

Growth stage at initiation of split-applied treatments for wild oat control. Howatt, Kirk A., Ronald F. Roach, and Janet D. Davidson-Harrington. Past experiments have shown the benefit of split-applications of herbicides at reduced rates for wild oat control. This experiment was established to evaluate split-applied treatments as growth stage of the initial treatment varied. 'Oxen' hard red spring wheat was seeded April 24, 2003. Treatments were applied with a CO<sub>2</sub>-pressurized backpack sprayer delivering 8.5 gpa at 35 psi through 8001 flat-fan nozzles to a 7 ft wide area the length of 10 by 30 ft plots. Experimental design was a randomized complete block with four replicates. Harvest was August 8. Crop and weed stages plus climate conditions at applications were as follows:

Application timing	1 leaf	2 leaf	10 DAT of 1 leaf	10 DAT of 2 leaf; 3 leaf	4 leaf	10 DAT of 3 leaf	10 DAT of 4 leaf
Date	May 13	May 20	May 23	May 29	June 03	June 09	June 13
Crop stage, leaf	1	1 to 1.5	2	3.5	4.5	6	6
Wild oat stage, leaf	1	2	2.5	3.5	3.5 to 4	4.5	3.5
Temperature, ° F	55	44	57	88	62	69	73
Relative humidity, %	-	42	53	39	38	54	46
Sky	Cloudy	Clear	-	Clear	Cloudy	Cloudy	-
Wind velocity, mph	10	4 to 6	12	7	2	8	2.5
Soil temp, ° F	-	47	53	58	61	61	-

Cool, wet conditions during June delayed symptom expression and efficacy compared to other environments, resulting in slower than normal control of wild oat treated with clodinafop at 0.05 lb/A at the 4-leaf stage. Clodinafop at 0.012 lb/A applied once at the 1-leaf stage controlled emerged plants (data not shown), but many wild oat emerged after the 1-leaf application, which made this treatment indiscernible from the untreated control. Initiating the treatment sequence at 1-leaf with a second application 10 DAT provided the best season-long wild oat control. Removal of wild oat competition early in the season correlated well with final wheat yield. Delaying the initial application clodinafop at 0.012 lb/A from the 1-leaf to the 4-leaf stage resulted in a steady reduction in wheat yield with maximum yield loss over 60%. Split-applied treatments that were initiated at the 1-leaf or 2-leaf stage improved wheat yield by as much as 110% compared to the labeled rate of 0.05 lb/A clodinafop, but there was no advantage to split-application when the initial application was delayed to the 3-leaf stage or later.

Table. Growth stage at initiation of split-applied treatments for wild oat control (Howatt, Roach, and Davidson-Harrington).

Treatment <sup>a</sup>	Rate (lb/A)	Application timing	June 13 AVEFA (%)	July 01 AVEFA (%)	July 14 AVEFA (%)	July 24 TRZAZ (tillers/m <sup>2</sup> )	Aug 08 Yield (bu/A)
Clodinafop + PO	0.05	4 leaf	35	82	97	57	22
Clodinafop + PO	0.025	4 leaf	37	85	97	56	20
Clodinafop + PO	0.012	1 leaf	0	0	0	39	13
Clfp + PO / Clfp + PO	0.012 / 0.012	1 leaf / 10 DAT	87	95	96	119	46
Clfp + PO / Clfp + PO	0.012 / 0.012	2 leaf / 10 DAT	79	92	96	95	32
Clfp + PO / Clfp + PO	0.012 / 0.012	3 leaf / 10 DAT	72	90	96	96	21
Clfp + PO / Clfp + PO	0.012 / 0.012	4 leaf / 10 DAT	32	77	95	47	18
Untreated	0		0	0	0	45	10
LSD (P=0.05)			5	6	2	24	5
CV			8	6	2	24	17

<sup>a</sup> PO = petroleum oil adjuvant = DSV included at 1% v/v for all treatments; the symbol "/" indicates portions of the treatment were separated by time.