

Weed control and crop tolerance with imidazolinone resistant wheat. Peterson, Dallas E. and David L. Regehr. An experiment was conducted near Manhattan, KS on a Reading silt loam soil with 2.5% organic matter and a pH of 5.7 to evaluate winter annual grass control and imidazolinone resistant wheat tolerance to imazamox and competitive treatments. Cereal rye, downy brome, and cheat seed were broadcast in strips across each replication and incorporated prior to establishing the experiment. An experimental imidazolinone resistant hard red winter wheat variety from ApriPro was seeded at 70 lb per acre on October 8, 2001. Precipitation of 0.9 inch was received within 1 week after planting, resulting in uniform germination and emergence of the crop and weeds. Fall postemergence (FP) treatments were applied to 3- to 4-leaf and 2- to 5-tiller wheat, 2- to 4-leaf and 1- to 3-tiller cheat and downy brome, and 3- to 5-leaf and 2- to 5-tiller rye on November 15 with 66 F, 70% relative humidity, and clear skies. Spring postemergence (SP) treatments were applied to multi-tillered wheat, cheat, downy brome, and rye on March 28 with 68 F, 35% relative humidity, and clear skies. Treatments were applied with a CO₂ back-pack sprayer delivering 20 gpa at 25 psi through XR8002 flat fan spray tips to the center 6.3 ft of 10- by 20-ft plots. The experiment was a randomized complete block design with three replications. Wheat injury was evaluated March 3 and May 15. Winter annual grass control was visually estimated on June 7. Wheat was harvested on June 26.

Fall and spring applied imazamox caused general stunting of imidazolinone resistant wheat. Wheat injury was much higher with imazamox plus chlorsulfuron&metsulfuron than imazamox alone. MON-37500, MKH-6561, and MKH-6562 also caused minor injury symptoms on wheat. Fall applied imazamox provide excellent control of downy brome, cheat, and rye. The addition of dicamba to imazamox tended to reduce downy brome and rye control compared to imazamox alone. Weed control with imazamox was lower for spring than fall treatments, especially for rye and downy brome. Cheat control with MKH-6561 and MKH-6562 was excellent with both fall and spring treatments. Fall applied MON-37500 also provided excellent cheat control, but control was slightly lower with spring treatments. Downy brome control with MON-37500, MKH-6561, and MKH-6562 was less than cheat control. Downy brome control tended to be slightly higher with MON-37500 than MKH-6561. Downy brome control was poor with MKH-6562. All treatments provided good control of bushy wallflower (data not presented). Wheat yields generally corresponded to weed control and crop tolerance. (Dept. of Agronomy, Kansas State University, Manhattan)

Table. Weed control and tolerance of imidazolinone resistant wheat (Peterson and Regehr).

Treatment ^a	Application		W heat		Downy Brome	Cheat	Rye	W heat yield
	Rate	Time ^b	3-3-02	5-15-02				
	(oz/A)		-----(% injury)-----					
Imazamox+NIS+N	0.5	FP	7	3	98	100	96	25
Imazamox+NIS+N	0.63	FP	12	3	99	100	99	24
Imazamox+chlorsulfuron&metsulfuron+NIS+N	0.5+0.19&0.04	FP	43	23	94	100	91	23
Imazamox+dicamba+NIS+N	0.5+2	FP	8	3	91	99	89	25
MON-37500+NIS	0.5	FP	3	0	70	100	27	29
MON-3750+chlorsulfuron&metsulfuron+NIS	0.5+0.19&0.04	FP	5	5	63	100	17	26
MKH-6561+NIS	0.64	FP	3	0	63	100	0	28
MKH-6562+NIS	0.42	FP	1	0	13	100	0	26
Imazamox+NIS+N	0.5	SP		0	50	92	23	28
Imazamox+NIS+N	0.63	SP		1	43	93	33	26
Imazamox+chlorsulfuron&metsulfuron+NIS+N	0.5+0.19&0.04	SP		22	37	87	17	23
Imazamox+dicamba+NIS+N	0.5+2	SP		5	40	90	7	27
MON-37500+NIS	0.5	SP		0	63	93	17	30
MON-37500+chlorsulfuron&metsulfuron+NIS	0.5+0.19&0.04	SP		1	47	90	3	29
MKH-6561+NIS	0.64	SP		0	50	100	3	28
MKH-6562+NIS	0.42	SP		0	17	100	0	27
No Treatment								22
LSD (5%)			4	5	19	6	11	4

^a & = formulated premix;; NIS = Activate Plus nonionic surfactant from Agrilience applied at 0.5% v/v; N = 28% UAN liquid nitrogen fertilizer applied at 2 pt/A.

^b FP = fall postemergence; SP = spring postemergence.