Report of the 2003 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 9th year in 2003. Six mist-irrigated locations at Brookings, SD, St. Paul and Crookston, MN, Prosper and Langdon, ND, and Glenlea, Manitoba, Canada, and two locations where supplemental mist irrigation was not used ("dryland screening locations") at St. Paul and Barnesville, MN were represented in the 2003 URSN. The Prosper ND location encountered problems and thus is not included in this annual report.

A total of 41 entries were included in the 2003 URSN, including the resistant checks 2375, BacUp, and ND2710, and the susceptible checks Wheaton and Oslo. The other 36 entries were contributed by university, industry, or national breeding programs. Five of these entries were durums, and five were USDA PI genotypes that are possible new sources of scab resistance.

A core set of traits evaluated provided from most locations included incidence of scab, scab severity, disease index, and visual scabby kernel ratings (VSK, ≅ tombstone). Additional recorded trait data are presented in the relevant individual location 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, VSK, and DON.

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Table 1. Entries for the Uniform Regional Scab Nursery for Spring Wheat Parents, 2003.

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	98S0113-20	N97-0117/3/N92-0098//SUMAI3/DALEN	AGP
7	98S0083-12	N96-0123/3/N93-0323//SUMAI3/DALEN	AGP
8	98S0311-17	N92-0176/3/HY611/NING8331(FHB5227)//SUMAI3/DALEN	AGP
9	99S0030-3-1	N97-0329ES/3/N93-0323//SUMAI3/DALEN	AGP
10	99S0024-14	N96-0160/3/N93-0323//SUMAI3/DALEN	AGP
11	ND 3015		ND
12	ND 2790		ND
13	ND 03/1-15		ND
14	ND 03/3-1		ND
15	ND 03/1-9		ND
16	SD3739	SD3335/ND695	SD
17	SD3746	SD93380/SD3335//OXEN	SD
18	SD3754	KS91W049-1-5-1/SD3414//SD8070	SD
19	SD3776	1340_325-2-2-4///SDX17150//(SD3005/G/4/SD3420/5/SD3310	SD
20	SD3784	NZFHBF3-61	SD
21	96B32-AN3C	RL 4802//(96MHN5295-1) BW 174*2/Clark	MAN
22	MN00232-2	MN2540W/KULM//ND2710	MN
23	MN99433-1	MN93434/94FHB#28	MN
24	MN01116	MN95211//Liz Cimmyt 9/MN95023	MN
25	MN01180	Liz Cimmyt 17/Parshall//HJ98	MN
26	MN01281	SD-AD B9/MN93434	MN
27	CA-901-735	Keystone x Ivan	WPB
28	CA-901-590W	Lars x White Sharpshooter	WPB
29*	CA-801-706	Mountrail x FA-898-785	WPB
30*	CA-801-715	Belzer x FA-898-785	WPB
31*	CA-801-721	Belzer x FA-898-785	WPB
32*	D011508	Sumai 3/Scepter//D88096	ND
33*	D011509	Sumai 3/Scepter//D88690	ND
34*	D011525	Sumai 3/Scepter//D88816	ND
35*	D011510	Sumai 3/Scepter//D88816	ND
36*	D011511	Sumai 3/Scepter//D88816	ND
37**	Al'Bidum 43 (PI 233203)	Albidum 357/Lutescens 91//Lutescens 311/Lutescens 91	Russia
38**	Klein Condor (PI 168716)	Standard F.C.S./Sud Oeste F.C.S.	Argentina
39**	Artemowska (PI 294975)		Bulgaria
40**	Buck austral (PI 344454)	Sola 50//Quivira/Guatrache/3/Massaux No. 1/Buck Quequen 2-2-11	Argentina
41**	Stepnjachka (PI 113949)	selection from Banatka Khersonskaya	Ukraine

* Durum entries

**Potential new sources of scab resistance from Yue Jin.

Table 2. 2003 Uniform Regional Scab Nursery for Spring Wheat Parents, Brookings, SD.

Line	Incidence %	Severity %	Disease Index	Tombstone %	Yield (g/plot)
2375	100.0	38.2	38.2	10.0	88.7
Wheaton	100.0	78.8	78.8	83.3	42.0
Bacup	85.0	16.5	14.6	1.0	66.0
Oslo	100.0	60.2	60.2	76.7	35.3
ND2710	54.0	5.7	3.1	1.0	101.0
98S0113-20	100.0	30.7	30.7	2.0	84.7
98S0083-12	100.0	35.8	35.8	15.0	63.3
98S0311-17	100.0	72.5	72.5	17.5	73.3
99S0030-3-1	100.0	38.5	38.5	11.7	88.0
99S0024-14	100.0	36.5	36.5	13.3	78.7
ND 3015	100.0	36.3	36.3	8.3	56.0
ND 2970	95.0	16.7	16.0	3.0	90.7
ND 03/1-15	100.0	44.2	44.2	6.7	69.3
ND 03/3-1	100.0	26.8	26.8	2.3	81.3
ND 03/1-9	90.0	23.2	21.9	3.0	81.3
SD3739	95.0	43.2	42.0	10.0	84.0
SD3746	100.0	53.0	53.0	50.0	63.3
SD3754	100.0	57.7	57.7	18.3	80.0
SD3776	93.3	20.0	18.5	1.7	83.0
SD3784	100.0	28.8	28.8	10.0	86.0
96B32-AN3C	100.0	39.3	39.3	13.3	92.7
MN00232-2	88.3	13.8	12.3	3.0	117.0
MN99433-1	100.0	48.0	48.0	15.0	73.3
MN01116	100.0	42.0	42.0	6.7	95.3
MN01180	95.0	18.2	17.6	3.7	114.7
MN01281	91.7	19.3	18.3	4.7	91.7
CA-901-735	100.0	43.5	43.5	18.3	64.0
CA-901-580W	100.0	31.8	31.8	10.0	101.3
CA-801-706	100.0	61.8	61.8	31.7	44.7
CA-801-715	100.0	64.5	64.5	61.7	40.7
CA-801-721	100.0	43.2	43.2	47.5	49.0
D011508	100.0	46.8	46.8	21.7	30.0
D011509	88.3	25.2	23.3	20.0	51.3
D011525	83.3	23.8	21.2	6.7	83.3
D011510	98.3	29.3	28.9	10.0	66.0
D011511	98.3	26.8	26.5	18.3	88.0
Al'Bidum 43 (PI 233203)	100.0	60.5	60.5	11.7	36.0
Klein Condor (PI 168716)	100.0	34.8	34.8	16.7	56.7
Artemowska (PI 294975)	93.3	27.5	26.8	4.7	86.3
Buck austral (PI 344454)	100.0	38.2	38.2	8.3	80.0
Stepnjachka (PI 113949)	96.7	27.5	26.8	5.3	49.7
Mean	96.2	37.3	36.8	16.7	73.3
LSD (0.05)	10.6	15.2	15.7	12.8	31.7
CV	6.8	25.2	26.6	39.6	26.1

Table 3. 2003 Uniform Regional Scab Nursery for Spring Wheat Parents, St. Paul, MN.

Line	Incidence %	Severity %	Disease Index	VSK %	DON ppm	Seed Wt. g**	Heading Days 6-1
2375	83.3	27.7	24.9	6.3	4.5	31.5	22.7
Wheaton	100.0	55.3	55.3	51.0	15.3	16.3	24.0
Bacup	91.7	33.9	31.6	12.7	6.9	16.4	20.0
Oslo	93.3	46.6	44.7	32.3	10.8	21.3	23.0
ND2710	70.0	13.7	10.4	3.3	2.7	32.5	22.7
98S0113-20	98.3	40.8	40.4	18.0	8.9	20.3	20.7
98S0083-12	98.3	35.1	34.8	13.0	8.6	23.5	20.3
98S0311-17	71.7	17.3	12.8	11.7	5.3	22.4	24.0
99S0030-3-1	98.3	23.6	23.2	4.0	3.7	24.6	24.0
99S0024-14	96.7	35.5	34.0	13.3	11.2	18.2	20.0
ND 3015	93.3	25.1	23.8	7.3	7.4	23.6	24.0
ND 2970	88.3	22.1	19.9	7.3	7.6	26.6	24.0
ND 03/1-15	95.0	28.7	27.4	6.0	4.7	24.3	24.0
ND 03/3-1	98.3	24.7	24.5	7.7	5.2	19.4	22.0
ND 03/1-9	95.0	33.5	32.5	9.0	8.6	19.8	22.7
SD3739	68.3	14.5	9.5	9.0	3.6	22.5	24.0
SD3746	93.3	33.6	31.8	22.7	9.3	26.4	24.0
SD3754	96.7	32.8	31.8	21.3	7.0	22.0	24.0
SD3776	75.0	20.6	17.6	10.3	4.7	24.6	21.7
SD3784	78.3	15.2	12.4	17.0	3.9	25.8	24.0
96B32-AN3C	66.7	17.3	11.1	4.3	2.2	22.9	24.0
MN00232-2	78.3	17.7	14.6	5.3	3.6	27.0	20.7
MN99433-1	81.7	19.3	15.2	7.0	3.3	23.2	22.7
MN01116	71.7	17.3	12.7	3.7	2.3	27.7	24.0
MN01180	75.0	17.3	13.8	3.0	2.7	37.2	24.0
MN01281	75.0	15.2	11.5	5.0	3.9	26.2	23.0
CA-901-735	96.7	37.7	36.9	34.0	14.5	18.7	20.3
CA-901-580W	90.0	37.8	35.4	14.7	17.5	26.1	20.3
CA-801-706	100.0	42.5	42.5	26.7	27.4	22.3	27.0
CA-801-715	100.0	47.2	47.2	29.3	30.2	27.5	26.0
CA-801-721	100.0	51.5	51.5	28.7	27.7	32.5	27.0
D011508	88.3	30.8	29.3	11.7	11.2	30.0	25.0
D011509	90.0	28.6	27.1	19.7	8.8	27.5	26.0
D011525	93.3	31.5	29.6	15.7	9.6	30.8	27.0
D011510	78.3	18.0	15.7	12.0	7.9	30.2	25.0
D011511	98.3	37.3	36.4	18.7	7.6	26.1	27.0
Al'Bidum 43 (PI 233203)*	87.5	26.5	23.3	9.5	5.6	22.9	24.0
Klein Condor (PI 168716)	100.0	36.9	36.9	30.0	11.6	17.0	24.0
Artemowska (PI 294975)	98.3	39.4	38.8	17.0	7.2	22.4	27.0
Buck austral (PI 344454)	95.0	34.1	33.3	16.0	5.1	19.3	26.0
Stepnjachka (PI 113949)*	96.8	43.3	42.4	11.7	5.3	21.7	27.0
Mean	88.9	29.9	28.0	14.8	8.7	24.4	23.7
LSD	18.4	17.9	19.2	9.9		7.1	1.8
CV	12.7	36.8	42.2	41.0		18.4	4.7

* Values from one rep and adjusted for that rep effect; Al'Bidum 43, two reps; Stepnjachka, one rep

** Seed wt. is from 30 spike sample used in VSK and DON analysis

Table 4. 2003 Uniform Regional Scab Nursery for Spring Wheat Parents, Crookston, MN.

Line	Incidence %	Severity %	Disease Index	VSK %	DON ppm	Seed Wt. g**	Heading Days 6-1
2375	96.7	43.4	42.7	21.0	23.6	22.4	30.7
Wheaton	100.0	69.5	69.5	53.7	49.9	11.3	31.7
Bacup	100.0	30.3	30.3	9.0	10.5	16.9	28.3
Oslo	100.0	79.1	79.1	32.0	29.5	13.2	30.0
ND2710	65.0	8.8	5.7	3.5	3.7	25.0	30.0
98S0113-20	100.0	49.4	49.4	12.5	12.4	14.1	28.5
98S0083-12	93.3	18.5	17.7	12.3	10.9	17.4	30.0
98S0311-17	88.3	23.1	21.9	16.0	17.8	16.3	32.7
99S0030-3-1	100.0	33.1	33.1	22.0	18.5	11.6	31.0
99S0024-14	90.0	29.4	28.3	11.0	9.6	18.3	28.0
ND 3015	100.0	48.0	48.0	17.0	14.6	12.1	30.3
ND 2970	88.3	19.6	18.4	8.7	11.9	14.9	31.3
ND 03/1-15	100.0	36.9	36.9	18.7	18.1	12.8	30.7
ND 03/3-1	90.0	18.1	17.2	9.3	10.9	17.9	30.0
ND 03/1-9	95.0	29.4	28.0	13.0	10.9	15.6	30.3
SD3739	91.7	19.5	18.6	8.0	12.1	20.5	31.0
SD3746	100.0	62.9	62.9	31.0	18.9	14.9	30.3
SD3754	100.0	39.6	39.6	20.0	19.6	20.0	31.0
SD3776	96.7	23.8	23.0	10.7	9.9	14.8	28.7
SD3784	88.3	15.5	14.3	21.0	17.7	18.7	32.0
96B32-AN3C	98.3	43.8	43.5	5.5	6.8	17.4	29.7
MN00232-2	81.7	12.2	10.5	9.7	5.5	16.8	29.3
MN99433-1	100.0	28.5	28.5	12.0	10.8	15.8	29.7
MN01116	83.3	11.6	9.9	4.5	2.8	20.8	31.3
MN01180	68.3	9.7	6.7	11.3	9.2	27.0	31.0
MN01281	88.3	13.6	12.1	6.3	7.9	19.6	30.3
CA-901-735	100.0	50.0	50.0	17.0	13.2	15.9	29.0
CA-901-580W	100.0	48.0	48.0	13.7	16.9	22.3	28.7
CA-801-706	100.0	58.8	58.8	30.0	38.5	13.8	34.0
CA-801-715	100.0	52.9	52.9	35.7	42.0	19.9	33.7
CA-801-721	100.0	65.2	65.2	43.7	39.2	15.7	33.0
D011508	100.0	62.1	62.1	47.0	29.2	11.1	31.7
D011509	95.0	24.0	23.5	26.0	15.8	22.8	35.0
D011525	85.0	17.3	15.1	20.7	15.2	26.0	35.0
D011510	96.7	23.5	22.7	20.7	14.7	21.7	34.0
D011511	90.0	23.3	21.9	21.0	12.7	22.2	34.3
Al'Bidum 43 (PI 233203)*	100.0	37.0	37.0	12.3	18.7	14.6	32.7
Klein Condor (PI 168716)	100.0	63.9	63.9	20.5	19.5	10.5	30.5
Artemowska (PI 294975)	93.3	36.8	34.7	27.0	17.6	16.9	35.0
Buck austral (PI 344454)	100.0	57.9	57.9	20.0	23.1	11.0	34.3
Stepnjachka (PI 113949)*	100.0	37.5	37.6	40.0	38.3	13.0	35.7
Mean	94.2	36.0	35.3	19.4	17.8	17.2	31.3
LSD	12.7	20.0	20.6	8.9		3.9	4.5
CV	8.3	34.4	36.0	28.3		13.9	8.8

* Values from one rep and adjusted for that rep effect; Al'Bidum 43, two reps; Stepnjachka, one rep

** Seed wt. is from 30 spike sample used in VSK and DON analysis

Table 5. 2003 Uniform Regional Scab Nursery for Spring Wheat Parents, Langdon, ND.

Line	Incidence %	Severity %	Disease Index	Tombstone %	Days to Heading**	Flag Leaf Necrosis*	Spikelets/ Head
2375	40.0	7.3	3.1	2.7	60.7	40.0	14.0
Wheaton	48.9	9.0	4.6	8.3	66.0	40.0	17.3
Bacup	15.6	1.6	0.4	1.0	59.3	33.3	16.3
Oslo	48.9	14.9	7.4	6.0	62.3	43.3	12.7
ND2710	11.1	1.4	0.2	0.7	59.7	40.0	15.3
98S0113-20	22.2	5.1	2.0	2.3	60.3	30.0	12.7
98S0083-12	31.1	3.7	1.5	3.3	62.7	36.7	15.3
98S0311-17	20.0	2.6	0.5	3.3	64.7	30.0	14.3
99S0030-3-1	22.2	5.2	1.1	2.3	63.3	36.7	14.0
99S0024-14	17.8	1.9	0.4	2.3	61.7	33.3	14.0
ND 3015	17.8	2.6	0.5	4.0	63.7	30.0	15.7
ND 2970	22.2	2.6	0.6	1.0	64.0	23.3	15.7
ND 03/1-15	37.8	4.9	2.0	3.3	63.3	36.7	16.3
ND 03/3-1	17.8	1.9	0.6	1.3	61.7	36.7	14.3
ND 03/1-9	28.9	5.4	1.9	1.7	62.7	26.7	14.0
SD3739	13.3	1.0	0.1	2.0	63.7	23.3	16.7
SD3746	22.2	3.1	0.7	5.3	64.0	43.3	15.7
SD3754	22.2	4.2	0.9	3.0	61.7	40.0	16.0
SD3776	11.1	1.2	0.2	1.3	62.0	36.7	15.3
SD3784	24.5	2.8	0.9	0.7	66.0	33.3	15.0
96B32-AN3C	22.2	2.9	0.6	2.3	62.7	40.0	16.3
MN00232-2	22.2	2.7	0.6	2.3	62.0	36.7	16.3
MN99433-1	33.3	3.8	1.6	3.7	63.3	26.7	17.0
MN01116	20.0	2.4	0.5	0.7	63.7	33.3	17.0
MN01180	13.4	1.4	0.3	1.0	64.0	33.3	14.0
MN01281	28.9	3.5	1.3	1.3	65.3	33.3	16.0
CA-901-735	22.2	3.0	0.8	2.7	61.3	53.3	12.7
CA-901-580W	31.1	5.2	1.7	4.0	62.3	43.3	15.0
CA-801-706	35.5	3.8	1.3	6.0	67.7	40.0	16.3
CA-801-715	46.7	4.9	2.5	6.3	67.0	43.3	17.3
CA-801-721	33.3	5.7	2.3	2.7	67.0	40.0	15.7
D011508	26.7	3.8	1.0	2.7	66.0	43.3	17.0
D011509	15.6	1.7	0.6	1.0	66.0	33.3	17.7
D011525	24.4	2.5	1.0	1.7	67.3	33.3	18.0
D011510	17.8	2.4	0.7	2.7	66.3	40.0	16.7
D011511	24.4	2.1	0.7	2.0	67.0	33.3	16.3
Al'Bidum 43 (PI 233203)	17.8	2.5	0.5	1.3	64.0	36.7	16.7
Klein Condor (PI 168716)	35.6	5.5	2.3	3.7	62.7	36.7	14.7
Artemowska (PI 294975)	15.6	1.4	0.3	0.7	68.0	40.0	17.0
Buck austral (PI 344454)	22.2	3.9	1.6	2.3	67.7	43.3	14.7
Stepnjachka (PI 113949)	15.5	1.2	0.2	3.0	67.3	46.7	15.0
Mean	24.9	3.6	1.3	2.7	64.0	36.7	15.6
LSD (0.05)	21.0	3.8	2.0	2.8	2.9	NS	2.1
CV %	52.0	65.0	97.9	65.3	2.8	24.6	8.2

* % of flag leaf that was dead on 7/25

** Planting date April 30th

Table 6. 2003 Uniform Regional Nursery for Spring Wheat Parents, Glenlea, MB, CAN.

Line	Disease Index*	FDK %
2375	23.3	10.6
Wheaton	65.3	-
Bacup	18.0	4.2
Oslo	68.0	28.0
ND2710	1.3	1.6
98S0113-20	22.5	8.1
98S0083-12	13.5	7.3
98S0311-17	20.5	8.4
99S0030-3-1	14.8	4.4
99S0024-14	13.1	7.9
ND 3015	32.3	8.7
ND 2970	14.6	5.3
ND 03/1-15	45.1	12.8
ND 03/3-1	6.4	4.6
ND 03/1-9	9.4	8.6
SD3739	14.5	4.4
SD3746	30.5	19.5
SD3754	32.6	12.4
SD3776	9.6	3.0
SD3784	7.6	6.8
96B32-AN3C	5.1	1.9
MN00232-2	10.1	4.8
MN99433-1	40.4	7.8
MN01116	15.3	3.0
MN01180	5.3	6.5
MN01281	5.7	2.9
CA-901-735	26.0	12.2
CA-901-580W	18.0	16.7
CA-801-706	49.7	15.4
CA-801-715	68.2	21.9
CA-801-721	57.3	13.7
D011508	26.6	11.9
D011509	7.4	4.1
D011525	12.8	8.0
D011510	15.6	9.9
D011511	9.9	6.8
Al'Bidum 43 (PI 233203)	41.4	7.7
Klein Condor (PI 168716)	50.3	10.0
Artemowska (PI 294975)	33.9	12.7
Buck austral (PI 344454)	18.8	5.8
Stepnjachka (PI 113949)	33.6	6.2
Mean	24.7	8.9

* Disease Index calculated as VRI

Table 7. 2003 Uniform Regional Scab Nursery for Spring Wheat Parents, Summary of Means Across Mist-Irrigated Locations.

Line	Incidence %	Incidence Rank	Severity %	Severity Rank	Disease Index	Disease Index Rank	DON ppm	DON Rank	VSK %*	VSK Rank	Heading Days from 6-1	Heading Rank
No. of Locations	**4**	**4**	**4**	**4**	**4**	**4**	**2**	**2**	**4**	**4**	**3**	**3**
2375	80.0	30	29.2	27	27.2	25	14.1	30	10.0	18	27.7	11
Wheaton	87.2	41	53.2	41	52.1	41	32.6	38	49.1	41	30.2	29
Bacup	73.1	14	20.6	14	19.2	14	8.7	11	5.9	8	25.5	1
Oslo	85.6	39	50.2	40	47.8	40	20.2	35	36.8	40	28.1	12
ND2710	50.0	1	7.4	1	4.9	1	3.2	2	2.1	1	27.1	7
98S0113-20	80.1	31	31.5	29	30.6	30	10.7	17	8.7	13	26.2	2
98S0083-12	80.7	34	23.3	17	22.5	17	9.8	12	10.9	22	27.3	9
98S0311-17	70.0	7	28.9	26	26.9	24	11.6	23	12.1	26	30.1	28
99S0030-3-1	80.1	31	25.1	19	24.0	20	11.1	20	10.0	18	29.1	20
99S0024-14	76.1	17	25.8	20	24.8	21	10.4	16	10.0	18	26.2	2
ND 3015	77.8	22	28.0	24	27.2	25	11.0	19	9.2	16	29.0	18
ND 2970	73.5	15	15.2	5	13.7	5	9.8	12	5.0	5	29.4	26
ND 03/1-15	83.2	35	28.7	25	27.6	27	11.4	22	8.7	13	29.0	18
ND 03/3-1	76.5	19	17.9	8	17.3	11	8.1	10	5.2	7	27.6	10
ND 03/1-9	77.2	20	22.9	16	21.1	15	9.8	12	6.7	11	28.2	13
SD3739	67.1	3	19.5	12	17.6	12	7.9	9	7.3	12	29.2	22
SD3746	78.9	26	38.2	36	37.1	36	14.1	30	27.2	37	29.1	20
SD3754	79.7	28	33.6	32	32.5	31	13.3	28	15.7	31	28.6	16
SD3776	69.0	6	16.4	7	14.8	7	7.3	8	6.0	9	27.1	7
SD3784	72.8	12	15.6	6	14.1	6	10.8	18	12.2	27	30.3	30
96B32-AN3C	71.8	10	25.8	20	23.6	19	4.5	3	6.4	10	28.5	15
MN00232-2	67.6	4	11.6	2	9.5	2	4.6	4	5.1	6	27.0	6
MN99433-1	78.7	24	24.9	18	23.3	18	7.1	7	9.4	17	28.2	13
MN01116	68.8	5	18.3	9	16.3	8	2.6	1	3.9	2	29.3	24
MN01180	62.9	2	11.6	2	9.6	3	6.0	6	4.8	4	29.3	24
MN01281	71.0	8	12.9	4	10.8	4	5.9	5	4.3	3	29.2	22
CA-901-735	79.7	28	33.6	32	32.8	33	13.9	29	18.0	34	26.5	4
CA-901-580W	80.3	33	30.7	28	29.2	28	17.2	34	10.6	21	26.8	5
CA-801-706	83.9	37	41.7	38	41.1	38	33.0	39	23.6	36	32.6	38
CA-801-715	86.7	40	42.4	39	41.8	39	36.1	41	33.2	39	31.9	33
CA-801-721	83.3	36	41.4	37	40.6	37	33.5	40	30.6	38	32.0	34
D011508	78.8	25	35.9	35	34.8	35	20.2	35	20.8	35	30.6	31
D011509	72.2	11	19.9	13	18.6	13	12.3	25	16.7	32	32.0	34
D011525	71.5	9	18.8	11	16.7	9	12.4	26	11.2	23	32.8	39
D011510	72.8	12	18.3	9	17.0	10	11.3	21	11.3	24	31.4	32
D011511	77.8	22	22.4	15	21.4	16	10.2	15	15.0	29	32.4	37
Al'Bidum 43 (PI 233203)	76.3	18	31.6	30	30.3	29	12.2	24	8.7	13	29.9	27
Klein Condor (PI 168716)	83.9	37	35.3	34	34.5	34	15.6	33	17.7	33	28.7	17
Artemowska (PI 294975)	75.1	16	26.3	22	25.2	22	12.4	26	12.3	28	33.0	40
Buck austral (PI 344454)	79.3	27	33.5	31	32.7	32	14.1	30	11.7	25	32.3	36
Stepnjachka (PI 113949)	77.2	20	27.4	23	26.7	23	21.8	37	15.0	29	33.0	40
Mean	76.1		26.7		25.4		13.2		13.4		29.3	

* For calculation of VSK %, Tombstone data considered = VSK

Table 8. 2003 Dryland Uniform Regional Scab Nursery for Spring Wheat Parents, St. Paul, MN.

Line	Incidence %	Severity %	Disease Index	VSK %	DON (ppm)
2375	15.0	7.3	1.2	3.0	2.5
Wheaton	93.8	22.6	21.5	58.8	15.8
Bacup	27.5	9.7	2.7	1.5	2.1
Oslo	87.5	27.5	24.5	28.8	14.7
ND 2710	23.8	7.1	1.7	3.5	2.2
98S0113-20	82.5	17.7	14.7	8.5	6.3
98S0083-12	57.5	10.7	6.6	4.0	3.0
98S0311-17	22.8	5.9	1.4	3.3	2.3
99S0030-3-1	81.3	16.4	13.5	10.3	5.6
99S0024-14	48.8	10.9	5.6	3.0	3.7
ND 3015	75.0	19.3	14.6	16.3	5.8
ND 2970	35.0	10.0	3.5	3.0	3.8
ND 03/1-15	77.5	15.8	12.4	14.5	6.6
ND 03/3-1	42.5	10.2	4.4	5.3	2.3
ND 03/1-9	53.8	12.1	6.7	5.5	4.1
SD 3739	36.3	7.9	2.9	3.8	2.4
SD 3746	82.5	18.3	15.6	23.8	7.6
SD 3754	53.8	12.6	6.8	9.0	4.3
SD 3776	52.5	11.6	5.9	4.0	2.9
SD 3784	75.0	14.9	11.8	6.0	4.2
96B32-AN3C	30.0	10.4	3.2	2.3	2.6
MN00232-2	46.3	10.6	5.2	1.5	2.0
MN99433-1	61.3	12.7	7.9	6.0	4.2
MN01116	27.5	9.0	2.7	1.5	1.4
MN01180	25.0	9.8	2.5	1.5	1.0
MN01281	36.3	9.6	3.9	3.0	2.3
CA-901-735	72.5	15.0	10.9	17.0	8.3
CA-901-580W	40.0	11.3	4.2	7.0	6.1
CA-801-706	86.3	18.0	15.7	6.5	7.6
CA-801-715	86.3	16.2	14.0	12.0	9.9
CA-801-721	65.0	15.7	10.3	6.0	8.5
D011508	37.5	8.2	3.1	3.0	3.3
D011509	15.0	5.2	1.1	1.0	1.3
D011525	30.0	10.9	3.8	3.5	3.4
D011510	38.8	7.5	2.9	2.8	2.9
D011511	38.8	7.8	3.3	1.5	1.4
Al'Bidum 43 (PI 233203)	87.5	8.4	11.7	11.8	8.7
Klein Condor (PI 168716)	82.5	22.7	20.0	10.3	7.1
Artemowska (PI 294975)	17.5	7.1	1.3	3.0	2.3
Buck austral (PI 344454)	61.3	11.3	7.0	2.8	2.4
Stepnjachka (PI 113949)*	77.5	6.2	6.2	1.0	2.0
Mean	52.2	12.5	7.8	7.9	4.6
LSD (0.05)	18.2	5.7	5.6	6.5	2.9
CV %	26.3	32.8	53.4	63.7	46.8

* Data from two replications.

Table 9. 2003 Dryland Uniform Regional Scab Nursery for Spring Wheat Parents, Barnesville, MN.

Line	Incidence %	Severity %	Disease Index	VSK %	DON (ppm)
2375	65.0	15.3	9.9	6.0	2.0
Wheaton	100.0	58.6	58.6	57.5	11.2
Bacup	57.5	11.5	6.5	1.5	0.8
Oslo	100.0	35.4	35.4	17.5	5.4
ND 2710	28.8	8.5	2.5	1.0	0.3
98S0113-20	72.5	13.4	9.9	6.0	1.3
98S0083-12	72.5	14.9	10.9	4.0	1.4
98S0311-17	77.5	18.0	13.8	13.3	4.5
99S0030-3-1	87.5	16.3	14.3	5.5	2.7
99S0024-14	81.3	23.8	19.0	4.5	1.7
ND 3015	93.8	30.7	28.9	9.3	3.4
ND 2970	70.0	15.3	10.7	4.5	1.9
ND 03/1-15	95.0	32.4	31.0	10.3	3.1
ND 03/3-1	62.5	14.1	9.2	1.5	0.5
ND 03/1-9	76.3	17.9	14.0	6.0	1.9
SD 3739	78.8	17.1	13.5	5.5	2.0
SD 3746	90.0	24.8	22.7	10.3	3.8
SD 3754	86.3	27.6	24.6	8.0	3.0
SD 3776	52.5	13.2	6.8	1.0	0.3
SD 3784	80.0	13.3	10.6	5.5	2.5
96B32-AN3C	32.5	9.4	3.0	1.8	0.5
MN00232-2	65.0	14.3	9.3	3.0	1.6
MN99433-1	76.3	16.0	12.0	6.5	1.4
MN01116	40.0	12.3	5.1	2.5	0.9
MN01180	27.5	8.6	2.4	1.5	0.3
MN01281	43.8	11.1	4.9	3.5	0.9
CA-901-735	91.3	22.3	20.8	6.0	2.8
CA-901-580W	83.8	22.3	18.7	8.0	3.6
CA-801-706	97.5	33.6	32.9	25.0	12.5
CA-801-715	97.5	33.5	32.6	22.5	18.8
CA-801-721	98.8	31.2	30.7	27.5	16.6
D011508	92.5	19.3	17.8	8.0	5.3
D011509	58.8	9.3	5.5	2.5	2.5
D011525	62.5	12.0	7.8	7.5	3.5
D011510	67.5	11.6	8.0	5.0	2.7
D011511	66.3	13.6	9.0	7.5	2.8
Al'Bidum 43 (PI 233203)*	90.7	30.2	27.5	3.4	3.9
Klein Condor (PI 168716)	97.5	30.5	29.6	4.5	2.5
Artemowska (PI 294975)	76.3	26.0	20.1	12.0	3.5
Buck austral (PI 344454)	93.8	23.4	22.0	8.3	3.3
Stepnjachka (PI 113949)*	88.2	16.5	14.8	7.4	2.3
Mean	74.6	20.1	16.6	8.7	3.6
LSD (0.05)	14.1	6.1	6.2	5.9	1.9
CV %	14.4	23.0	29.1	52.7	42.2

* Data from two replications.

Table 10. 2003 Uniform Regional Scab Nursery for Spring Wheat Parents, Summary of Means Across Dryland Locations.

Line	Incidence %	Incidence Rank	Severity %	Severity Rank	Disease Index	Disease Index Rank	DON ppm	DON Rank	VSK %	VSK Rank
2375	40.0	6	11.3	10	5.5	8	2.3	15	4.5	16
Wheaton	96.9	41	40.6	41	40.0	41	13.5	40	58.1	41
Bacup	42.5	8	10.6	7	4.6	7	1.5	5	1.5	1
Oslo	93.8	40	31.4	40	29.9	40	10.1	37	23.1	40
ND2710	26.3	1	7.8	2	2.1	1	1.3	3	2.3	6
98S0113-20	77.5	26	15.5	24	12.3	26	3.8	27	7.3	25
98S0083-12	65.0	20	12.8	19	8.8	18	2.2	12	4.0	14
98S0311-17	50.1	11	11.9	13	7.6	16	3.4	23	8.3	31
99S0030-3-1	84.4	32	16.4	25	13.9	28	4.2	28	7.9	30
99S0024-14	65.0	20	17.3	28	12.3	26	2.7	16	3.8	11
ND 3015	84.4	32	25.0	37	21.8	36	4.6	30	12.8	35
ND 2970	52.5	12	12.6	18	7.1	14	2.9	19	3.8	11
ND 03/1-15	86.3	34	24.1	35	21.7	35	4.9	32	12.4	34
ND 03/3-1	52.5	12	12.1	14	6.8	13	1.4	4	3.4	10
ND 03/1-9	65.0	20	15.0	23	10.4	20	3.0	22	5.8	22
SD3739	57.5	18	12.5	16	8.2	17	2.2	12	4.6	18
SD3746	86.3	34	21.6	33	19.1	32	5.7	35	17.0	38
SD3754	70.0	25	20.1	32	15.7	30	3.7	26	8.5	32
SD3776	52.5	12	12.4	15	6.4	12	1.6	6	2.5	8
SD3784	77.5	26	14.1	21	11.2	24	3.4	23	5.8	22
96B32-AN3C	31.3	3	9.9	5	3.1	3	1.6	6	2.0	4
MN00232-2	55.6	17	12.5	16	7.2	15	1.8	9	2.3	6
MN99433-1	68.8	24	14.4	22	10.0	19	2.8	17	6.3	24
MN01116	33.8	4	10.6	7	3.9	5	1.2	2	2.0	4
MN01180	26.3	1	9.2	3	2.4	2	0.7	1	1.5	1
MN01281	40.0	6	10.3	6	4.4	6	1.6	6	3.3	9
CA-901-735	81.9	29	18.6	30	15.8	31	5.6	34	11.5	33
CA-901-580W	61.9	19	16.8	27	11.5	25	4.9	32	7.5	27
CA-801-706	91.9	38	25.8	38	24.3	38	10.1	37	15.8	36
CA-801-715	91.9	38	24.8	36	23.3	37	14.4	41	17.3	39
CA-801-721	81.9	29	23.4	34	20.5	34	12.6	39	16.8	37
D011508	65.0	20	13.7	20	10.4	20	4.3	29	5.5	19
D011509	36.9	5	7.3	1	3.3	4	1.9	10	1.8	3
D011525	46.3	9	11.5	12	5.8	10	3.5	25	5.5	19
D011510	53.1	16	9.6	4	5.5	8	2.8	17	3.9	13
D011511	52.5	12	10.7	9	6.1	11	2.1	11	4.5	16
Al'Bidum 43 (PI 233203)	89.1	36	19.3	31	19.6	33	6.3	36	7.6	29
Klein Condor (PI 168716)	90.0	37	26.6	39	24.8	39	4.8	31	7.4	26
Artemowska (PI 294975)	46.9	10	16.6	26	10.7	23	2.9	19	7.5	27
Buck austral (PI 344454)	77.5	26	17.3	28	14.5	29	2.9	19	5.5	19
Stepnjachka (PI 113949)	82.9	31	11.4	11	10.5	22	2.2	12	4.2	15
Mean	64.2		16.2		12.3		4.1		8.2	

Table 11. Correlation coefficients among traits for Mist-Irrigated and Dryland Locations.

	Incidence %	Severity %	Disease Index	VSK %	DON ppm
Incidence %		0.81	0.88	0.60	0.72
Severity %	0.82		0.99	0.86	0.84
Disease Index	0.83	1.00		0.85	0.85
VSK %	0.65	0.86	0.85		0.80
DON ppm	-	-	-	-	

Note: Dryland Correlation Coefficients are above the diagonal, Mist-Irrigated are below the diagonal.

Table 12. Means and correlation coefficients between Mist-Irrigated and Dryland Locations.

Means across locations	Incidence %	Severity %	Disease Index	DON ppm	VSK %
Mist-Irrigated	76.1	26.7	25.4	13.2	13.4
Dryland	64.2	16.2	12.3	4.1	8.2
Correlation Coefficients					
Mist-Irrigated vs. Dryland	0.78	0.84	0.86	0.90	0.85