Hard red spring wheat and barley tolerance to postemergence herbicides at Crookston, MN - 1998. Durgan, Beverly R. and Jim Cameron. This experiment was designed to evaluate wheat and barley tolerance to various postemergence herbicides. The experiments were conducted at Crookston, MN on a Donaldson and Wheaton loam soil. Following weedy fallow, the experimental area received 100 lb/A of N and was fall plowed. In the spring the experimental area was disked and harrowed. 'AC Barrie', 'Anvil', 'Forge', Gunner', 'Lars', 'Oxen', 'Russ', 'SBE 0050', Sharpshooter, 'Verde', '2375'' hard red spring wheat varieties, 'MN Brite' and 'Stander' barley varieties were seeded on April 28 at 1.75 Bu/A and 2 Bu/A for wheat and barley, respectively. Propachlor (3 lbs ai/A) was broadcast to reduce grassy weed interference. Bromoxynil (0.25 lb ai/A) was broadcast to reduce broadleaf weed interference. All herbicide treatments were applied with a backpack type sprayer delivering 10 gpa at 30 psi using 80015 flat fan nozzles. The experimental design was a split block with three replications. Varieties were seeded in strips randomized within each replication. Herbicide treatments were applied across all nine varieties. Each herbicide x variety plot was 8 by 8 ft. Herbicide treatments were applied May 26. Environmental conditions are listed below. Crop injury was rated visually on June 5 and June 17. Crop height was measured and yields taken. Data were summarized by variety and are presented in Tables 1-5.

Treatment Date	May 26	June 1
Target crop stage	3-4 leaf	4-5 leaf
Soil Moisture	dry	dry
Wind (mph)	0-2 S	10 N
Cloud Cover	clear	clear
Air Temperature (°F)	78	60
Rainfall before Application		
Week 1 (inch)	0.00	0.14
Rainfall after Application		
Week 1 (inch)	0.29	0.15
Week 2 (inch)	0.00	1.02

HOE 1170, tralkoxydim, and Tiller + Harmony Extra treatments all resulted in leaf chlorosis on wheat and barley. All wheat varieties exhibited similar degrees of injury. The barley varieties showed greater injury symptoms with the higher rates of tralkoxydim and the Tiller + Harmony Extra. Grain height and yields were not significantly reduced with these treatments.

MKH 6562 produced consistently high injury symptoms over all of the small grain varieties. 'SBE 0050' was most susceptible at both rate levels and height and yields were reduced as a result. '2375', 'Verde', 'MN Brite', and 'Stander' all showed severe injury and had reduced yields at the high rate only. 'AC Barrie' and 'Gunner' also showed greater injury at the higher MHK 6562 rate, but yields of these varieties were not significantly reduced.

'Gunner' and 'Verde' were extremely susceptible to difenzoquat. Both varieties were stunted and yields were reduce by one half or more. 'Russ', 'AC Barrie', 'Forge', and 'Stander' showed slightly higher injury at the higher difenzoquat rate compared to the remaining varieties, however height and yields were not affected.

Table 1. Wheat tolerance to postemergence herbicides at Crookston, MN - 1998 (Durgan and Cameron).

Treatment	Rate	2375 Injury 6/5	2375 Injury 6/17	2375 Height	2375 Yield	Russ Injury 6/5	Russ Injury 6/17	Russ Height	Russ Yield	AC Barrie Injury 6/5	AC Barrie Injury 6/17	AC Barrie Height	AC Barrie Yield
	(lb/A)	- -- % - --		inch	Bu/A	---- % ----		inch	Bu/A	---- % ----		inch	Bu/A
Postemergence (May 26)													
Fenoxaprop & safener[1]	0.104	3	8	33	48	3	15	37	45	3	12	36	30
Fenoxaprop & safener	0.208	0	17	36	53	0	20	37	53	0	18	39	42
Tralkoxydim + TF8035 COC	0.18 + 0.5%	0	12	33	51	0	12	35	45	0	12	38	31
Tralkoxydim + TF8035 COC	0.36 + 0.5%	8	17	36	50	10	12	35	47	10	17	38	29
Fenoxaprop & MCPA[2] + thifensulfuron & tribenuron[3]	0.09 & 0.37 + 0.009 & 0.005	12	22	33	48	12	17	34	51	15	22	39	32
Fenoxaprop & MCPA + thifensulfuron & tribenuron	0.14 & 0.55 + 0.014 & 0.007	25	23	33	49	20	18	35	53	20	17	37	30
MKH 6562 + NIS[4]	0.027 + 0.25%	37	47	33	43	37	40	34	44	37	40	39	25
MKH 6562 + NIS	0.054 + 0.25%	42	58	34	36	42	48	34	44	42	60	37	26
Postemergence (June 1)													
Difenzoquat	1.0	2	22	34	53	2	20	33	46	2	17	39	32
Difenzoquat	1.5	13	22	32	50	13	35	33	46	13	30	37	35
Imazamethabenz[5] + difenzoquat + NIS	0.23 + 0.5 + 0.25%	0	15	36	50	0	10	37	48	0	18	39	34
Check		0	0	34	55	0	0	35	52	0	0	38	32
LSD (P=.05)		6	14	ns	8	6	12	ns	ns	7	14	ns	ns

[1] HOE 1170
[2] Premix = Cheyenne 2.69E.
[3] Premix = Harmony Extra 75DF.
[4] NIS = Class Preference nonionic surfactant.
[5] Assert LC 2.5E.

Table 2. Wheat tolerance to postemergence herbicides at Crookston, MN - 1998 (Durgan and Cameron).

Treatment	Rate	Gunner Injury 6/5	Gunner Injury 6/17	Gunner Height	Gunner Yield	Sharp Injury 6/5	Sharp Injury 6/17	Sharp Height	Sharp Yield	Anvil Injury 6/5	Anvil Injury 6/17	Anvil Height	Anvil Yield
	(lb/A)	- -- % - --		inch	Bu/A	---- % ----		inch	Bu/A	---- % ----		inch	Bu/A
Postemergence (May 26)													
Fenoxaprop & safener[1]	0.104	3	13	39	45	3	10	32	48	3	13	38	47
Fenoxaprop & safener	0.208	0	22	38	48	0	22	36	49	0	20	38	40
Tralkoxydim + TF8035 COC	0.18 + 0.5%	0	13	36	42	0	12	35	53	0	12	40	42
Tralkoxydim + TF8035 COC	0.36 + 0.5%	15	18	38	37	10	17	34	52	7	13	38	47
Fenoxaprop & MCPA[2] + thifensulfuron & tribenuron[3]	0.09 & 0.37 + 0.009 & 0.005	12	20	35	44	12	22	35	54	12	17	37	50
Fenoxaprop & MCPA + thifensulfuron & tribenuron	0.14 & 0.55 + 0.014 & 0.007	20	22	36	40	20	20	32	58	18	15	38	49
MKH 6562 + NIS[4]	0.027 + 0.25%	37	30	35	39	37	38	34	48	37	42	37	44
MKH 6562 + NIS	0.054 + 0.25%	42	55	37	39	42	40	31	42	42	40	36	43
Postemergence (June 1)													
Difenzoquat	1.0	2	80	32	22	2	18	33	53	2	12	36	46
Difenzoquat	1.5	13	87	32	13	10	12	36	47	10	18	34	53
Imazamethabenz[5] + difenzoquat + NIS	0.23 + 0.5 + 0.25%	0	50	38	43	0	20	37	59	0	17	40	54
Check		0	0	36	45	0	0	35	55	0	0	39	51
LSD (P=.05)		6	16	4	12	5	10	3	ns	6	8	ns	ns

[1] HOE 1170
[2] Premix = Cheyenne 2.69E.
[3] Premix = Harmony Extra 75DF.
[4] NIS = Class Preference nonionic surfactant.
[5] Assert LC 2.5E.

Table 3. Wheat tolerance to postemergence herbicides at Crookston, MN - 1998 (Durgan and Cameron).

Treatment	Rate	SBE-0050 Injury 6/5	SBE-0050 Injury 6/17	SBE-0050 Height	SBE-0050 Yield	Oxen Injury 6/5	Oxen Injury 6/17	Oxen Height	Oxen Yield	Forge Injury 6/5	Forge Injury 6/17	Forge Height	Forge Yield
	(lb/A)	- -- % - --		inch	Bu/A	---- % ----		inch	Bu/A	---- % ----		inch	Bu/A
Postemergence (May 26)													
Fenoxaprop & safener[1]	0.104	3	12	35	58	3	15	35	71	3	12	38	48
Fenoxaprop & safener	0.208	0	18	37	57	0	18	34	63	0	20	37	50
Tralkoxydim + TF8035 COC	0.18 + 0.5%	0	12	37	61	0	12	33	66	0	12	37	43
Tralkoxydim + TF8035 COC	0.36 + 0.5%	7	13	36	59	7	13	33	63	12	18	38	45
Fenoxaprop & MCPA[2] + thifensulfuron & tribenuron[3]	0.09 & 0.37 + 0.009 & 0.005	22	22	33	52	12	15	34	65	12	22	35	48
Fenoxaprop & MCPA + thifensulfuron & tribenuron	0.14 & 0.55 + 0.014 & 0.007	23	22	33	52	20	22	33	65	20	18	36	51
MKH 6562 + NIS[4]	0.027 + 0.25%	37	72	33	32	37	37	32	62	37	38	33	43
MKH 6562 + NIS	0.054 + 0.25%	42	75	27	30	42	32	33	62	42	42	32	42
Postemergence (June 1)													
Difenzoquat	1.0	2	18	35	56	2	18	34	72	2	15	35	46
Difenzoquat	1.5	10	22	34	53	10	15	35	66	13	33	36	45
Imazamethabenz[5] + difenzoquat + NIS	0.23 + 0.5 + 0.25%	0	22	35	61	0	18	38	70	0	17	38	49
Check		0	0	36	59	0	0	34	74	0	0	38	57
LSD (P=.05)		9	21	2	7	6	13	ns	ns	6	14	3	ns

[1] HOE 1170
[2] Premix = Cheyenne 2.69E.
[3] Premix = Harmony Extra 75DF.
[4] NIS = Class Preference nonionic surfactant.
[5] Assert LC 2.5E.

Table 4. Wheat tolerance to postemergence herbicides at Crookston, MN - 1998 (Durgan and Cameron).

Treatment	Rate	Verde Injury 6/5	Verde Injury 6/17	Verde Height	Verde Yield	Lars Injury 6/5	Lars Injury 6/17	Lars Height	Lars Yield
	(lb/A)	- -- % - --		inch	Bu/A	---- % ----		inch	Bu/A
Postemergence (May 26)									
Fenoxaprop & safener[1]	0.104	3	18	35	45	3	13	31	48
Fenoxaprop & safener	0.208	0	27	35	43	0	17	30	52
Tralkoxydim + TF8035 COC	0.18 + 0.5%	0	12	34	45	0	20	30	52
Tralkoxydim + TF8035 COC	0.36 + 0.5%	12	12	34	43	17	13	32	52
Fenoxaprop & MCPA[2] + thifensulfuron & tribenuron[3]	0.09 & 0.37 + 0.009 & 0.005	12	17	31	45	12	12	30	48
Fenoxaprop & MCPA + thifensulfuron & tribenuron	0.14 & 0.55 + 0.014 & 0.007	20	17	36	46	20	18	31	51
MKH 6562 + NIS[4]	0.027 + 0.25%	37	43	34	33	37	30	29	45
MKH 6562 + NIS	0.054 + 0.25%	42	75	29	28	42	38	26	43
Postemergence (June 1)									
Difenzoquat	1.0	2	75	28	28	2	17	30	50
Difenzoquat	1.5	13	87	28	20	13	17	29	46
Imazamethabenz[5] + difenzoquat + NIS	0.23 + 0.5 + 0.25%	0	32	34	42	0	20	29	51
Check		0	0	34	46	0	0	32	54
LSD (P=.05)		6	20	4	7	7	16	2	ns

[1] HOE 1170
[2] Premix = Cheyenne 2.69E.
[3] Premix = Harmony Extra 75DF.
[4] NIS = Class Preference nonionic surfactant.
[5] Assert LC 2.5E.

Table 5. Barley tolerance to postemergence herbicides at Crookston, MN - 1998 (Durgan and Cameron).

Treatment	Rate	Stander Injury 6/5	Stander Injury 6/17	Stander Height	Stander Yield	MN Brite Injury 6/5	MN Brite Injury 6/17	MN Brite Height	MN Brite Yield
	(lb/A)	- -- % - --		inch	Bu/A	---- % ----		inch	Bu/A
Postemergence (May 26)									
Fenoxaprop & safener[1]	0.104	3	12	32	61	3	12	36	57
Fenoxaprop & safener	0.208	0	27	33	69	0	23	39	68
Tralkoxydim + TF8035 COC	0.18 + 0.5%	3	23	33	74	3	32	36	61
Tralkoxydim + TF8035 COC	0.36 + 0.5%	23	40	31	58	23	43	36	67
Fenoxaprop & MCPA[2] + thifensulfuron & tribenuron[3]	0.09 & 0.37 + 0.009 & 0.005	15	20	30	61	15	23	37	70
Fenoxaprop & MCPA + thifensulfuron & tribenuron	0.14 & 0.55 + 0.014 & 0.007	25	32	37	84	25	32	39	83
MKH 6562 + NIS[4]	0.027 + 0.25%	40	40	30	60	40	50	33	62
MKH 6562 + NIS	0.054 + 0.25%	47	72	19	26	47	70	26	43
Postemergence (June 1)									
Difenzoquat	1.0	2	23	33	76	2	28	36	74
Difenzoquat	1.5	12	35	32	66	12	25	37	72
Imazamethabenz[5] + difenzoquat + NIS	0.23 + 0.5 + 0.25%	0	22	32	78	0	28	38	78
Check		0	0	33	77	0	0	37	74
LSD (P=.05)		6	21	5	27	6	21	4	19

[1] HOE 1170
[2] Premix = Cheyenne 2.69E.
[3] Premix = Harmony Extra 75DF.
[4] NIS = Class Preference nonionic surfactant.
[5] Assert LC 2.5E.