. ET Herbicide Tank Mixtures for Preplant Burndown in Wheat Stubble during the Spring of 2007.

Herbicide treatment <sup>a</sup>	Rate (lb ae/acre)	Visual weed control ratings												Weed density					
		April 30 - 5 DAT				May 7 - 12 DAT				May 18 - 23 DAT				May 21 - 26 DAT					
		Winter wheat	Downy brome	Tansy mustard	Kochia	Winter wheat	Downy brome	Tansy mustard	Kochia	Winter wheat	Downy brome	Tansy mustard	Kochia	Winter wheat	Downy brome	Tansy mustard	Kochia	Common lamb- quarters	
		----- (%) -----												----- (plants/9 sq.ft.) -----					
Roundup WeatherMax + X77 + AMS	0.75	75	72	78	80	99	94	99	99	99	99	99	99	99	0	0	0	32	9
ET + Roundup WeatherMax + X77 + AMS	0.00163 + 0.75	85	83	85	83	99	88	99	99	99	99	99	99	99	0	0	0	15	4
2,4-D ester + Roundup WeatherMax + X77 + AMS	0.5 + 0.75	82	78	82	80	99	90	98	99	98	99	99	99	99	0	0	0	1	13
ET + 2,4-D ester + Roundup WeatherMax + X77 + AMS	0.00163 + 0.5 + 0.75	80	78	80	83	99	87	99	99	99	99	99	99	99	0	0	0	0	1
ET + 2,4-D ester + X77 + AMS	0.00163 + 0.5	43	43	80	82	15	13	80	93	0	0	99	99	5	38	0	1	0	
Nontreated	—	0	0	0	0	0	0	0	0	0	0	0	0	16	28	3	2	0	
LSD at 5%		12	11	7	6	6	7	13	3	1	1	1	1	—	—	—	—	—	

<sup>a</sup> Herbicide treatments applied on April 25, 2007. Spray additives were combined with herbicides at the following rates: X77 nonionic surfactant at 0.25% v/v and ammonium sulfate (AMS) at 2% w/w.