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. Agripro 'AP 502 CL' imidazolinone resistant hard red winter wheat was seeded at 70 lb per acre on October 1, 2002. Over 2.6 inches of precipitation was received within 1 week after planting, resulting in soil crusting, emergence problems, and thin wheat stands. Fall postemergence (FP) treatments were applied to 3- to 4-leaf and 2-tiller wheat, 1 inch bushy wallflower and field pennycress rosettes, 1- to 3-leaf cheat and downy brome, and 3- to 4-leaf and 2-tiller rye on November 19 with 63 F, 31% relative humidity, and partly cloudy skies. Dormant (DOR) treatments were applied to tillering wheat, 1- to 3-inch bushy wallflower and field pennycress rosettes, 2- to 3-leaf and 1- to 2-tiller cheat and downy brome, and 4-leaf and multi-tiller rye on February 12 with 47 F, 34% relative humidity, and partly cloudy skies. Spring postemergence (SP) treatments were applied to multi-tiller wheat, 2- to 8-inch bushy wallflower and field pennycress rosettes, and multi-tiller cheat, downy brome, and rye on March 25 with 65 F, 17% relative humidity, and clear skies. Treatments were applied with a CO_2 back-pack sprayer delivering 15 gpa at 25 psi through TT110015 Turbo Tee 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 April 9 and May 20. Broadleaf weed control was evaluated April 9 and grass control was evaluated May 20. Wheat was harvested on July 7.

Several imazamox treatments caused some minor stunting of imidazolinone resistant wheat. Wheat injury with imazamox tended to be more severe when applied with methylated seed oil or when tank-mixed with chlorsulfuron&metsulfuron, especially with spring treatments. All fall treatments gave good control of bushy wallflower and field pennycress. Broadleaf weed control by imazamox with dormant and spring treatments was enhanced by the addition of chlorsulfuron&metsulfuron. All fall treatments gave good cheat control. MKH-6561 provided complete cheat control at all treatment times. Cheat control with imazamox tended to be higher with fall and lowest with dormant treatments. Downy brome control was generally higher with imazamox than with MON-37500 or MKH-6561 treatments. Downy brome control was poor with flucarbazone at all application timings. Downy brome control with imazamox tended to be better with fall applications compared to spring treatments. Downy brome control with MKH-6561 or MON-37500 was lower with dormant treatments than fall or spring applications. Spring imazamox treatments provided excellent rye control. Rye control by imazamox with fall and dormant treatments was enhanced by the addition of methylated seed oil. Grass control with imazamox tended to be antagonized by the addition of dicamba with fall and spring treatments. Wheat yields generally corresponded to the level of cheat and downy brome control. (Dept. of Agronomy, Kansas State University, Manhattan)

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

Treatment[a]	Application Rate	Application Time[b]	Wheat 4-9-03	Wheat 5-20-03	Bushy wallflower	Field pennycress	Cheat	Downy brome	Rye	Wheat yield
	(oz/A)		------(% injury)-----		----------(% control)----------					(Bu/A)
Imazamox+NIS+N	0.5	FP	0	3	90	98	96	92	83	53
Imazamox+MSO+N	0.5	FP	7	8	93	100	98	96	97	53
Imazamox+NIS+N	0.63	FP	0	0	98	97	97	95	90	55
Imazamox+chlorsulfuron&metsulfuron+NIS+N	0.5+0.19&0.04	FP	3	5	100	100	96	89	73	49
Imazamox+dicamba+NIS+N	0.5+2	FP	0	2	98	98	89	78	63	49
MON-37500+NIS	0.5	FP	0	0	100	100	94	47	10	49
MON-37500+chlorsulfuron&metsulfuron+NIS	0.5+0.19&0.04	FP	2	2	100	100	98	63	0	48
MKH-6561+NIS	0.64	FP	0	0	93	100	100	72	0	48
Flucarbazone+NIS	0.42	FP	0	0	100	100	98	10	0	34
Imazamox+NIS+N	0.5	DOR	0	0	80	73	78	80	37	51
Imazamox+MSO+N	0.5	DOR	0	4	87	83	92	88	90	50
Imazamox+NIS+N	0.63	DOR	0	2	82	70	86	83	53	52
Imazamox+chlorsulfuron&metsulfuron+NIS+N	0.5+0.19&0.04	DOR	7	3	100	100	80	75	33	49
Imazamox+dicamba+NIS+N	0.5+2	DOR	2	0	78	63	82	75	33	49
MON-37500+NIS	0.5	DOR	0	0	80	88	83	47	10	41
MON-37500+chlorsulfuron&metsulfuron+NIS	0.5+0.19&0.04	DOR	3	0	100	100	77	37	10	41
MKH-6561+NIS	0.64	DOR	0	0	73	87	100	37	0	39
Flucarbazone+NIS	0.42	DOR	0	0	87	87	93	10	0	35
Imazamox+NIS+N	0.5	SP	0	7	60	60	82	78	100	46
Imazamox+MSO+N	0.5	SP	2	20	63	60	93	85	100	47
Imazamox+NIS+N	0.63	SP	5	13	70	63	92	82	100	45
Imazamox+chlorsulfuron&metsulfuron+NIS+N	0.5+0.19&0.04	SP	15	22	77	80	83	82	97	43
Imazamox+dicamba+NIS+N	0.5+2	SP	7	3	70	67	92	72	90	43
MON-37500+NIS	0.5	SP	0	2	70	70	85	47	0	44
MON-37500+chlorsulfuron&metsulfuron+NIS	0.5+0.19&0.04	SP	3	7	77	77	92	63	13	47
MKH-6561+NIS	0.64	SP	0	0	60	60	100	75	0	51
Flucarbazone+NIS	0.42	SP	0	0	60	60	100	13	0	40
No Treatment										24
LSD (5%)			4	4	9	8	10	13	16	7

[a] & = formulated premix;; NIS = Activate Plus nonionic surfactant from Agriliance applied at 0.5% v/v with MON-37500 and at 0.25% v/v with all other herbicides; N = 28% UAN liquid nitrogen fertilizer applied at 1.25% v/v; MSO = Destiny methylated seed oil with 15% emulsifier from Agriliance applied at 1.5 pt/A.

[b] FP = fall postemergence; DOR = dormant; SP = spring postemergence.