PROJECT TITLE: Evaluation of Clearfield Winter Wheat Lines for Herbicide Tolerance.

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OBJECTIVES:

To evaluate early generation soft white winter wheat lines for herbicide tolerance and agronomic performance.

RESULTS:

Twenty-five experimental lines and five check soft winter wheat varieties were planted on October 1, 2001 with 2 replications. The plots in first replication were sprayed with Imazamox (Brand name: Beyond) on May 1, 2002. The herbicide was applied at a rate of 0.046 lb ai/a with 1% v/v of SUN-IT II plus 2.5% v/v of 28% UAN under clear sky with adequate soil moisture. The wheat plants had 7 main stem leaves with 0-4 tillers when the herbicide was applied. The wheat plots were harvested on August 14, 2002.

The mild winter resulted in high winter survival in all tested entries (>95%). Disease symptoms were very minimal and no disease evaluations were recorded. Averaged across tested entries, yield in herbicide treated plots (118.2 bu/a) was close to that in untreated plots (120.7 bu/a). Some treated entries (J473, J476, J484, J523 and J524) showed 10-14% yield reduction as compared to the untreated checks. In contrast, treated entries (J439, J461, J483 and J527) showed a 9-13% yield increase. The herbicide reduced plant height; the average height was 32.8 inches in treated plots and 34.5 inches in untreated plots. The largest reduction in height (16%) occurred in J455. The herbicide also slightly reduced grain protein content. Herbicide treatments resulted in minor crop injury in most of the tested entries (5-25%). Only three entries (J502, J520 and J527) had no injury. However, the herbicide had little effect on grain test weight (59 lb/bu) and heading date (Julian 167 days).

SUMMARY:

Many herbicide tolerance lines showed good yield, test weight and protein content during the 2001-02 growing season. The results of this project will further the selection process toward the release of Clearfield winter wheat cultivars.

FUTURE PLANS:

Continue to evaluate experimental winter wheat lines for herbicide tolerance.

Table 1. Agronomic data from the Clearfield Winter Wheat Lines for Herbicide Tolerance Northwestern Agricultural Research Center Kalispell, MT.

Entry	ID	PEDIGREE	Yield (Bu/A)			Test Weight (Lb/Bu)			Winter Survival	
			Treated	Untreated	Treated as % of Untreated	Treated	Untreated	Treated as % of Untreated	Treated %	Untreated %
1	J439	Daws*2/Fidel	128.8	117.9	109.2	59.6	58.5	101.9	100	100
2	J443	Daws*2/Fidel	118.3	111.1	106.5	60.1	59.9	100.2	100	100
3	J445	Daws*2/Fidel	118.9	122.6	97.0	59.4	61.3	97.0	100	100
4	J449	Daws*2/Fidel	121.8	118.7	102.7	57.4	58.2	98.7	100	100
5	J455	Daws*2/Fidel	115.2	120.8	95.3	58.2	58.3	99.8	100	100
6	J459	Daws*2/Fidel	130.6	134.8	96.9	62.4	61.7	101.1	100	100
7	J461	Daws*2/Fidel	124.3	112.3	110.7	60.6	60.4	100.4	100	100
8	J462	Daws*2/Fidel	122.4	124.5	98.3	59.4	59.1	100.5	100	100
9	J467	Daws*2/Fidel	110.2	113.7	96.9	58.9	59.3	99.3	100	100
10	J472	Eltan//Daws/Fidel	117.1	120.5	97.2	56.0	57.3	97.7	99	99
11	J473	Eltan//Daws/Fidel	104.9	120.5	87.1	60.4	61.0	99.0	100	95
12	J476	Eltan//Daws/Fidel	103.0	119.4	86.3	59.4	56.5	105.1	100	99
13	J480	Eltan//Daws/Fidel	109.5	108.9	100.5	58.5	54.9	106.6	100	100
14	J483	Eltan//Daws/Fidel	127.3	112.0	113.7	55.9	54.3	103.0	100	100
15	J484	Eltan//Daws/Fidel	115.7	129.0	89.7	58.0	61.0	95.1	100	100
16	J486	Eltan//Daws/Fidel	117.8	114.0	103.3	55.7	55.2	100.9	100	100
17	J488	Eltan//Daws/Fidel	122.1	124.1	98.4	58.0	58.2	99.6	100	100
18	J489	Malcolm*2/Fidel	114.3	111.2	102.7	60.7	61.9	98.1	100	100
19	J502	Malcolm*2/Fidel	127.3	118.8	107.1	56.9	56.1	101.5	100	100
20	J512	Malcolm/Fidel//Eltan	118.5	125.1	94.7	56.8	57.2	99.2	100	100
21	J517	Malcolm/Fidel//Eltan	116.0	114.1	101.7	57.7	59.3	97.4	100	100
22	J520	Malcolm/Fidel//Eltan	121.9	113.9	107.0	59.6	58.8	101.2	100	100
23	J523	Malcolm/Fidel//Eltan	117.3	130.4	89.9	60.7	60.0	101.2	100	100
24	J524	Malcolm/Fidel//Eltan	104.1	113.3	91.9	57.9	59.9	96.6	100	100
25	J527	Malcolm/Fidel//Eltan	124.3	113.8	109.2	59.9	59.9	99.9	100	99
26	Daws	check	-	133.5	-	-	61.8	-	100	100
27	Eltan	check	-	142.1	-	-	59.4	-	100	100
28	Malcolm	check	-	136.3	-	-	58.6	-	100	100
29	MTI01158	check (IMI)	115.4	122.8	94.0	63.9	64.7	98.8	100	100
30	Fidel	check (IMI)	125.0	119.6	104.5	61.9	59.9	103.3	99	100
	Average		118.2	120.7	98.0	59.0	59.1	99.9	99.9	99.7

Table 1 (Continued). Agronomic data from the Clearfield Winter Wheat Lines for Herbicide Tolerance Northwestern Agricultural Research Center Kalispell, MT.

Entry	ID	PEDIGREE	Heading Date (Julian)			Height (in)			Injury (%)		Protein (%)		
			Treated	Untreated	Treated as % of Untreated	Treated	Untreated	Treated as % of Untreated	Treated	Untreated	Treated	Untreated	Treated as % of Untreated
1	J439	Daws*2/Fidel	166	167	99.4	31.1	31.1	100.0	25	0	11.1	11.7	94.7
2	J443	Daws*2/Fidel	167	167	100.0	33.1	32.7	101.2	5	10	11.9	11.2	105.8
3	J445	Daws*2/Fidel	167	167	100.0	30.3	32.3	93.9	15	0	11.7	11.2	104.2
4	J449	Daws*2/Fidel	167	166	100.6	30.3	30.7	98.7	10	5	11.6	11.9	97.6
5	J455	Daws*2/Fidel	172	169	101.8	29.5	35.0	84.3	25	0	12.1	12.1	100.0
6	J459	Daws*2/Fidel	169	163	103.7	33.9	33.9	100.0	5	0	11.1	11.6	95.8
7	J461	Daws*2/Fidel	165	165	100.0	31.9	34.3	93.1	5	5	10.5	11.5	91.5
8	J462	Daws*2/Fidel	169	167	101.2	34.3	37.0	92.6	25	0	12.1	12.7	95.3
9	J467	Daws*2/Fidel	166	167	99.4	33.5	33.1	101.2	5	0	11.6	12.0	96.2
10	J472	Eltan//Daws/Fidel	170	169	100.6	28.7	33.9	84.9	20	0	12.0	11.4	104.9
11	J473	Eltan//Daws/Fidel	168	167	100.6	29.9	32.7	91.6	20	5	11.5	12.3	93.3
12	J476	Eltan//Daws/Fidel	167	168	99.4	31.5	32.7	96.4	10	0	11.3	12.1	92.8
13	J480	Eltan//Daws/Fidel	168	169	99.4	29.5	33.5	88.2	20	0	12.1	13.1	92.6
14	J483	Eltan//Daws/Fidel	169	169	100.0	32.3	32.7	98.8	20	0	11.7	12.2	95.3
15	J484	Eltan//Daws/Fidel	168	166	101.2	30.7	34.6	88.6	25	10	12.3	11.3	109.0
16	J486	Eltan//Daws/Fidel	168	169	99.4	31.5	32.7	96.4	20	0	12.4	12.7	97.7
17	J488	Eltan//Daws/Fidel	168	168	100.0	33.5	35.4	94.4	5	0	11.8	11.7	100.8
18	J489	Malcolm*2/Fidel	165	165	100.0	36.6	36.6	100.0	15	10	11.8	12.1	97.3
19	J502	Malcolm*2/Fidel	165	166	99.4	26.4	29.9	88.2	0	0	12.5	12.8	97.6
20	J512	Malcolm/Fidel//Eltan	170	169	100.6	31.9	32.7	97.6	5	0	12.9	12.1	106.6
21	J517	Malcolm/Fidel//Eltan	169	168	100.6	36.6	40.9	89.4	10	0	11.7	12.2	96.5
22	J520	Malcolm/Fidel//Eltan	169	169	100.0	41.7	46.1	90.6	0	0	12.3	13.1	94.3
23	J523	Malcolm/Fidel//Eltan	169	163	103.7	33.1	31.1	106.3	10	0	10.4	11.6	89.2
24	J524	Malcolm/Fidel//Eltan	168	167	100.6	38.2	39.8	96.0	15	0	12.3	11.9	103.8
25	J527	Malcolm/Fidel//Eltan	167	167	100.0	41.3	41.7	99.1	0	0	12.2	12.7	95.9
26	Daws	check	-	165	-	-	31.9	-	(100)	0	-	11.2	-
27	Eltan	check	-	-	-	-	35.4	-	(100)	5	-	11.7	-
28	Malcolm	check	-	167	-	-	35.0	-	(100)	0	-	11.4	-
29	MTI01158	check (IMI)	164	163	100.6	31.1	32.7	95.2	20	0	12.7	13.0	97.8
30	Fidel	check (IMI)	164	164	100.0	31.9	33.1	96.4	5	0	11.3	12.3	91.4
	Average		167.6	166.8	100.5	32.8	34.5	94.9	12.6	1.7	11.8	12.0	98.1

TANK MIX OPTIONS FOR WILD OAT HERBICIDES

Herbicide	Aim	Banvel	Bronate	Buctril	Curtail (M)	2,4-D	MCPA	Starane	Stinger	SU's	Sequential
Achieve			X	X	M	Ester			X		5 days
Assert			X		M	Ester	Ester	X			4 days
Avenge			X	X	X	X	X			X	
Cheyenne*				X				X	X		5 days
Discover**		X	X	X	X	Amine	X	X	X	X	4 days
Everest***	X		X	X	X	X	X	X	X	with 2,4-D	
Fargo											
Hoelon****				X						X	5 days
Puma****			X	X	M		Ester	X		X	5 days
Tiller**, *****				X				X	X	Peak	5 days

* already contains MCPA and Harmony Extra
** Tankmix options vary depending on the grass weed being targeted.
*** MUST be applied in tankmix combination with NIS.
**** Tankmix options vary depending on the crop.
***** already contains 2,4-D and MCPA