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NRPN: location of replicated yield trials and regional production zones.

- North central plains
- Northwest plains
- ▲ Northern plains
- Northern high plains
- ★ Northwest plains
- unassigned

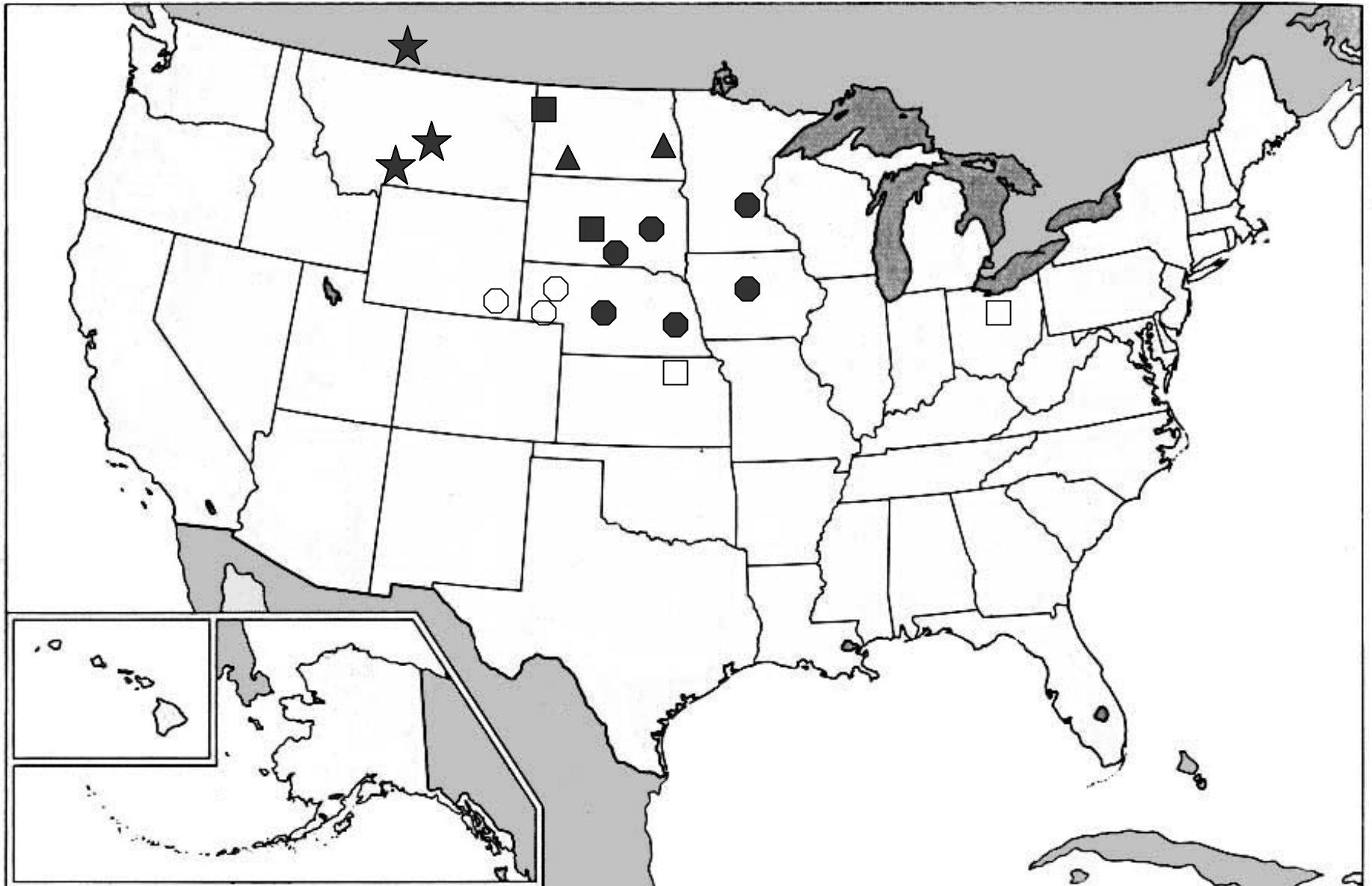


Table 1. 2004 NRPN location notes

Location	Notes
Palmer, KS	
Goodland, KS	Lost, hail.
Lincoln, NE	Infected with soilborne mosaic virus.
North Platte, NE	Pretty much every foliar disease known to wheat and mankind alike.
Sidney, NE	
Alliance, NE	Heavy tanspot infection.
Brookings, SD	
Dakota Lakes, SD	
Winner, SD	
Ames, IA	
Casselton, ND	
Williston, ND	Planted: Sept.15, 2004 on Fallow. Applied Fertilizer in lbs/a: 84N:39P2O5:0K: Soil Test to two feet in lbs/a:111N:20P:350K: 2.5 OM pH-7.4 Soil Type: Williams-Bowbells Loam Harvested: July 27
Hettinger, ND	Planting date: September 20, 2004, harvest date: July 28, 2005 , previous crop: barley
Bozeman, MT	
Moccasin, MT	
Lingle, WY	
Rosemount, MN	Unequally distributed winter kill in nursery.
Wooster, OH	
Lethbridge, Alberta	Seasonal ppt. > 14 inches.

Table 2. 2005 Northern Regional Performance Nursery

Entry	Line/selection	Putative market class	Cultivar or pedigree	source
1	Kharkof	HRW	Kharkof	check
2	Harding	HRW	Harding	check
3	Nuplains	HWW	Nuplains	check
4	Nekota	HRW	Nekota	check
5	N02Y5075	HRW	YUMA//T-57/3/LAMAR/4/4*YUMA/5/(KS91H184/ARLIN S/KS91HW29//NE89526)	ARS-LNK
6	N02Y5078	HRW	YUMA//T-57/3/LAMAR/4/4*YUMA/5/(KS91H184/ARLIN S/KS91HW29//NE89526)	ARS-LNK
7	N02Y5106	HRW	YUMA//T-57/3/CO850034/4/4*YUMA/5/KS91H184/ARLIN S/KS91HW29//NE89526)	ARS-LNK
8	N02Y5117	HRW	YUMA//T-57/3/CO850034/4/4*YUMA/5/KS91H184/ARLIN S/KS91HW29//NE89526)	ARS-LNK
9	NP-02	HWW	selection from Nuplains	ARS-LNK
10	TX00V1117	HRW	ARLIN/TX89V4213 (CO723594/YACO'S//TX81V6582)	TAMU
11	NE01604	HRW	KS91H184/ARLIN SIB//KS91HW29/3/NE91631 (=NE82761/REDLAND)/3/VBF0168	UNL
12	NE02513	HRW	KS92H363-2/NE95417 (=ABILENE/KARL)	UNL
13	NE02528	HRW	KS92H363-2/NE95417 (=ABILENE/KARL)	UNL
14	NE02584	HRW	KS92H363-2/NE95417 (=ABILENE/KARL)	UNL
15	NE02592	HRW	W91-040/NE95656 (=684HBK1008)	UNL
16	NI03427	HRW	WI88-052/WI81-162-610W//N94L189	UNL
17	NE01643	HRW	NE94482 (=ARA/ABILENE//NE86488)/ND8974	UNL
18	NH01036	HRW	NE95L164/3/NE94481//TXGH125888-120*4/FS2	UNL
19	NH01048	HRW	2137/3/NE94481//TXGH125888-120*4/FS2	UNL
20	NI02425	HRW	Wahoo (ARAPAHOE 2*/ABILENE)/AP7601	UNL
21	SD00032	HRW	CEP17/Jerry//SD94160	SDSU
22	SD00258	HRW	Millennium/NE93613	SDSU
23	SD01054	HRW	CO910424/Wesley	SDSU
24	SD02024	HRW	N95L1229/SD97W604	SDSU
25	SD02039	HRW	Crimson/SD97W603	SDSU
26	SD02480	HRW	Tandem/Cougar	SDSU
27	SD02771	HRW	IDO537/SD93380//Nekota	SDSU
28	SD01W064	HWW	RUSSIANPI592033/NE92458//NEKOTA	SDSU
29	SD02W129	HWW	OR908482/SD93267	SDSU
30	SD98W175-1	HWW	KS84273BB-10/KSSB110-9//KS831374-141B/YE1110/3/KS82W418/SPN	SDSU
31	BC97-ROM50W	HWW	JaggerxRomanian bulk	Agripro
32	97x0850-16	HRW	W94-320xW96-422	Agripro

Table 3. Agronomic summary of 32 hard winter wheats entered in the 2005 NRPN.

Entry	Line/selection	Grain yield, kg/ha		Volume	Days from	Plant	Winter
		mean	rank	weight, kg/hl	1/1 to heading	height, cm	Survival, 0-100 ^a
1	Kharkof	2881	31	74.7	161	104	96
2	Harding	2776	32	74.4	161	101	97
3	Nuplains	3420	27	72.5	160	77	86
4	Nekota	3282	30	71.8	155	78	96
5	N02Y5075	3361	29	73.2	158	83	77
6	N02Y5078	3586	23	74.2	157	79	75
7	N02Y5106	3706	19	72.8	157	78	96
8	N02Y5117	3726	18	71.3	158	78	89
9	NP-02	3386	28	72.0	159	77	88
10	TX00V1117	4013	8	73.8	157	76	71
11	NE01604	3929	12	73.1	152	82	80
12	NE02513	3488	25	73.6	156	74	70
13	NE02528	4074	5	74.5	156	80	86
14	NE02584	3934	11	75.2	157	76	79
15	NE02592	3954	10	73.6	156	87	83
16	NI03427	4137	4	71.8	158	79	88
17	NE01643	4342	1	74.0	158	83	90
18	NH01036	3827	16	72.6	158	87	95
19	NH01048	3907	13	68.5	160	86	93
20	NI02425	4162	3	74.6	157	79	78
21	SD00032	3484	26	72.9	157	92	95
22	SD00258	4220	2	73.5	159	88	97
23	SD01054	3839	15	72.1	160	85	91
24	SD02024	3541	24	69.8	159	80	94
25	SD02039	3651	21	75.7	159	95	96
26	SD02480	3820	17	73.9	159	87	91
27	SD02771	3689	20	74.1	161	93	96
28	SD01W064	3890	14	72.2	158	85	94
29	SD02W129	3635	22	71.2	160	81	91
30	SD98W175-1	4072	6	73.4	158	79	84
31	BC97-ROM50W	4019	7	68.4	158	72	79
32	97x0850-16	3966	9	68.1	156	79	90
	mean	3741		72.7	158	83	88
	c.v.	12.8					
	n	52					
	l.s.d. (0.05)	376					

^aReported from 4 locations, values normalized to 0-100 scale with 0= no survival and 100 = 100% survival.

Table 4. Mean grain yields (kg/ha) and ranks for 32 wheats grown in the 2005 NRPN.

Entry	Line or selection	region		Palmer, KS		Nebraska state		Lincoln, NE		North Platte, NE		Sidney, NE		Alliance, NE	
		mean	rank	mean	rank	mean	rank	mean	rank	mean	rank	mean	rank	mean	rank
1	Kharkof	2881	31	1605	32	2884	30	2488	31	2041	24	2970	23	4035	30
2	Harding	2776	32	1690	31	2834	32	2242	32	1875	27	3060	20	4158	29
3	Nuplains	3420	27	2571	28	3489	26	3979	18	1794	29	2724	27	5458	12
4	Nekota	3282	30	2789	24	2960	29	3688	23	1179	32	2331	32	4640	28
5	N02Y5075	3361	29	3055	14	3729	21	3531	26	3528	9	2813	26	5044	23
6	N02Y5078	3586	23	3051	15	3827	18	3766	22	3449	10	3026	21	5066	22
7	N02Y5106	3706	19	3788	4	3845	17	3912	20	3151	12	3127	17	5189	19
8	N02Y5117	3726	18	2955	19	3924	16	3889	21	3749	4	3206	13	4853	25
9	NP-02	3386	28	3150	13	3306	27	3138	28	1913	26	2511	30	5660	8
10	TX00V1117	4013	8	2686	26	4206	10	4629	12	2725	17	3766	2	5705	6
11	NE01604	3929	12	3865	2	4148	12	3945	19	3835	2	3475	7	5335	17
12	NE02513	3488	25	2663	27	4287	9	5772	9	2868	16	3071	18	5436	14
13	NE02528	4074	5	3297	10	4657	3	6030	6	3574	7	3632	5	5391	16
14	NE02584	3934	11	3484	9	4385	7	6142	5	3105	13	3318	12	4977	24
15	NE02592	3954	10	3851	3	4033	15	4226	13	4174	1	2612	29	5122	20
16	NI03427	4137	4	3508	7	4191	11	6243	4	2942	15	2892	24	4685	27
17	NE01643	4342	1	3726	5	4678	2	4797	11	3783	3	3766	2	6366	1
18	NH01036	3827	16	1957	30	3609	24	3676	24	2466	19	2847	25	5447	13
19	NH01048	3907	13	3571	6	4134	13	4080	16	3040	14	3721	4	5694	7
20	NI02425	4162	3	4116	1	4711	1	6265	3	3666	5	3351	11	5559	10
21	SD00032	3484	26	2033	29	3689	22	4057	17	2404	21	3071	18	5223	18
22	SD00258	4220	2	3262	11	4042	14	4136	15	3199	11	3419	8	5414	15
23	SD01054	3839	15	2793	22	3778	19	5828	8	1966	25	3788	1	3531	32
24	SD02024	3541	24	2701	25	3229	28	2791	30	1855	28	2477	31	5795	5
25	SD02039	3651	21	2793	22	3546	25	3015	29	1710	30	3497	6	5963	4
26	SD02480	3820	17	2937	20	3610	23	3676	24	2280	22	3363	10	5122	20
27	SD02771	3689	20	3183	12	2855	31	3463	27	1253	31	3004	22	3699	31
28	SD01W064	3890	14	3017	17	4505	6	5918	7	2686	18	3396	9	6019	3
29	SD02W129	3635	22	2851	21	3767	20	4147	14	2143	23	3183	15	5593	9
30	SD98W175-1	4072	6	3484	8	4377	8	5156	10	3600	6	3194	14	5559	10
31	BC97-ROM50W	4019	7	3033	16	4542	5	7185	1	3532	8	2668	28	4786	26
32	97x0850-16	3966	9	2977	18	4569	4	6389	2	2451	20	3150	16	6288	2
	mean	3741		3014		3886		4444		2748		3138		5213	
	c.v.	12.8		17.1		15.4		15.8		12.7		7.4		16.7	
	l.s.d. (0.05)	376		834		1047		1135		565		375		1409	
	n	52		3		12		3		3		3		3	

Table 4. Mean grain yields (kg/ha) and ranks for 32 wheats grown in the 2005 NRPN.

Entry	Line or selection	region		South Dakota state		Brookings, SD		Dakota Lakes, SD		Winner, SD	
		mean	rank	mean	rank	mean	rank	mean	rank	mean	rank
1	Kharkof	2881	31	2425	29	2444	14	2352	31	2480	31
2	Harding	2776	32	1981	32	1908	24	1413	32	2622	27
3	Nuplains	3420	27	2586	27	1550	31	3223	17	2985	20
4	Nekota	3282	30	2203	30	1670	28	2422	30	2517	29
5	N02Y5075	3361	29	2665	25	2177	19	3314	16	2504	30
6	N02Y5078	3586	23	2862	17	2592	11	3359	14	2635	26
7	N02Y5106	3706	19	3121	6	2106	21	3925	2	3331	7
8	N02Y5117	3726	18	2891	15	2128	20	3526	9	3018	19
9	NP-02	3386	28	2136	31	1340	32	2477	28	2592	28
10	TX00V1117	4013	8	3201	5	2264	18	4007	1	3331	7
11	NE01604	3929	12	2893	14	2760	6	2847	24	3073	18
12	NE02513	3488	25	2707	24	1828	26	3464	11	2828	24
13	NE02528	4074	5	3012	8	2382	15	3832	3	3095	17
14	NE02584	3934	11	3001	9	2322	16	3479	10	3203	12
15	NE02592	3954	10	3492	1	3371	2	3612	5	3494	2
16	NI03427	4137	4	3054	7	2600	10	3223	17	3338	6
17	NE01643	4342	1	3314	3	3306	3	3381	13	3256	11
18	NH01036	3827	16	2888	16	2787	5	3158	21	2718	25
19	NH01048	3907	13	2801	20	1888	25	3393	12	3120	15
20	NI02425	4162	3	2839	18	2507	13	3569	7	2440	32
21	SD00032	3484	26	2711	23	2752	8	2462	29	2920	21
22	SD00258	4220	2	3370	2	3662	1	3554	8	2895	22
23	SD01054	3839	15	2918	12	2036	22	3321	15	3396	4
24	SD02024	3541	24	2838	19	1996	23	3158	19	3361	5
25	SD02039	3651	21	2964	10	2515	12	3073	22	3303	9
26	SD02480	3820	17	2932	11	2750	9	2943	23	3103	16
27	SD02771	3689	20	2903	13	2898	4	2645	27	3299	10
28	SD01W064	3890	14	2630	26	1588	29	2790	25	3511	1
29	SD02W129	3635	22	2543	28	1818	27	2672	26	3138	14
30	SD98W175-1	4072	6	3278	4	2760	6	3607	6	3469	3
31	BC97-ROM50W	4019	7	2773	22	2292	17	3158	19	2870	23
32	97x0850-16	3966	9	2797	21	1583	30	3617	4	3191	13
	mean	3741		2835		2331		3155		3032	
	c.v.	12.8		13.0		10.6		13.1		13.8	
	l.s.d. (0.05)	376		692		401		666		675	
	n	52		9		3		3		3	

Table 4. Mean grain yields (kg/ha) and ranks for 32 wheats grown in the 2005 NRPN.

Entry	Line or selection	region		North Dakota State		Williston, ND		Prosper, ND		Hettinger, ND	
		mean	rank	mean	rank	mean	rank	mean	rank	mean	rank
1	Kharkof	2881	31	3634	32	3886	32	3521	26	3450	31
2	Harding	2776	32	3762	30	4055	29	3384	28	3874	19
3	Nuplains	3420	27	3822	29	4502	24	3215	30	3724	24
4	Nekota	3282	30	3925	27	4385	25	3820	23	3450	30
5	N02Y5075	3361	29	3635	31	3897	31	3473	27	3500	29
6	N02Y5078	3586	23	4033	24	4281	27	3969	19	3787	23
7	N02Y5106	3706	19	3949	26	4188	28	3916	20	3674	26
8	N02Y5117	3726	18	4270	19	4367	26	4386	16	3986	15
9	NP-02	3386	28	3961	25	4505	23	2912	32	4633	5
10	TX00V1117	4013	8	4577	12	4825	14	4353	17	4546	6
11	NE01604	3929	12	4686	5	4841	12	5129	4	3886	18
12	NE02513	3488	25	3847	28	4041	30	3139	31	4534	7
13	NE02528	4074	5	4635	9	4866	10	4676	8	4272	11
14	NE02584	3934	11	4761	4	4539	21	4435	12	5493	1
15	NE02592	3954	10	4455	14	4645	18	4721	7	3849	21
16	NI03427	4137	4	4643	8	5029	6	4423	13	4422	8
17	NE01643	4342	1	5068	1	4836	13	5225	3	5169	2
18	NH01036	3827	16	4679	6	4915	9	4729	6	4297	10
19	NH01048	3907	13	4547	13	4989	8	4415	15	4135	14
20	NI02425	4162	3	4679	7	4721	15	4531	9	4820	4
21	SD00032	3484	26	4286	17	4618	19	4422	14	3662	27
22	SD00258	4220	2	4982	2	4712	16	5353	2	4845	3
23	SD01054	3839	15	4260	20	5008	7	3727	25	3973	16
24	SD02024	3541	24	4200	21	5044	4	3806	24	3600	28
25	SD02039	3651	21	4279	18	4614	20	4286	18	3824	22
26	SD02480	3820	17	4610	11	4860	11	5034	5	3712	25
27	SD02771	3689	20	4799	3	4681	17	5360	1	4210	12
28	SD01W064	3890	14	4135	23	5122	3	3352	29	3861	20
29	SD02W129	3635	22	4197	22	4535	22	3848	22	4210	12
30	SD98W175-1	4072	6	4625	10	5032	5	4437	11	4335	9
31	BC97-ROM50W	4019	7	4429	15	5346	1	3864	21	3961	17
32	97x0850-16	3966	9	4396	16	5334	2	4465	10	3052	32
	mean	3741		4336		4663		4198		4086	
	c.v.	12.8		10.6		5.0		14.6		10.9	
	l.s.d. (0.05)	376		741		326		860		719	
	n	52		11		4		4		3	

Table 4. Mean grain yields (kg/ha) and ranks for 32 wheats grown in the 2005 NRPN.

Entry	Line or selection	region		Montana State		Moccasin, MT		Bozeman, MT		Ames, IA		Lingle, WY	
		mean	rank	mean	rank	mean	rank	mean	rank	mean	rank	mean	rank
1	Kharkof	2881	31	3579	31	2307	31	4851	31	3241	31	1444	7
2	Harding	2776	32	3448	32	2293	32	4602	32	3174	32	1098	28
3	Nuplains	3420	27	4631	21	2580	30	6682	11	4549	24	1152	24
4	Nekota	3282	30	4404	26	2993	17	5815	26	4408	27	1123	26
5	N02Y5075	3361	29	4218	27	2690	27	5745	27	5330	11	829	31
6	N02Y5078	3586	23	4817	13	3044	13	6591	12	4657	23	928	30
7	N02Y5106	3706	19	4818	12	3145	9	6492	16	4926	19	1540	4
8	N02Y5117	3726	18	4871	11	3031	15	6712	10	4909	20	1486	6
9	NP-02	3386	28	4740	17	2921	21	6559	14	3917	29	1430	9
10	TX00V1117	4013	8	5141	5	3037	14	7245	2	5494	7	1578	2
11	NE01604	3929	12	4929	9	3306	5	6552	15	5393	9	1401	11
12	NE02513	3488	25	4193	28	2652	29	5734	28	5198	14	594	32
13	NE02528	4074	5	4765	16	3107	11	6422	20	5464	8	1345	15
14	NE02584	3934	11	4883	10	3176	7	6591	12	5158	16	1311	18
15	NE02592	3954	10	4657	19	2910	22	6404	21	5720	4	1011	29
16	NI03427	4137	4	5330	2	3295	6	7364	1	5565	6	1271	19
17	NE01643	4342	1	5121	6	3383	3	6860	8	6402	1	1186	23
18	NH01036	3827	16	5186	3	3129	10	7243	3	5387	10	1130	25
19	NH01048	3907	13	5015	8	3076	12	6954	5	4724	22	1345	15
20	NI02425	4162	3	5149	4	3403	2	6895	7	5868	3	1188	21
21	SD00032	3484	26	4162	30	2934	20	5389	30	3699	30	1343	17
22	SD00258	4220	2	5070	7	3356	4	6783	9	6187	2	1347	14
23	SD01054	3839	15	4816	14	3172	8	6460	17	5108	18	1742	1
24	SD02024	3541	24	4571	22	2692	26	6449	19	4492	26	1249	20
25	SD02039	3651	21	4560	23	2948	19	6171	25	4170	28	1533	5
26	SD02480	3820	17	4558	24	2816	24	6301	23	5309	12	1188	21
27	SD02771	3689	20	4190	29	2858	23	5521	29	5131	17	1385	12
28	SD01W064	3890	14	4799	15	2688	28	6911	6	4869	21	1352	13
29	SD02W129	3635	22	4496	25	2746	25	6245	24	4496	25	1428	10
30	SD98W175-1	4072	6	4657	19	2999	16	6315	22	5716	5	1121	27
31	BC97-ROM50W	4019	7	5384	1	3569	1	7200	4	5172	15	1560	3
32	97x0850-16	3966	9	4724	18	2990	18	6458	18	5219	13	1437	8
	mean	3741		4684		2976		6391		4970		1284	
	c.v.	12.8		7.9		9.6		6.9		8.3		23.8	
	l.s.d. (0.05)	376		683		463		711		815		492	
	n	52		6		3		3		2		3	

Table 4. Mean grain yields (kg/ha) and ranks for 32 wheats grown in the 2005 NRPN.

Entry	Line or selection	region		Lethbridge, Alberta		Rosemount, MN	
		mean	rank	mean	rank	mean	rank
1	Kharkof	2881	31	4580	31	847	31
2	Harding	2776	32	4273	32	975	27
3	Nuplains	3420	27	6616	12	924	28
4	Nekota	3282	30	5939	22	2447	3
5	N02Y5075	3361	29	5041	29	1097	24
6	N02Y5078	3586	23	5342	26	1412	20
7	N02Y5106	3706	19	5438	24	1329	21
8	N02Y5117	3726	18	5814	23	1290	22
9	NP-02	3386	28	6982	6	887	30
10	TX00V1117	4013	8	6508	16	451	32
11	NE01604	3929	12	5940	21	983	26
12	NE02513	3488	25	4894	30	1075	25
13	NE02528	4074	5	6102	20	1693	15
14	NE02584	3934	11	5273	28	919	29
15	NE02592	3954	10	5370	25	2234	9
16	NI03427	4137	4	7390	2	2223	10
17	NE01643	4342	1	6344	18	2253	8
18	NH01036	3827	16	6576	13	2450	2
19	NH01048	3907	13	6548	14	1472	18
20	NI02425	4162	3	6634	11	1473	17
21	SD00032	3484	26	5277	27	2350	5
22	SD00258	4220	2	6350	17	3374	1
23	SD01054	3839	15	7414	1	2075	12
24	SD02024	3541	24	6808	7	1649	16
25	SD02039	3651	21	6542	15	1757	14
26	SD02480	3820	17	7205	5	2095	11
27	SD02771	3689	20	7273	4	2304	6
28	SD01W064	3890	14	6776	8	2368	4
29	SD02W129	3635	22	6701	9	1961	13
30	SD98W175-1	4072	6	6261	19	2291	7
31	BC97-ROM50W	4019	7	6655	10	1472	18
32	97x0850-16	3966	9	7354	3	1261	23
	mean	3741		6194		1681	
	c.v.	12.8		5.9		42.8	
	l.s.d. (0.05)	376		595		1175	
	n	52		3		3	

Table 5. Summary of mean yields of 32 wheats grown in the 2005 NRPN for regional production zones (Peterson, 1992, Crop Science 32: 907).

Entry	Line or selection	region		North Central Plains		Northern High Plains		Northern Plains		Northwest Plains		Northwest	
		mean	rank	mean	rank	mean	rank	mean	rank	mean	rank	mean	rank
1	Kharkof	2881	31	2110	31	2816	29	3490	30	3228	31	3913	31
2	Harding	2776	32	2014	32	2772	30	3594	28	2923	32	3723	32
3	Nuplains	3420	27	2526	29	3111	21	3433	32	3954	21	5293	15
4	Nekota	3282	30	2584	28	2698	31	3661	26	3544	30	4915	26
5	N02Y5075	3361	29	2917	23	2895	28	3485	31	3647	28	4492	29
6	N02Y5078	3586	23	3001	20	3007	24	3891	20	3886	23	4992	25
7	N02Y5106	3706	19	3135	14	3286	13	3812	23	4075	17	5025	23
8	N02Y5117	3726	18	3045	19	3182	18	4215	15	4007	19	5186	22
9	NP-02	3386	28	2345	30	3200	17	3650	27	3636	29	5487	11
10	TX00V1117	4013	8	3094	15	3683	2	4436	10	4475	3	5597	7
11	NE01604	3929	12	3309	11	3404	8	4597	6	3987	20	5266	16
12	NE02513	3488	25	3075	16	3034	22	3737	24	3794	25	4427	30
13	NE02528	4074	5	3557	8	3456	7	4503	8	4521	2	5211	20
14	NE02584	3934	11	3392	9	3202	16	4888	3	4085	16	5013	24
15	NE02592	3954	10	3774	2	2915	27	4347	13	4202	13	4895	27
16	NI03427	4137	4	3685	5	2949	26	4423	11	4255	8	6016	1
17	NE01643	4342	1	3808	1	3773	1	5201	1	4213	12	5529	8
18	NH01036	3827	16	2947	22	3141	20	4544	7	4162	14	5649	4
19	NH01048	3907	13	3048	18	3587	6	4295	14	4305	6	5526	9
20	NI02425	4162	3	3657	6	3366	11	4655	5	4227	10	5644	5
21	SD00032	3484	26	2847	25	3212	15	4096	16	3694	27	4533	28
22	SD00258	4220	2	3698	3	3393	10	5135	2	4216	11	5496	10
23	SD01054	3839	15	3225	12	3020	23	3833	22	4285	7	5682	3
24	SD02024	3541	24	2602	27	3173	19	3718	25	4236	9	5316	14
25	SD02039	3651	21	2681	26	3664	3	4088	17	3954	22	5220	18
26	SD02480	3820	17	3057	17	3224	14	4467	9	4038	18	5441	13
27	SD02771	3689	20	2956	21	2696	32	4867	4	3808	24	5218	19
28	SD01W064	3890	14	3350	10	3589	5	3570	29	4123	15	5458	12
29	SD02W129	3635	22	2858	24	3401	9	4003	18	3736	26	5231	17
30	SD98W175-1	4072	6	3686	4	3292	12	4393	12	4421	4	5192	21
31	BC97-ROM50W	4019	7	3575	7	3005	25	3905	19	4408	5	5808	2
32	97x0850-16	3966	9	3200	13	3625	4	3859	21	4598	1	5601	6
	mean	3741		3086		3212		4150		4020		5187	
	c.v.	12.8		16.7		17.1		13.3		7.9		7.1	
	l.s.d. (0.05)	376		704		723		996		786		764	
	n	52		19		9		7		7		9	

Table 6. Summary of mean volume weights (kg/hl) of 32 wheats grown in the 2005 NRPN.

Entry	Line or selection	region	Dakota Lakes, SD	Winner, SD	Brookings, SD	Prosper, ND	Williston, ND	Hettinger, ND	Moccasin, MT	Bozeman, MT	Rosemount, MN	Ames, IA
1	Kharkof	74.7	71.7	79.1	68.7	66.1	80.3	75.6	74.1	78.0	75.9	77.2
2	Harding	74.4	71.4	79.3	67.6	65.0	80.6	74.6	74.0	78.2	75.7	77.2
3	Nuplains	72.5	69.9	79.1	59.1	54.8	82.6	76.8	72.8	79.6	71.8	78.3
4	Nekota	71.8	69.2	75.7	55.4	58.1	79.7	75.7	76.0	77.5	75.2	75.9
5	N02Y5075	73.2	73.4	76.2	62.3	60.2	80.3	74.8	74.3	77.8	75.4	77.4
6	N02Y5078	74.2	74.2	77.5	68.1	61.0	80.9	75.9	76.0	78.9	71.3	77.8
7	N02Y5106	72.8	73.3	77.7	61.1	62.5	79.7	74.2	72.8	77.1	73.7	76.0
8	N02Y5117	71.3	70.0	76.9	58.3	59.3	79.0	73.7	72.2	76.9	71.8	75.3
9	NP-02	72.0	71.0	76.0	56.9	54.1	82.6	75.9	74.9	79.6	73.1	75.5
10	TX00V1117	73.8	72.4	79.3	62.8	62.7	82.2	76.3	71.3	79.6	72.8	78.3
11	NE01604	73.1	71.9	76.7	66.1	59.3	80.9	72.2	73.9	78.7	74.9	76.2
12	NE02513	73.6	72.5	78.0	58.1	61.0	82.4	77.2	75.1	78.9	76.0	77.1
13	NE02528	74.5	73.7	78.4	65.9	60.4	82.1	77.6	75.4	78.9	74.9	77.6
14	NE02584	75.2	75.1	81.0	62.5	55.6	83.3	78.4	78.2	80.2	77.8	79.5
15	NE02592	73.6	70.9	80.0	66.3	62.3	80.4	76.2	73.3	76.1	74.6	76.1
16	NI03427	71.8	71.1	77.3	64.8	57.8	81.8	74.0	68.2	77.4	69.6	76.2
17	NE01643	74.0	71.4	78.0	67.1	64.7	80.7	76.3	73.8	77.3	74.0	76.8
18	NH01036	72.6	70.8	76.0	64.3	64.5	79.8	74.6	69.6	76.9	74.0	75.1
19	NH01048	68.5	67.0	72.8	56.5	57.0	78.9	72.9	66.3	74.3	67.7	71.6
20	NI02425	74.6	71.1	76.6	66.9	62.1	82.6	77.5	74.2	79.1	77.1	78.4
21	SD00032	72.9	72.3	78.8	64.1	59.9	79.6	73.7	72.1	76.5	75.2	76.8
22	SD00258	73.5	72.8	76.1	67.6	61.8	80.1	75.0	72.4	77.5	73.5	77.7
23	SD01054	72.1	69.6	79.0	58.3	57.1	81.5	74.4	73.1	78.9	72.2	76.6
24	SD02024	69.8	63.9	76.2	57.9	52.5	80.1	73.1	71.3	75.4	72.5	75.3
25	SD02039	75.7	75.0	81.9	67.2	65.5	81.5	76.3	76.1	78.9	76.6	78.2
26	SD02480	73.9	73.2	79.1	68.8	63.2	80.4	74.9	72.6	77.4	72.3	77.5
27	SD02771	74.1	71.4	79.3	69.0	64.5	80.1	74.2	71.3	77.4	77.1	76.9
28	SD01W064	72.2	68.5	79.5	52.8	58.7	82.5	76.5	72.8	78.1	74.9	77.2
29	SD02W129	71.2	67.2	76.5	61.7	61.5	79.7	74.5	68.0	76.0	71.3	75.5
30	SD98W175-1	73.4	70.7	80.0	62.0	57.2	82.1	75.9	74.9	78.6	73.2	78.8
31	BC97-ROM50W	68.4	66.6	72.6	52.4	51.5	79.5	70.4	73.5	76.8	69.1	71.9
32	97x0850-16	68.1	66.2	74.8	50.0	51.6	79.9	72.1	69.2	74.7	69.4	73.3
	mean	72.7	70.9	77.7	62.2	59.8	80.9	75.0	72.9	77.7	73.6	76.5

Table 7. Summary of mean plant heights (cm) of 32 wheats grown in the 2005 NRPN.

Entry	Line or selection	Region	North Platte, NE	Sidney, NE	Alliance, NE	Brookings, SD	Winner, SD	Williston, ND	Hettinger, ND	Lingle, WY	Moccasin, MT	Bozeman, MT	Ames, IA	Lethbridge, Alberta	Rosemount, MN
1	Kharkof	104	109	104	102	105	94	108	109	63	107	130	117	110	100
2	Harding	101	86	102	108	100	91	107	106	57	109	135	118	98	97
3	Nuplains	77	81	71	84	79	71	75	77	43	80	95	86	76	81
4	Nekota	78	81	74	86	84	74	72	71	41	85	100	86	66	90
5	N02Y5075	83	94	79	93	80	81	73	78	44	91	106	98	74	84
6	N02Y5078	79	79	79	85	83	79	72	76	46	86	105	86	74	77
7	N02Y5106	78	86	79	81	75	76	71	71	47	86	95	84	68	93
8	N02Y5117	78	76	74	86	79	79	71	77	49	85	100	86	69	81
9	NP-02	77	81	76	84	76	71	74	76	46	82	97	89	73	76
10	TX00V1117	76	86	79	84	74	76	77	70	52	83	93	95	68	47
11	NE01604	82	94	79	94	80	76	80	80	47	92	104	98	74	69
12	NE02513	74	79	76	86	74	69	69	72	39	80	88	86	64	77
13	NE02528	80	89	76	95	81	76	77	77	49	83	96	95	71	79
14	NE02584	76	84	79	93	75	74	72	78	41	81	91	88	67	68
15	NE02592	87	89	86	97	90	86	80	87	48	90	105	99	84	89
16	NI03427	79	81	74	77	81	76	77	76	50	86	101	97	68	80
17	NE01643	83	81	84	89	88	79	79	84	42	91	108	99	74	88
18	NH01036	87	94	84	93	88	79	82	89	50	91	107	100	78	96
19	NH01048	86	94	86	95	91	76	80	88	52	87	108	99	72	92
20	NI02425	79	84	81	88	77	69	75	80	44	87	102	89	75	78
21	SD00032	92	89	89	98	97	79	89	97	49	97	119	105	86	99
22	SD00258	88	91	91	99	93	79	83	86	52	92	103	100	82	95
23	SD01054	85	86	86	93	86	74	85	84	56	86	101	100	78	88
24	SD02024	80	81	76	93	80	76	78	77	51	80	94	90	74	88
25	SD02039	95	91	91	98	102	84	89	97	55	104	121	109	95	95
26	SD02480	87	89	84	99	86	79	85	85	47	93	112	98	84	92
27	SD02771	93	94	94	100	89	84	87	93	53	102	122	109	89	94
28	SD01W064	85	89	89	93	85	81	82	81	48	87	103	99	80	90
29	SD02W129	81	81	84	80	81	79	81	81	52	87	102	90	73	86
30	SD98W175-1	79	84	76	84	77	76	77	80	49	84	98	85	70	87
31	BC97-ROM50W	72	74	64	71	74	69	68	75	41	83	94	89	63	72
32	97x0850-16	79	89	76	89	80	74	76	75	47	84	95	89	66	83
	mean	83	87	82	91	84	78	80	82	49	89	104	96	76	85

Table 8. Summary of days (from 1/1) to heading for 32 wheats grown in the 2005 NRPN.

Entry	Line or selection	region	Brookings, SD	Dakota Lakes, SD	Winner, SD	Williston, ND	Hettinger, ND	Lingle, WY	Bozeman, MT	Moccasin, MT	Ames, IA	Lethbridge, Alberta	Rosemount, MN
1	Kharkof	161	162	158	155	156	165	150	173	172	149	170	164
2	Harding	161	164	157	155	158	165	147	172	173	148	170	165
3	Nuplains	160	159	154	153	157	167	149	171	172	146	171	164
4	Nekota	155	155	151	147	150	160	147	167	167	143	164	157
5	N02Y5075	158	158	152	150	156	162	148	168	171	143	169	159
6	N02Y5078	157	157	151	150	154	162	147	168	169	143	168	159
7	N02Y5106	157	158	151	149	151	162	147	169	171	142	167	159
8	N02Y5117	158	158	151	149	154	163	147	171	171	143	167	161
9	NP-02	159	160	154	150	156	166	148	171	172	143	168	164
10	TX00V1117	157	157	152	152	154	163	147	167	168	144	167	159
11	NE01604	152	156	149	148	154	161	146	167	117	144	167	160
12	NE02513	156	156	150	148	153	161	148	167	169	142	167	159
13	NE02528	156	156	149	149	152	161	147	167	168	140	166	159
14	NE02584	157	157	149	150	155	162	148	167	168	141	168	159
15	NE02592	156	156	149	150	153	160	147	167	168	143	166	159
16	NI03427	158	157	152	152	155	164	147	167	169	144	166	161
17	NE01643	158	157	153	152	154	161	148	169	170	144	165	161
18	NH01036	158	156	152	153	155	163	148	169	169	144	166	160
19	NH01048	160	160	154	153	156	165	150	171	172	147	169	164
20	NI02425	157	157	151	152	153	161	149	168	170	143	167	160
21	SD00032	157	157	153	147	155	163	147	168	170	145	165	160
22	SD00258	159	159	154	153	155	165	148	171	172	147	166	163
23	SD01054	160	159	154	154	157	166	150	170	172	148	167	162
24	SD02024	159	160	153	153	156	164	149	169	171	147	169	161
25	SD02039	159	158	154	150	157	164	148	170	171	146	167	162
26	SD02480	159	158	154	150	157	164	150	170	171	145	169	163
27	SD02771	161	161	156	154	158	165	151	172	172	147	170	163
28	SD01W064	158	158	153	150	154	164	148	170	171	146	169	161
29	SD02W129	160	160	153	152	157	166	151	171	173	145	170	164
30	SD98W175-1	158	160	153	150	155	165	149	169	171	146	165	160
31	BC97-ROM50W	158	158	152	151	154	165	148	168	168	145	171	162
32	97x0850-16	156	157	152	148	151	160	148	168	167	144	165	159
	mean	158	158	152	151	155	163	148	169	169	144	167	161

Table 9. Stability analyses, grain yield and volume weights, of 32 wheats grown in the 2005 NRPN.

Entry	Line or selection	grain yield			volume weight		
		regional average (kg/ha)	regression coef. (b)	r ²	regional average (kg/hl)	regression coef. (b)	r ²
1	Kharkof	2881	0.70	0.85	74.7	0.66	0.96
2	Harding	2776	0.72	0.79	74.4	0.73	0.96
3	Nuplains	3420	1.16	0.96	72.5	1.33	0.99
4	Nekota	3282	0.94	0.90	71.8	1.19	0.92
5	N02Y5075	3361	0.89	0.89	73.2	0.96	0.97
6	N02Y5078	3586	0.92	0.93	74.2	0.83	0.90
7	N02Y5106	3706	0.88	0.91	72.8	0.90	0.96
8	N02Y5117	3726	0.94	0.94	71.3	1.04	0.98
9	NP-02	3386	1.14	0.88	72.0	1.35	0.97
10	TX00V1117	4013	1.17	0.94	73.8	0.98	0.96
11	NE01604	3929	0.98	0.89	73.1	0.90	0.93
12	NE02513	3488	0.99	0.84	73.6	1.13	0.95
13	NE02528	4074	1.00	0.93	74.5	0.95	0.98
14	NE02584	3934	1.00	0.84	75.2	1.28	0.95
15	NE02592	3954	0.84	0.83	73.6	0.82	0.96
16	NI03427	4137	1.15	0.92	71.8	0.99	0.91
17	NE01643	4342	1.04	0.93	74.0	0.73	0.98
18	NH01036	3827	1.10	0.92	72.6	0.74	0.94
19	NH01048	3907	1.07	0.96	68.5	1.04	0.95
20	NI02425	4162	1.12	0.91	74.6	0.89	0.95
21	SD00032	3484	0.78	0.87	72.9	0.92	0.97
22	SD00258	4220	0.92	0.86	73.5	0.77	0.95
23	SD01054	3839	1.01	0.81	72.1	1.23	0.99
24	SD02024	3541	1.08	0.89	69.8	1.28	0.97
25	SD02039	3651	0.97	0.87	75.7	0.79	0.97
26	SD02480	3820	1.05	0.92	73.9	0.73	0.92
27	SD02771	3689	0.93	0.75	74.1	0.69	0.88
28	SD01W064	3890	1.13	0.90	72.2	1.36	0.94
29	SD02W129	3635	1.04	0.96	71.2	0.90	0.93
30	SD98W175-1	4072	0.98	0.96	73.4	1.17	0.99
31	BC97-ROM50W	4019	1.13	0.83	68.4	1.35	0.95
32	97x0850-16	3966	1.24	0.89	68.1	1.44	0.98
	mean	3741			72.7		

Table 10. Reaction of 32 wheats grown in the 2005 NRPN to viral pathogens.

Entry	Line or selection	BYDV - Urbana, IL: fall inoculation with PAV-IL	SBMV:Urbana, IL	SBMV/WSSMV*	
		Mean (n=2) % dwarfing	(mean, n=2), 1- 9, 1=res.	Stillwater, OK, 1(res.) -4	
				03/08	03/18
1	Kharkof	10	6.5	2	2
2	Harding	38	6.5	2	2
3	Nuplains	21	9	3	3
4	Nekota	23	2	1	1
5	N02Y5075	14	8.5	3	2
6	N02Y5078	19	6	1	1
7	N02Y5106	38	4	1	1
8	N02Y5117	30	2	1	1
9	NP-02	20	9	2	2
10	TX00V1117	15	9	1	1
11	NE01604	27	7.5	2	1
12	NE02513	14	1	1	1
13	NE02528	21	1.5	1	1
14	NE02584	13	8	1	1
15	NE02592	20	9	3	2
16	NI03427	26	1	1	1
17	NE01643	20	7	3	3
18	NH01036	18	6.5	3	3
19	NH01048	20	8	3	3
20	NI02425	20	8.5	1	1
21	SD00032	20	6.5	3	3
22	SD00258	26	9	3	3
23	SD01054	26	1	1	1
24	SD02024	28	9	3	3
25	SD02039	21	7	4	4
26	SD02480	22	6	3	4
27	SD02771	22	4	3	3
28	SD01W064	25	1	1	1
29	SD02W129	15	5	1	2
30	SD98W175-1	16	9	3	3
31	BC97-ROM50W	14	5	1	1
32	97x0850-16	15	6	2	2

*visual assessment: 1=no mosaic and/or no stunting, 2=slight mosaic and/or slight stunting, 3=moderate mosaic and/or moderate stunting, 4=severe mosaic and/or severe stunting.

Table 11. Seedling reactions of entries in the 2005 NRPN to selected isolates of stem rust.

Entry	Line/selection	Seedling reactions - greenhouse					Field response, St. Paul, MN ¹	
		stem rust isolates					Severity	Infection response
		TPMK 74-MN-1409	QFCS 03ND76C	TTTT 01 MN 84 A-1	RCRS 77 ND 82A	RKQQ 99KS76A-1		
1	Kharkof	S	S	S	S	S	50	S
2	Harding	;S	S	S	S	S	50	S
3	Nuplains	2	1	2	;1	1	TR	
4	Nekota	0	;	S	;	;	5	MS/S
5	N02Y5075	2	;1/2	2	1	;	0	
6	N02Y5078	2	1	2	1	1	0	
7	N02Y5106	2-	;	2	;	;	0	
8	N02Y5117	2-	;	2-	0;	;	0	
9	NP-02	2	2-	-	;?	;1	0	
10	TX00V1117	0/S	2+	S	S	S	-	
11	NE01604	0;	;	S/2	;	2+	10	MS-S
12	NE02513	0	0;/1/2	1+	1	2/;	0	
13	NE02528	S	S	S	S/2	S	30	S
14	NE02584	2/S	S/2	2	1	2/S	TR/S	
15	NE02592	0/2	;	0;/S(1pl)	0	;	0	
16	NI03427	0	2	2-	2	2/S	0	
17	NE01643	S	2	S	2	-	60	MS-S
18	NH01036	2	1	2-	1	;	TR	
19	NH01048	S	2/S	2/S	2+	2	10	MS
20	NI02425	0;	;	1/S	;	2/S	50	S
21	SD00032	0/0;	;	2	0	-	5	S
22	SD00258	2	1	2-	1	2/S	0	
23	SD01054	S	S/2	-	;S	S/2	TR	
24	SD02024	2-	1	0	;	2+	0	
25	SD02039	-	-	;1	0;	-	0	
26	SD02480	0;	;	1	;	-	0	
27	SD02771	;	;	S/;	0	-	0/MS	
28	SD01W064	2,3	;	-	2-	2	0/MS	
29	SD02W129	-	;	-	0	-	0/MR	
30	SD98W175-1	-	-	;	0;	;	TR	
31	BC97-ROM50W	S	2	S	;;2	;	0	
32	97x0850-16	S/2	3+N	S/2	2/S	S/2	60	MS

¹"/" indicates a mixture of plants, predominant type listed first. "S" indicate susceptible, including infection types 3 or 4. Bulk of races for field inoculation: MCCF, QFCS, QTHJ, RCRS, RKQQ, TPMK, TTTT.

Table 12. Seedling reactions of entries in the 2005 NRPN to selected isolates of leaf rust.

Entry	Line/selection	Leaf rust isolates								Postulated Genes
		KDBG	MCDS	TCTD	TNRJ	THBJ	MFBJ	MBJJ	Bulk	
1	Kharkof	3;	3	3	3	3+	3+	3+	3	0
2	Harding	3;	3	3	3	3+	3+	3+	3	0
3	Nuplains	3	;	;	3	;	3+	3+	31c;	24
4	Nekota	3	3	3	3	3+	3+	0;	3	0
5	N02Y5075	;3	3;	3	3	3+	3+	32;	3;	0
6	N02Y5078	;3	3	3;	3;	3+	32;	3;	3;	0
7	N02Y5106	3;	3	3	;1c2	3+	3+	3+	3;	0
8	N02Y5117	;1c-3	3	3	3	3+	3+	0;	3	14a
9	NP-02	3	;1c	;	3;	;	2+3	3+	3;	24
10	TX00V1117	;	2c;	;1c2	3;	;2	;1-	3	;1c3	16
11	NE01604	;	1c;	;1c	3;	;	;	;	;3	9
12	NE02513	;1c-3	;	;	3	;	2+3	3;	;3	14a, 24
13	NE02528	3-;	3;	3	3;	;2+	2+3	;2+3	;3	0
14	NE02584	;3	3-;	3-;	;3	;2+	2+3	;2	3;	26
15	NE02592	;	;	;	;	0;/22+	;	;	1c;	+
16	NI03427	;	;	;	3	0;	3+	0;	;3	14a, 24, +
17	NE01643	;	;1c	;1c	;2c	;1-	;	3+	;1c	16,24
18	NH01036	;	;	;	3	;	3+	3+	;1c3	14a, 24
19	NH01048	;	;1c	;2c	3	;2+	3+	3+	;3	14a, 24
20	NI02425	;	3-;	;	3	;3	3+	3+	;3	14a, 24
21	SD00032	;	;	;	;1c	2+3	;	3/;	;3	16
22	SD00258	;	;	;	;1c	;	;	3+	;	16,24
23	SD01054	;	3	;1c	3	3/;	3+	3+	;3	10,14a
24	SD02024	;	;	;	-	;	3+	3+	;	14a,24
25	SD02039	3	;	3	3	--	3	;	3	23
26	SD02480	3;1c	;	3	3	--	3+	--	31c;	+
27	SD02771	;3	;	;	;1c-3	2	3+;/	3+	;3	16
28	SD01W064	;3	;	;	3	;	3+	3+	;3	24
29	SD02W129	3	;	;	3	;	3+	3+	3;	24
30	SD98W175-1	;3	;	;1c	;	;	3+;/2	3+	-	16,24
31	BC97-ROM50W	;	;1c	;	;1c	;	;	;1-	;1c3	+
32	97x0850-16	;1c3	;1c	;	;1c2	;2+	;1	;	;3	+

Table 13. Field reactions to leaf rust and select DNA markers, 2005 NPRN.

Entry No.	Line/selection	Stillwater, OK:	St. Paul, MN incidence	St. Paul, MN reaction type	Hettinger, ND incidence	Hettinger, ND severity	Lr DNA markers - allele, primers, detected band size						
		seedling, Stakeman scores						Lr34/Yr18 BARC352 T264,265	Lr34/Yr18 GWM295 T273	Lr37/SR38/Yr17 VENTRIUP-LN2 259	Lr39/Lr41 GDM35 T184	Lr50 GDM87 T120-125	Lr50 GWM382 T131-156
1	Kharkof	3+	40	S	73	1	+	-	-	-	-	-	
2	Harding	3	40	S	73	1	+	-	-	-	-	-	
3	Nuplains	;	40	MS	93	2	-	-	-	-	-	-	
4	Nekota	3	50	S	97	2	+	-	-	-	+	-	
5	N02Y5075	3+			37	1	+	-	-	-	+	+	
6	N02Y5078	3	5	R	10	1	+	-	-	-	-	+	
7	N02Y5106	3	40	MS-S	87	2	+	-	-	-	+	+	
8	N02Y5117	3+	5	R/ 30 MS	77	1	+	-	-	-	+	+	
9	NP-02	3	50	S	57	2	?	-	-	-	-	-	
10	TX00V1117	3+			17	>1	-	-	-	-	+	-	
11	NE01604	X;3-	5	R	30	>1	-	-	-	-	-	+	
12	NE02513	3	20	MR-MS	73	1	+	-	-	-	-	-	
13	NE02528	3+	30	MS	73	3	+	-	-	-	-	-	
14	NE02584	3+	40	MS	70	2	+	-	-	+	-	-	
15	NE02592	X;3	5	R	3	>1	+	+	+	-	+	-	
16	NI03427	3	20	MS	70	2	-	-	-	-	-	-	
17	NE01643	3+	20	MR-MS	30	1	+	-	-	-	-	-	
18	NH01036	X;3-	40	MS	87	2	+	-	-	-	-	-	
19	NH01048	3+	60	S	100	3	+	-	-	-	+	-	
20	NI02425	3	30	MR-MS	43	1	+	-	-	-	-	-	
21	SD00032	3+	20	MS	37	1	+	-	-	-	+	-	
22	SD00258	;	TR		0	0	+	-	-	-	-	-	
23	SD01054	3	50	S	90	3	-	-	-	-	+	+	
24	SD02024	X;3-	50	S	97	2	-	-	-	-	-	-	
25	SD02039	3+	30	MR-MS	77	1	+	-	-	-	+	-	
26	SD02480	X;3	10	MR	53	1	+	-	-	-	-	-	
27	SD02771	3	10	R	43	1	?	?	-	-	-	-	
28	SD01W064	3	40	S	87	2	-	-	-	-	+	+	
29	SD02W129	X;3	40	MS	97	2	-	-	-	-	+	+	
30	SD98W175-1	X;3-	30	MS	23	1	-	-	+	-	+	-	
31	BC97-ROM50W	3+	10	R	33	1	-	-	+	-	-	+	
32	97x0850-16	X;3-	5	R	20	1	-	-	-	-	-	-	

Table 14. Field reactions to stripe rust, 2005 NPRN.

Entry No.	Line/selection	Hettinger, ND	Pullman, WA		Mt. Vernon, WA			
			6/16/05		4/22/05		5/23/01	
			%Inc.	IT*	%	IT	%	IT
1	Kharkof	0	8	5	5	10	2,5	5
2	Harding	3	8	10	2	10	2	2
3	Nuplains	63	8	100	8	100	8	100
4	Nekota	73	8	100	8	100	8	100
5	N02Y5075	13	5	20	5	20	5	30
6	N02Y5078	0	8	80	5	20	5	30
7	N02Y5106	47	5-8	70	8	100	8	95
8	N02Y5117	3	5	30	8	100	8	100
9	NP-02	63	8	100	8	100	8	100
10	TX00V1117	27	8	80	8	100	8	80
11	NE01604	33	8	100	8	60	8	90
12	NE02513	3	8	100	8	60	8	80
13	NE02528	7	8	90	5	40	5	50
14	NE02584	27	8	90	5	40	5	50
15	NE02592	17	8	60	8	40	8	70
16	NI03427	7	8	80	8	50	8	80
17	NE01643	27	8	100	8	50	8	90
18	NH01036	53	8	100	8	100	8	90
19	NH01048	10	5	20	5	40	5	50
20	NI02425	3	5	40	8	40	2	20
21	SD00032	13	8	70	8	20	8	60
22	SD00258	20	8	90	8	60	8	80
23	SD01054	67	8	90	8	60	8	80
24	SD02024	37	8	80	5	40	5	60
25	SD02039	67	8	90	2	10	2	10
26	SD02480	0	5	40	5	20	2	10
27	SD02771	73	8	90	8	80	8	90
28	SD01W064	53	8	100	8	100	8	100
29	SD02W129	30	8	100	8	100	8	100
30	SD98W175-1	7	8	70	8	60	8	80
31	BC97-ROM50W	10	8	80	8	40	8	80
32	97x0850-16	63	8	100	8	60	8	90

*Stripe rust percent (%) and infection type (T) under natural infestation. IT: 0=no visible symptoms; 1=necrotic &/or chlorotic flecks; no sporulation; 2=necrotic and/or chlorotic blotches or stripes; no sporulation; 3=necrotic &/or chlorotic blotches or stripes; no sporulation; 4=necrotic &/or chlorotic blotches or stripes, trace sporulation; 5=necrotic &/or chlorotic blotches or stripes, intermediate sporulation; 6=necrotic &/or chlorotic blotches or stripes; moderate sporulation; necrotic &/or chlorotic blotches or stripes; abundant sporulation; 8=chlorosis behind sporulating area; abundant sporulation; 9=no necrosis of chlorosis; abundant sporulation. From Xianming Chen, USDA-ARS.

Table 15. Field reactions to leaf pathogens and Fusarium head blight.

Entry	Line/selection	Leaf Disease, Williston, ND ¹		Hettinger, ND - Tan Spot		Powdery mildew, Lethbridge, Alberta (0-9)	Fusarium Headblight Brookings, SD ¹		
		Bact. Blight	Tan Spot	Incidence	Severity		Incidence	Severity	Disease Index
		%	%	%					
1	Kharkof	35	10	100	2	4	100	71.5	71.5
2	Harding	40	15	100	3	4	100	66	66
3	Nuplains	5	30	97	2	5	100	76.6	76.6
4	Nekota	40	25	100	1	4	100	70	70
5	N02Y5075	20	10	100	3	3	100	54.8	54.8
6	N02Y5078	15	10	100	2	3	100	66.7	66.7
7	N02Y5106	5	40	77	2	4	100	58	58
8	N02Y5117	1	30	100	3	3	100	74.8	74.8
9	NP-02	5	30	100	2	5	100	75.8	75.8
10	TX00V1117	1	10	100	2	2	100	56.8	56.8
11	NE01604	1	5	100	2	4	100	43.2	43.2
12	NE02513	1	40	100	2	2	100	62.5	62.5
13	NE02528	1	30	97	2	4	100	58.5	58.5
14	NE02584	5	5	93	2	3	100	54	54
15	NE02592	1	25	100	3	4	100	57.2	57.2
16	NI03427	15	15	97	1	3	100	55.5	55.5
17	NE01643	1	20	97	2	4	100	61.3	61.3
18	NH01036	5	30	93	2	2	100	44.1	44.1
19	NH01048	1	10	100	2	4	100	64	64
20	NI02425	5	10	100	2	3	100	65.7	65.7
21	SD00032	5	10	100	3	2	100	57.7	57.7
22	SD00258	5	15	100	3	3	100	63.8	63.8
23	SD01054	15	10	70	3	3	100	68.5	68.5
24	SD02024	15	20	100	3	5	100	76.2	76.2
25	SD02039	45	20	83	1	2	100	55.8	55.8
26	SD02480	0	5	100	1	3	100	50.5	50.5
27	SD02771	15	10	100	2	3	100	61.3	61.3
28	SD01W064	10	10	77	2	4	100	77.7	77.7
29	SD02W129	5	20	83	1	3	100	66.2	66.2
30	SD98W175-1	10	15	100	2	5	100	63.3	63.3
31	BC97-ROM50W	1	10	70	1	4	100	83.2	83.2
32	97x0850-16	5	10	70	1	3	100	74.5	74.5

¹From Amir Ibrahim, South Dakota State, FHB ratings are based on a 0-9 scale. Incidence is the number of infected ears. Severity is the average of the scab ratings * 10. Disease Index is incidence * severity/100.

Table 16. Acid soil reactions of entries in the 2005 NRPN.

Entry	Line or Selection	Acid soil tolerance, Enid, OK*		
		MAR 19	APRIL 14	MAY 18
1	Kharkof	4	5	5
2	Harding	5	4	3
3	Nuplains	3	3	3
4	Nekota	5	5	5
5	N02Y5075	3	2	1
6	N02Y5078	3	2	1
7	N02Y5106	4	4	4
8	N02Y5117	4	4	2
9	NP-02	4	4	4
10	TX00V1117	3	3	3
11	NE01604	2	1	1
12	NE02513	4	3	3
13	NE02528	4	4	3
14	NE02584	2	3	3
15	NE02592	2	2	1
16	NI03427	2	3	1
17	NE01643	5	5	5
18	NH01036	3	2	1
19	NH01048	5	5	5
20	NI02425	2	3	2
21	SD00032	5	5	4
22	SD00258	5	4	3
23	SD01054	5	4	3
24	SD02024	5	5	4
25	SD02039	5	4	3
26	SD02480	5	4	3
27	SD02771	4	4	4
28	SD01W064	2	3	1
29	SD02W129	5	5	5
30	SD98W175-1	3	3	2
31	BC97-ROM50W	5	5	5
32	97x0850-16	2	3	3

*Readings taken at Enid, OK (pH = 4.6, 70 ppm Al, and Al saturation = 11%). Scale of 1 (highly tolerant) to 5 (highly susceptible), in which Jagger = 2. First reading could be biased by winter dormancy pattern; second reading could be biased by extreme differences in growth habit; third reading yielded greatest confidence.

Table 17. Reactions of entries in the 2005 NRPN to various insects.

Entry	Line or Selection	Russian Wheat Aphid Biotype 1	Greenbug biotype E	Hessian fly
1	Kharkof	S	S	S
2	Harding	S	S	S
3	Nuplains	S	S	S
4	Nekota	S	S	S
5	N02Y5075	S	S	S
6	N02Y5078	S	S	S
7	N02Y5106	S	S	S
8	N02Y5117	S	S	S
9	NP-02	S	S	S
10	TX00V1117	S	S	S
11	NE01604	S	S	H
12	NE02513	S	S	S
13	NE02528	S	S	S
14	NE02584	S	S	S
15	NE02592	S	S	S
16	NI03427	S	S	S
17	NE01643	S	S	S
18	NH01036	S	S	S
19	NH01048	S	20 R/ 4 S	S
20	NI02425	S	S	S
21	SD00032	S	S	S
22	SD00258	S	S	H+
23	SD01054	S	S	H
24	SD02024	S	S	S
25	SD02039	S	S	S
26	SD02480	S	S	S
27	SD02771	S	S	S
28	SD01W064	S	S	S
29	SD02W129	S	S	H-
30	SD98W175-1	S	S	S
31	BC97-ROM50W	S	S	S
32	97x0850-16	S	S	S

Table 18. DNA marker analyses of entries in the 2005 NRPN.

Entry	Primers Band Size (bp)	Lr50	Hessian Fly	RWA	RWA	BYD2	WSM1	WSM1
		GWM382 T131-156	H9 H9 909	Dn4 GWM106 120	DN4 GWM337 T182	ByAgi T564	J15 400	PCR Control G43 700
1	Kharkof	-	+	-	-	-	-	+
2	Harding	-	+	-	-	-	-	+
3	Nuplains	-	-	-	-	-	-	+
4	Nekota	-	-	-	-	-	-	+
5	N02Y5075	+	-	+	+	-	+	+
6	N02Y5078	+	+	-	-	-	+	+
7	N02Y5106	+	-	+	+	-	+	+
8	N02Y5117	+	-	+	+	-	+	+
9	NP-02	-	-	-	-	-	-	+
10	TX00V1117	-	-	-	-	-	-	+
11	NE01604	+	-	-	-	-	-	+
12	NE02513	-	-	-	-	-	-	+
13	NE02528	-	-	-	-	-	-	+
14	NE02584	-	-	-	-	-	-	+
15	NE02592	-	-	-	-	-	-	+
16	NI03427	-	+	-	-	-	-	+
17	NE01643	-	+	-	-	-	-	+
18	NH01036	-	-	-	-	-	-	+
19	NH01048	-	+	-	-	-	-	+
20	NI02425	-	+	-	-	-	-	+
21	SD00032	-	-	-	-	-	-	+
22	SD00258	-	-	-	-	-	-	+
23	SD01054	+	-	-	-	-	-	+
24	SD02024	-	-	-	-	-	-	+
25	SD02039	-	-	-	-	-	-	+
26	SD02480	-	-	-	-	-	-	+
27	SD02771	-	-	-	-	-	-	+
28	SD01W064	+	-	-	-	-	-	+
29	SD02W129	+	+	-	-	-	-	+
30	SD98W175-1	-	-	-	-	-	-	+
31	BC97-ROM50W	+	+	-	-	-	-	+
32	97x0850-16	-	-	-	-	-	-	+

Table 18. DNA marker analyses of entries in the 2005 NRPN.

Entry	Primers Band Size (bp)	1RS Rye	1RS Rye	1RS	Grain Texture	Grain Texture	HighMolWt	HighMolWt	HighMolWt
		Secalin SECA T446	SCM9 T224,T241	SDS-PAGE Grain Storage Proteins	PinA T346	PinB 320	Glutenins HMWAx2* 1319	Glutenins HMWBx 766	Glutenins HMWDx5 478
1	Kharkof	-	-	Non.1RS	+	+	+	+	+
2	Harding	-	-	Non.1RS	+	+	+	+	+
3	Nuplains	-	-	Non.1RS	+	-	+	+	+
4	Nekota	-	-	1AL.1RS +/-	+	-	+	+	+
5	N02Y5075	-	-	Non.1RS	+	-	+	+	+
6	N02Y5078	-	-	Non.1RS	+	-	+	+	-
7	N02Y5106	-	-	Non.1RS	+	-	-	+	+
8	N02Y5117	-	-	Non.1RS	+	-	-	+	+
9	NP-02	-	-	Non.1RS	+	-	+	+	+
10	TX00V1117	-	-	Non.1RS	+	-	+	+	+
11	NE01604	-	-	Non.1RS	+	-	+	+	+
12	NE02513	-	-	Non.1RS	+	-	+	+	+
13	NE02528	-	-	Non.1RS	+	-	-	+	+
14	NE02584	-	-	Non.1RS	+	-	-	+	+
15	NE02592	-	-	Non.1RS	-	+	+	-	+
16	NI03427	-	-	Non.1RS	+	-	+	+	+
17	NE01643	+	-	Non.1RS	+	-	+	+	-
18	NH01036	-	-	1AL.1RS +/-	+	-	+	+	+
19	NH01048	+	-	Non.1RS	?	-	+	+	+
20	NI02425	-	-	Non.1RS	+	-	+	+	-
21	SD00032	-	-	1BL.1RS	-	-	+	+	+
22	SD00258	-	-	Non.1RS	-	-	+	+	+
23	SD01054	+	-	Non.1RS	?	-	+	+	+
24	SD02024	-	-	Non.1RS	+	-	+	+	+
25	SD02039	+	+	1BL.1RS	+	-	+	+	+
26	SD02480	+	+	1BL.1RS	+	-	+	+	+
27	SD02771	-	-	Non.1RS	+	-	+	+	-
28	SD01W064	-	-	Non.1RS	-	+	+	+	+
29	SD02W129	-	-	Non.1RS	-	-	+	+	+
30	SD98W175-1	+	-	Non.1RS	-	-	+	+	+
31	BC97-ROM50W	+	-	Non.1RS	+	-	+	+	?
32	97x0850-16	+	-	Non.1RS	?	+	+	+	+

Table 18. DNA marker analyses of entries in the 2005 NRPN.

Entry	Primers Band Size (bp)	Null Wx-D1	Null Wx-A1	Null Wx-B1	Aluminum	Height	Height	Height	VRN-A1-Promoter	Vrn-A1	
		7DS Waxy4 314	7AS Waxy4 273	4AL Waxy4 243	Tolerance ALMT1 107	Rht1 Rht1 237	Rht2 Rht2 254	Rht8 GWM261 T207	VRNAIF-VRNA1R 500	Intr1/C/F & Intr1/AB/R 1068	NON-Deletion
1	Kharkof	+	+	+	-	?	-	-	+		+
2	Harding	+	+	+	-	-	-	-	+		+
3	Nuplains	+	+	+	+	+	-	-	+		+
4	Nekota	+	+	+	-	+	-	-	+		+
5	N02Y5075	+	+	+	-	+	-	-	+		-
6	N02Y5078	+	+	+	-	+	-	-	+		+
7	N02Y5106	+	+	+	-	+	-	-	+		+
8	N02Y5117	+	+	+	-	+	-	-	+		+
9	NP-02	+	+	+	?	+	-	-	+		+
10	TX00V1117	+	+	-	+	+	-	-	+		+
11	NE01604	+	+	+	-	+	-	-	+		+
12	NE02513	+	+	+	+	+	-	-	+		+
13	NE02528	+	+	+	-	+	-	-	+		+
14	NE02584	+	+	+	-	+	-	-	+		+
15	NE02592	+	+	+	?	+	-	-	+		+
16	NI03427	+	+	-	+	+	-	-	+		+
17	NE01643	+	-	+	-	+	-	-	+		+
18	NH01036	+	+	+	-	+	-	-	+		+
19	NH01048	+	+	+	-	+	-	-	+		+
20	NI02425	+	+	+	+	+	-	-	+		+
21	SD00032	+	-	+	+	+	-	-	+		+
22	SD00258	+	+	+	-	+	-	-	+		+
23	SD01054	+	+	+	-	+	-	-	+		+
24	SD02024	+	+	+	-	+	-	-	+		+
25	SD02039	+	-	+	-	+	-	-	+		+
26	SD02480	+	-	+	-	+	-	-	+		+
27	SD02771	+	+	+	-	+	-	-	?		+
28	SD01W064	+	+	+	-	+	-	-	+		+
29	SD02W129	+	+	-	-	+	-	+	+		+
30	SD98W175-1	+	+	+	-	+	-	-	+		+
31	BC97-ROM50W	+	+	+	-	+	-	-	+		+
32	97x0850-16	+	+	-	+	+	-	-	+		+

Table 18. DNA marker analyses of entries in the 2005 NRPN.

Entry	Primers Band Size (bp)	Vrn-B1	Vrn-D1
		NON-Deletion Intr1/B/F & Intr1/B/R4 1149	NON-Deletion Intr1/D/F & Intr1/D/R4 997
1	Kharkof	?	+
2	Harding	-	+
3	Nuplains	+	+
4	Nekota	-	+
5	N02Y5075	+	+
6	N02Y5078	+	+
7	N02Y5106	+	+
8	N02Y5117	+	+
9	NP-02	+	+
10	TX00V1117	+	+
11	NE01604	+	+
12	NE02513	+	+
13	NE02528	+	+
14	NE02584	+	+
15	NE02592	+	+
16	NI03427	+	+
17	NE01643	+	+
18	NH01036	+	+
19	NH01048	+	+
20	NI02425	?	+
21	SD00032	+	+
22	SD00258	-	+
23	SD01054	+	+
24	SD02024	-	+
25	SD02039	+	+
26	SD02480	+	+
27	SD02771	?	+
28	SD01W064	+	+
29	SD02W129	+	+
30	SD98W175-1	+	+
31	BC97-ROM50W	+	+
32	97x0850-16	+	+