

# **Report of the 2005 Uniform Regional Scab Nursery for Spring Wheat Parents**

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The Uniform Regional Scab Nursery for Spring Wheat Parents (URSN) was grown for the 11th year in 2005. Six mist-irrigated locations at Brookings, SD, St. Paul and Crookston, MN, Prosper and Langdon, ND, and Glenlea (Manitoba, Canada) were planted in 2005. The Glenlea and Crookston locations encountered problems and thus are not included in this annual report.

A total of 43 entries were included in the 2005 URSN, including the resistant checks 2375, BacUp, and ND2710, and the susceptible checks Wheaton and Oslo. The other 38 entries were contributed by university, industry, and national breeding programs. Seven of these entries were durums, and the others were hard red spring wheat.

A core set of traits evaluated provided from most locations included scab incidence, scab severity, disease index (incidence x severity), and visual scabby kernel ratings (VSK,  $\cong$  tombstone). Additional recorded trait data such as grain deoxynivalenol content, plot yield, and heading date, are presented in individual location summary tables. Overall means for traits across locations are presented, as are relative rankings for scab incidence, severity, disease index, and VSK. Correlation coefficients are provided between scab incidence and severity, disease index, and VSK.

This material is based upon work supported by the U.S. Department of Agriculture, in cooperation with the U.S. Wheat & Barley Scab Initiative. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the U.S. Department of Agriculture.

St. Paul, MN  
January, 2006

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## **Cooperators for the 2005 Uniform Regional Scab Nursery for Spring Wheat Parents**

### **North Dakota State University (Prosper):**

Mohamed Mergoum and Robert Stack

### **North Dakota Agricultural Experiment Station (Langdon):**

John Lukach

### **South Dakota State University (Brookings):**

Karl Glover

### **University of Minnesota (St. Paul, Crookston):**

Jim Anderson, Ruth Dill-Macky, and John Wiersma

### **Agri-Food Canada, Glenlea, Manitoba:**

Jeannie Gilbert and Gavin Humphreys

**Table 1. Entries for the Uniform Regional Scab Nursery for Spring Wheat Parents, 2005.**

Entry No.	Name	Pedigree	Source
1	2375	CHECK	ND
2	Wheaton	CHECK	MN
3	Bacup	CHECK	MN
4	Oslo	CHECK	AGP
5	ND2710	CHECK	ND
6	Rugby*	DURUM CHECK	ND
7	SD3973	PI 285933/OXEN//SD3635	SD
8	SD3975	PI 519798/SD3650//REEDER	SD
9	SD3979	FN1700-155/SD3638//SD3506	SD
10	SD3989	PI 349478/FN1500-074//SD3599	SD
11	SD3991	FN1700-006/SD3628//SD3522	SD
12	00S0063-1	KNUDSON/3/N94-0157//SUMAI3/DALEN	AGP
13	00S0240-3	OXEN/3/SUMAI3/DALEN//N96-0160	AGP
14	00S0249-9	KNUDSON/ALSEN	AGP
15	00S0251-6	KNUDSON/4/N97-0214/3/N93-0338//SUMAI3/DALEN	AGP
16	CA-904-741	Express x Knudson	WB
17	CA-904-742	Alsen x Keystone	WB
18	CA-904-743	Granite x Keystone	WB
19	MN01057-3-1	ND2710/McVey	MN
20	MN01380-2-1	MN93434/Ingot//MN97008	MN
21	MN02051-1	Parshall/MN97589	MN
22	MN02219-1	MN98389/MN97518	MN
23	MN02306-2	ND2710/BacUp//MN94123	MN
24	MT03501487	Scholar/WA7802//ND709-9	MT
25	MT03501736	Outlook/ND709-9	MT
26	MT03502405	Choteau/ND709-9	MT
27	MT03502420	Choteau/ND709-9	MT
28	MT03502445	Choteau/ND709-9	MT
29	NDSW0345	MT9904/Alsen	ND
30	NDSW0350	ND622*3/Grandin//ND2891	ND
31	M05/1-14	SUMAI 3/STOA/ND674/3/TOKAI 66	ND
32	M05/1-15	SUMAI 3/STOA/ND674/3/ND744	ND
33	M05/1-16	FRONTANA/W9207//ND716/3/ND716 SELN.	ND
34	M05/1-17	FUJIAN 5114-1/MN2538//ND716 SELN.	ND
35	M05/1-18	FRONTANA/W9207//2*ND2940	ND
36	BW315a	94B46*G22/McKenzie	MAN
37	FA-800-772*	(Rugby x Duraking) x Belzer	WB
38	CA-804-744*	TA/Ben*//D88303//D88303/4/Laker	WB
39	CA-804-745*	Mountrail x CA-801-748	WB
40	CA-804-746*	Primo D'oro x Lebsock	WB
41	CA-801-717*	(Rugby x Duraking) x Belzer	WB
42	DG013141*	Belzer/WB735	DGP
43	DG012166*	Maier/WB733	DGP

\* Durum entries

SD, South Dakota State Univ.; MN, Univ. of Minnesota; MT, Montana State Univ.  
 AGP, Agripro; WB, Westbred; DGP, Dakota Growers Pasta Company  
 ND, North Dakota State Univ.; MAN, Agriculture and Agri-Food Canada, Manitoba

**Table 2. 2005 Uniform Regional Scab Nursery for Spring Wheat Parents, Brookings, SD.**

Line	Incidence %	Severity %	Disease Index	Tombstone %	Yield (g/plot)	Test Weight
2375	98.3	51.0	50.1	10.0	140	17.3
Wheaton	98.3	50.0	49.4	70.0	86	10.0
Bacup	95.0	34.3	32.6	7.7	123	18.0
Oslo	98.3	48.5	47.7	46.7	77	10.7
ND2710	91.7	26.8	24.6	4.3	126	19.3
Rugby	100.0	55.7	55.7	23.3	99	12.7
SD3973	95.0	28.2	26.8	5.0	167	20.0
SD3975	96.7	24.0	23.2	5.0	153	20.7
SD3979	96.7	34.5	33.5	5.0	143	18.7
SD3989	91.7	29.0	26.7	7.0	147	15.3
SD3991	98.3	49.5	48.7	5.7	155	18.7
00S0063-1	96.7	43.2	41.7	5.0	124	14.0
00S0240-3	98.3	36.0	35.5	15.0	121	10.0
00S0249-9	95.0	26.0	24.8	5.7	180	17.3
00S0251-6	96.7	28.2	27.3	8.3	143	20.0
CA-904-741	100.0	57.3	57.3	41.7	94	10.7
CA-904-742	96.7	36.0	34.9	8.3	117	15.3
CA-904-743	100.0	53.8	53.8	26.7	98	14.7
MN01057-3-1	91.7	23.0	21.1	3.0	185	19.3
MN01380-2-1	98.3	28.2	27.7	3.0	111	20.0
MN02051-1	95.0	31.7	30.1	5.7	168	14.7
MN02219-1	93.3	33.8	32.0	6.0	185	20.0
MN02306-2	95.0	25.8	24.4	4.3	184	20.0
MT03501487	100.0	40.8	40.8	15.0	102	13.3
MT03501736	100.0	47.0	47.0	21.7	83	12.0
MT03502405	98.3	27.0	26.6	6.7	154	17.3
MT03502420	96.7	36.3	35.1	8.3	119	13.3
MT03502445	98.3	45.7	45.0	38.3	61	7.3
NDSW0345	100.0	49.0	49.0	9.7	93	12.0
NDSW0350	100.0	41.7	41.7	26.7	57	11.3
M05/1-14	90.0	36.0	33.0	3.0	118	21.3
M05/1-15	90.0	28.0	26.0	4.3	153	16.7
M05/1-16	98.3	33.3	32.9	10.0	160	13.3
M05/1-17	76.7	20.8	16.3	3.7	122	20.7
M05/1-18	96.7	29.0	28.0	7.3	153	17.3
BW315a	95.0	43.5	41.5	4.3	155	14.0
FA-800-772	98.3	37.2	36.6	17.3	108	10.7
CA-804-744	98.3	55.0	54.0	15.0	80	10.7
CA-804-745	100.0	43.3	43.3	13.3	122	12.7
CA-804-746	98.3	50.2	49.4	28.3	97	10.0
CA-801-717	100.0	44.3	44.3	13.3	130	14.0
DG013141	96.7	32.8	31.8	14.0	123	14.0
DG012166	98.3	46.3	45.6	15.0	89	10.7
Mean	96.4	38.2	37.2	13.9	126.3	15.1
LSD	7.5	7.9	8.9	10.8	32.2	3.3
CV	4.8	12.8	14.8	47.9	15.6	13.4

**Table 3. 2005 Uniform Regional Scab Nursery for Spring Wheat Parents, St. Paul, MN.**

Line	Incidence %	Severity %	Disease Index	VSK %	DON ppm	30 SSW <sup>1</sup> g	Heading d from 6-1
2375	60.0	25.2	16.0	7.3	3.5	20.3	27
Wheaton	78.3	36.8	28.2	21.7	4.9	15.5	31
Bacup	45.0	17.5	8.1	3.3	1.2	16.8	24
Oslo	83.3	40.5	35.2	11.7	3.5	11.4	28
ND2710	18.3	6.6	1.3	3.3	0.7	24.9	26
Rugby	85.0	20.2	17.0	12.0	8.3	32.5	30
SD3973	68.3	18.0	12.3	4.7	0.7	16.9	26
SD3975	15.0	9.6	1.4	5.3	1.0	18.1	24
SD3979	51.7	18.2	10.3	2.7	0.6	22.9	27
SD3989	55.0	9.4	5.3	6.7	2.2	17.6	27
SD3991	71.7	25.8	20.6	6.0	1.2	19.3	27
00S0063-1	81.7	13.4	10.9	4.0	2.5	18.9	27
00S0240-3	70.0	21.1	14.9	4.7	1.9	19.2	24
00S0249-9	56.7	15.8	9.1	4.7	1.9	19.7	26
00S0251-6	40.0	17.9	6.8	3.3	1.4	17.7	26
CA-904-741	98.3	61.5	60.4	16.7	7.9	13.9	27
CA-904-742	66.7	22.4	15.3	8.0	3.7	18.3	31
CA-904-743	68.3	30.9	22.5	12.7	2.7	16.5	26
MN01057-3-1	21.7	10.8	2.3	2.0	0.5	24.4	24
MN01380-2-1	36.7	7.8	2.7	3.3	0.8	12.5	31
MN02051-1	66.7	19.0	12.9	4.7	1.8	17.8	26
MN02219-1	75.0	22.5	17.0	4.0	1.9	25.2	28
MN02306-2	36.7	7.8	2.9	2.0	0.8	22.9	24
MT03501487	76.7	29.5	23.4	12.0	2.8	15.2	30
MT03501736	86.7	29.2	25.5	11.0	7.5	16.5	31
MT03502405	55.0	13.2	7.1	4.7	1.3	21.3	24
MT03502420	66.7	13.4	8.9	6.7	2.3	17.8	28
MT03502445	68.3	42.2	31.2	11.3	2.2	11.1	30
NDSW0345	66.7	27.3	19.2	7.3	4.3	18.2	31
NDSW0350	70.0	27.2	19.1	10.0	3.1	15.3	27
M05/1-14	41.7	21.6	8.5	4.0	0.5	19.0	27
M05/1-15	63.3	10.9	6.8	2.7	1.3	20.2	26
M05/1-16	48.3	9.4	4.7	4.7	2.0	17.5	27
M05/1-17	25.0	9.0	2.3	2.7	0.9	20.9	30
M05/1-18	61.7	14.8	9.1	4.7	3.0	22.4	27
BW315a	58.3	29.2	16.9	6.0	3.2	14.6	27
FA-800-772	66.7	30.7	20.1	11.3	7.7	20.0	31
CA-804-744	80.0	36.0	28.4	12.7	9.2	18.7	31
CA-804-745	61.7	26.8	16.5	11.3	10.9	26.6	31
CA-804-746	76.7	34.2	26.1	13.0	9.1	18.0	31
CA-801-717	63.3	21.1	14.8	16.3	8.2	22.3	30
DG013141	83.3	33.1	27.1	11.0	5.0	22.7	31
DG012166	78.3	24.7	19.6	8.0	4.3	25.7	31
Mean	61.6	22.4	15.6	7.6	3.4	19.2	27.9
LSD	21.8	12.0	12.1	3.7		5.8	2.8
CV	21.8	33.1	47.8	29.8		18.6	6.2

<sup>1</sup>30 SSW = 30 spike seed weight. This is the sample used to determine VSK.

**Table 4. 2005 Uniform Regional Scab Nursery for Spring Wheat Parents, Langdon, ND.**

Line	Incidence %	Severity %	Disease Index	Tombstone %	Spikelets per head
2375	40.0	8.8	3.6	7.0	17.0
Wheaton	43.3	18.9	9.4	10.3	16.3
Bacup	26.7	6.0	2.2	5.7	16.0
Oslo	46.7	11.7	5.6	12.7	18.0
ND2710	16.7	1.8	0.7	2.3	16.7
Rugby	40.0	10.6	4.3	5.3	16.7
SD3973	23.3	4.6	1.2	3.3	16.0
SD3975	53.3	11.7	6.8	3.0	15.0
SD3979	30.0	9.0	3.3	4.0	16.0
SD3989	50.0	13.6	7.0	3.3	17.0
SD3991	63.3	9.7	6.3	4.7	15.7
00S0063-1	43.3	7.2	3.9	3.7	15.3
00S0240-3	40.0	13.4	5.0	6.0	14.0
00S0249-9	43.3	12.7	6.1	4.0	16.0
00S0251-6	36.7	9.3	3.7	3.7	16.3
CA-904-741	46.7	7.9	3.7	8.3	17.7
CA-904-742	46.7	7.5	3.7	5.7	18.3
CA-904-743	36.7	15.4	5.7	9.0	17.3
MN01057-3-1	23.3	2.8	0.7	1.0	18.3
MN01380-2-1	26.7	5.9	1.9	2.7	16.7
MN02051-1	30.0	7.5	2.7	4.0	16.3
MN02219-1	50.0	10.6	5.4	3.0	17.7
MN02306-2	36.7	12.8	5.1	7.3	17.7
MT03501487	43.3	13.1	5.5	14.3	17.0
MT03501736	43.3	17.0	7.5	16.3	16.7
MT03502405	43.3	18.6	8.8	9.7	16.7
MT03502420	46.7	12.1	5.9	7.3	17.7
MT03502445	56.7	16.7	10.0	10.7	16.7
NDSW0345	36.7	8.3	3.3	5.0	16.7
NDSW0350	60.0	9.6	5.5	5.7	17.7
M05/1-14	40.0	8.1	3.6	4.0	18.3
M05/1-15	33.3	6.8	3.4	1.7	17.7
M05/1-16	36.7	12.4	5.2	2.7	18.3
M05/1-17	46.7	7.0	3.8	4.0	19.7
M05/1-18	30.0	5.3	2.2	5.0	19.0
BW315a	36.7	14.3	5.7	5.7	16.7
FA-800-772	50.0	11.8	6.2	4.7	16.7
CA-804-744	33.3	3.6	1.4	3.7	17.3
CA-804-745	30.0	6.8	2.0	7.7	17.7
CA-804-746	53.3	12.4	7.5	10.7	16.7
CA-801-717	40.0	10.6	4.6	5.7	18.0
DG013141	30.0	4.3	1.3	5.7	17.0
DG012166	46.7	7.3	3.6	3.7	18.3
Mean	40.2	9.9	4.5	5.9	17.0
LSD	20.2	8.3	4.9	3.5	2.2
CV	30.9	51.7	66.3	36.5	7.9

**Table 5. 2005 Uniform Regional Scab Nursery for Spring Wheat Parents, Prosper, ND.**

Line	Incidence %	Severity %	Disease Index	VSK* %
2375	73.7	34.3	25.5	6.3
Wheaton	100.0	50.8	50.8	-
Bacup	95.3	38.9	37.0	4.0
Oslo	91.0	33.6	31.3	7.5
ND2710	49.7	12.2	6.2	2.5
Rugby	100.0	60.3	60.3	16.8
SD3973	89.0	43.5	40.1	3.8
SD3975	84.3	22.6	19.4	1.9
SD3979	83.7	20.5	17.3	2.6
SD3989	53.3	15.1	8.6	3.4
SD3991	82.7	27.7	22.6	3.8
00S0063-1	92.7	16.1	15.2	6.8
00S0240-3	98.3	54.1	53.1	15.0
00S0249-9	89.0	22.6	20.7	2.4
00S0251-6	90.7	25.3	22.7	2.8
CA-904-741	98.0	40.6	39.8	15.5
CA-904-742	85.7	21.6	19.5	6.8
CA-904-743	97.3	53.0	51.9	12.5
MN01057-3-1	64.3	15.5	10.0	1.5
MN01380-2-1	83.0	23.1	20.6	7.5
MN02051-1	91.0	39.7	36.8	3.3
MN02219-1	50.3	14.8	9.0	4.5
MN02306-2	54.3	19.2	10.6	3.0
MT03501487	100.0	60.4	60.4	14.0
MT03501736	93.3	41.6	38.9	12.3
MT03502405	94.7	45.1	42.8	6.3
MT03502420	66.3	27.2	19.3	6.3
MT03502445	100.0	51.1	51.1	14.3
NDSW0345	90.7	29.7	28.4	3.8
NDSW0350	94.7	42.2	40.3	9.5
M05/1-14	83.3	34.5	28.8	3.3
M05/1-15	91.3	42.3	40.2	2.6
M05/1-16	78.7	17.1	13.9	8.8
M05/1-17	73.0	20.6	15.3	6.3
M05/1-18	64.0	15.6	11.0	7.3
BW315a	71.7	28.7	20.3	6.0
FA-800-772	100.0	61.2	61.2	15.0
CA-804-745	98.7	53.2	52.7	12.5
CA-804-746	100.0	57.6	57.6	21.8
CA-804-747	78.3	44.7	42.9	14.3
CA-804-744	100.0	56.7	56.7	14.5
DG013141	100.0	45.4	45.4	9.5
DG012166	100.0	49.6	49.6	7.0
NDSURF2398**	91.9	31.2	29.3	17.5
Mean	86.0	35.0	32.2	8.3
LSD	21.0	17.3	18.9	9.2
CV	21.0	48.0	58.1	76.9

\* Only two reps done

\*\* Extra entry



**Table 6. 2005 Uniform Regional Scab Nursery for Spring Wheat Parents, Means Across Locations.**

Line	Incidence %	Incidence Rank	Severity %	Severity Rank	Disease Index	Disease Index Rank	VSK %*	VSK Rank	DON ppm	DON Rank
No. of Locations	4	4	4	4	4	4	4	4	1	1
2375	68.0	16	29.8	27	23.8	24	7.6	26	3.5	29
Wheaton	80.0	36	39.1	42	34.4	42	34.0	43	4.9	34
Bacup	65.5	11	24.2	19	20.0	19	5.2	18	1.2	10
Oslo	79.8	35	33.6	32	29.9	32	19.6	41	3.5	29
ND2710	44.1	1	11.8	1	8.2	1	3.1	3	0.7	4
Rugby	81.3	42	36.7	38	34.3	40	14.3	36	8.3	40
SD3973	68.9	17	23.6	18	20.1	20	4.2	11	0.7	4
SD3975	62.3	6	17.0	8	12.7	7	3.8	6	1.0	9
SD3979	65.5	11	20.5	14	16.1	13	3.6	5	0.6	3
SD3989	62.5	7	16.8	7	11.9	5	5.1	17	2.2	20
SD3991	79.0	34	28.2	23	24.5	25	5.0	16	1.2	10
00S0063-1	78.6	32	20.0	11	17.9	15	4.9	15	2.5	23
00S0240-3	76.7	28	31.2	29	27.1	29	10.2	29	1.9	16
00S0249-9	71.0	21	19.3	10	15.2	11	4.2	10	1.9	16
00S0251-6	66.0	14	20.1	12	15.1	10	4.5	14	1.4	14
CA-904-741	85.8	43	41.8	43	40.3	43	20.5	42	7.9	38
CA-904-742	73.9	25	21.9	15	18.3	16	7.2	25	3.7	31
CA-904-743	75.6	26	38.3	40	33.5	38	15.2	37	2.7	24
MN01057-3-1	50.2	2	13.0	2	8.5	2	1.9	1	0.5	1
MN01380-2-1	61.2	5	16.2	4	13.2	8	4.1	7	0.8	6
MN02051-1	70.7	20	24.5	20	20.6	21	4.4	13	1.8	15
MN02219-1	67.2	15	20.4	13	15.8	12	4.4	12	1.9	16
MN02306-2	55.7	4	16.4	6	10.7	4	4.2	9	0.8	6
MT03501487	80.0	36	36.0	37	32.5	37	13.8	35	2.8	25
MT03501736	80.8	38	33.7	34	29.7	31	15.3	38	7.5	36
MT03502405	72.8	22	26.0	22	21.3	23	6.8	23	1.3	12
MT03502420	69.1	18	22.3	17	17.3	14	7.1	24	2.3	22
MT03502445	80.8	38	38.9	41	34.3	40	18.7	40	2.2	20
NDSW0345	73.5	24	28.6	24	25.0	26	6.4	21	4.3	32
NDSW0350	81.2	41	30.2	28	26.6	28	13.0	33	3.1	27
M05/1-14	63.7	9	25.1	21	18.5	17	3.6	4	0.5	1
M05/1-15	69.5	19	22.0	16	19.1	18	2.8	2	1.3	12
M05/1-16	65.5	11	18.0	9	14.2	9	6.5	22	2.0	19
M05/1-17	55.3	3	14.4	3	9.4	3	4.1	8	0.9	8
M05/1-18	63.1	8	16.2	4	12.6	6	6.1	20	3.0	26
BW315a	65.4	10	28.9	25	21.1	22	5.5	19	3.2	28
FA-800-772	78.7	33	35.2	35	31.0	35	12.1	31	7.7	37
CA-804-744	77.6	31	37.0	39	34.1	39	11.0	30	9.2	42
CA-804-745	72.9	23	33.6	32	29.9	32	13.5	34	10.9	43
CA-804-746	76.7	28	35.4	36	31.5	36	16.6	39	9.1	41
CA-801-717	75.8	27	33.2	31	30.1	34	12.5	32	8.2	39
DG013141	77.5	30	28.9	25	26.4	27	10.1	28	5.0	35
DG012166	80.8	38	32.0	30	29.6	30	8.4	27	4.3	32
Mean	70.9		26.5		22.5		9.0		3.4	

\* For calculation, tombstone data considered = VSK

**Table 7. Correlation coefficients among traits.**

	<b>Incidence %</b>	<b>Severity %</b>	<b>Disease Index</b>
Severity %	0.85		
Disease Index	0.88	0.99	
VSK %	0.67	0.81	0.81

Note: DON was not included since only one location provided data.

Correlation coefficients were calculated with means across locations.