

Report on the 2007-2008 Northern Uniform Winter Wheat Scab Nursery (NUWWSN) and the Preliminary Northern Uniform Winter Wheat Scab Nursery (PNUWWSN)

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Each year the USWBSI funds the evaluation of Fusarium Head Blight (FHB, caused by *Fusarium graminearum*) of soft winter wheat cultivars and germplasm adapted to the northern US. In the 2007-08 season there were two tests: the Northern Uniform Winter Wheat Scab Nursery (NUWWSN) and the preliminary NUWWSN (PNUWWSN). Field data from these two tests were provided by 13 cooperators (Table 0). The traits evaluated are listed in table 1. Grain was evaluated for milling and baking quality by Dr. Ed Souza of the the USDA Soft Wheat Quality Lab. Dr. Gina Brown-Guedira of the USDA Small Grains Genotyping Lab provided marker data.

The NUWWSN consisted of 60 entries: 4 checks and 56 breeding lines from 14 programs (Table 2). This included several hard wheat lines from NE and KS. The NUWWSN has evaluated in a total of 12 locations (Table 0). The PNUWWSN had 60 entries: 4 checks and 56 breeding lines from 10 programs (Table 3) and was evaluated in eight locations (Table 0).

Cooperators collect replicated data and submit means to the coordinator. The means from individual locations are used in an analysis over locations. The genotype x environment interaction (GEI) term is the error and is used to calculate an LSD (0.05). The LSD value is used to determine if a mean is statistically equal to the lowest entry mean (such values are designated with an "l") or the highest entry mean (such values are designated with an "h").

The GEI can not be tested for significance. The GEI appeared important for all FHB traits except GH in the NUWWSN as the sum of squares from the GEI was at least 1.5 times greater than the genotype sum f squares (Table 4). This also occurred for INC, SEV, and IND in the PNUWWSN (Table 4).

There were significant and positive correlations among all FHB traits in both the NUWWSN and PNUWWSN (Table 5). The FHB means over locations were not well correlated to heading date or height. This was not true though when analyzed by location (Table 6). In some locations, heading date was positively correlated to some FHB traits, but negatively correlated to FHB traits in other locations.

TABLE 0	List of cooperators and test locations
TABLE 1	List of traits and location where recorded
TABLE 2	NUWWSN Entries
TABLE 3	PNUWWSN Entries
TABLE 4	Summary of ANOVA statistics
TABLE 5	Correlation of means over all locations
TABLE 6	Correlation of heading date with FHB traits by location
TABLE 7	Mean of FHB traits for NUWWSN entries
TABLE 8	Best and worst NUWWSN entries
TABLE 9	Mean of FHB traits for PNUWWSN entries
TABLE 10	Best and worst PNUWWSN entries
TABLE 11	INC from NUWWSN
TABLE 12	SEV from NUWWSN
TABLE 13	IND from NUWWSN
TABLE 14	FDK from NUWWSN
TABLE 15	ISK from NUWWSN
TABLE 16	DON from NUWWSN
TABLE 17	Grennhouse SEV from NUWWSN
TABLE 18	Heading date from NUWWSN
TABLE 19	Plant height from NUWWSN
TABLE 20	Quality data from SWQL for the NUWWSN
TABLE 21	Means for other triat from the NUWWSN
TABLE 22	Presence or absence of genes based on marker data for NUWWSN
TABLE 23	INC from PNUWWSN
TABLE 24	SEV from PNUWWSN
TABLE 25	IND from PNUWWSN
TABLE 26	FDK from PNUWWSN
TABLE 27	ISK from PNUWWSN
TABLE 28	DON from PNUWWSN
TABLE 29	Grennhouse SEV from PNUWWSN
TABLE 30	Heading date from PNUWWSN
TABLE 31	Plant height from PNUWWSN
TABLE 32	Means for other triat from the PNUWWSN
TABLE 33	Presence or absence of genes based on marker data for PNUWWSN

Table 0. Cooperators and locations for the 2008 NUWWSN and PNUWWSN.

CODE	COOPERATOR (S)	INSTITUTE	LOCATION	NUWWSN	PNUWWSN
ILURB	Fred Kolb, Eric Brucker	University of Illinois	Urbana, IL	yes	yes
INLAY	Herb Ohm	Purdue University	Lafayette, IN	yes	yes
KSMAN	Bill Bockus, Mark Davis	Kansas State University	Manhattan, KS	yes	no
KYLEX	David Van Sanford, Nikki Mundell	University of Kentucky	Lexington, KY	yes	yes
MDSAL	Jose Costa	University of Maryland	Salisbury, MD	yes	no
MIELA	Janet Lewis, Lee Siler	Michigan State University	East Lansing, MI	yes	yes
MOCOL	Anne McKendry, David Teague	University of Missouri	Columbia, MO	yes	yes
NEMEA	Stephen Baenziger, S Wegulo	University of Nebraska	Mead, NE	yes	no
NYITH	Mark Sorrells, Gary Bergstrom	Cornell University	Ithaca, NY	yes	no
OHWOO	Clay Sneller, Pierce Paul	The Ohio State University	Wooster, Ohio	yes	yes
ONRID	Lilly Tamburic, Mike Holtzworth	University of Guelph, Ridgetown	Ridgetown, Ontario	yes	yes
ROMAN	Mariana Iltu	National Agricultural Research-Development Institute Fundulea	Calarasi, Romania	yes	yes
VABLA	Carl Griffey, Shuyu Liu	Virginia Tech	Blacksburg, VA	yes	yes

Table 1. Traits assessed in the 2007-08 PNUWWSN and NUWWSN

Code	Trait	Description	PNUWWSN Locations	NUWWSN Locations
SEV	Disease severity from field tests	% of infected spikelets in an infected head.	ILURB, INLAF, KYLEX, MIELA, MOCOL, OHWOO, ONRID, VABLA	ILURB, INLAF, KYLEX, MDSAL, MIELA, MOCOL, NEMEA, NYITH, OHWOO, ONRID, VABLA
INC	Disease incidence	% of heads with at least one infected spikelets	ILURB, KYLEX, MIELA, MOCOL, ONRID, VABLA	ILURB, KYLEX, MDSAL, MIELA, MOCOL, NEMEA, NYITH, OHWOO, ONRID, VABLA
IND	Disease index	$IND = (SEV \times INC) / 100$	ILURB, KYLEX, MIELA, MOCOL, OHWOO, ONRID, ROMAN, VABLA	ILURB, KSMAN, KYLEX, MDSAL, MIELA, MOCOL, NEMEA, NYITH, OHWOO, ONRID, ROMAN, VABLA
FDK	Fusarium damaged kernels	Either a visual assessment of the percent infected kernels, or a percent of scabby seed by weight	ILURB, KYLEX, MOCOL, ROMAN	ILURB, KSMAN, KYLEX, MDSAL, MOCOL, ROMAN
ISK	Composite of head and kernel traits	$ISK \text{ Index} = .3 (\text{Severity}) + .3 (\text{Incidence}) + .4 (\text{FDK})$	ILURB, KYLEX, MOCOL, ROMAN	ILURB, KSMAN, KYLEX, MDSAL, MOCOL, ROMAN
DON	DON (vomitoxin)	PPM of vomitoxin in grain	ILURB, INLAF, KYLEX, VABLA	ILURB, INLAF, KSMAN, KYLEX, MDSAL, NEMEA, NYITH, OHWOO, VABLA
GH	Greenhouse severity	Same as SEV except from greenhouse	ILURB	ILURB, MOCOL
MILL SCORE	Milling score	A relative composite score based on traits that affect milling		INLAF
BAKE SCORE	Baking score	A relative composite score based on traits that affect baking		INLAF
TW SCORE	Test weight score	A relative score based on TW		INLAF
SE SCORE	Softness equivalent score	A relative score based on softness equivalent		INLAF
TW	Test weight	Test weight in lbs/bu of clean grain		INLAF
SOFTNESS EQUIVALENT	Softness equivalent	Percentage of flour that passes through a 94 mesh screen		INLAF
FLOUR PROTEIN	Flour protein	NIR estimate of flour protein percentage (based on 13% moisture)		INLAF
LACTIC ACID SRC	Lactic acid solvent retention capacity	A measure of gluten strength based on percentage of LA solvent retained by a flour sample after centrifugation		INLAF
SUCROSE SRC	Sucrose solvent retention capacity	A measure of pentosan content, and thus water absorption, based on percentage of sucrose solvent retained by a flour sample after centrifugation		INLAF
FLOUR YIELD	Flour yield	The weight of the flour that passes through a 40 mesh screen after milling, adjusted for moisture and SE, expressed as percentage of milled grain.		INLAF

Table 2. Entries in the 2008 NUWWSN

ENTRY	NAME	PEDIGREE	Source
1	ERNIE	CHECK	
2	TRUMAN	CHECK	
3	FREEDOM	CHECK	
4	PIONEER 2545	CHECK	
5	MSU Line E6002	VA96W-403-WS / CJ9403	Lewis, Michigan State University
6	MSU Line E6001	Pioneer 25W60 / CJ 9306	Lewis, Michigan State University
7	MSU Line E6003	VA96W-403-WS / W14	Lewis, Michigan State University
8	MSU Line E5011	Caledonia / NY88024-117	Lewis, Michigan State University
9	P.99600A2-4-93	9560//9811/3/Fdm/201R	Ohm, Purdue University
10	P.0179A1-17	Fdm/Gfd//92829/Patton	Ohm, Purdue University
11	P.011010A1-15	97395/981129//INW0316	Ohm, Purdue University
12	P.03112A1-7-3	97395//INW0315/99794	Ohm, Purdue University
13	KS980512-2-2	T67/X84W063-9-45//K92/3/SNF/4/X86509-1-1/X84W063-9-39-2//K92	Bockus, Kansas State University
14	KS05HW14-3	KS98HW452(KS91H153/KS93HW255)/CO960293//KS920709B-5-2(T67/X84W063-9-45//K92)	Bockus, Kansas State University
15	MO050143	MO 11769/Madison	McKendry, University of Missouri
16	MO050699	950016/3/950016//90X54-1-1/MO 91-1009	McKendry, University of Missouri
17	MO050921	Ernie/Truman "S"	McKendry, University of Missouri
18	MO050101	MO 11769/Madison	McKendry, University of Missouri
19	VA05W-425	Roane/3/Ning7840/Coker9904//Pioneer2552	Griffey, Virginia Tech
20	VA05W-775	3010-9-30-5 (Roane*2//Futai 8944/ Roane/3/Roane), BC3F6	Griffey, Virginia Tech
21	VA05W-777	3007-8-12-2 (Roane*2//W14/Roane /3/Roane), BC3F6	Griffey, Virginia Tech
22	VA05W-534	Goldfield/Tribute//Gibson	Griffey, Virginia Tech
23	MD01W233-06-1	McCormick/Choptank	Costa, University of Maryland
24	MD01W233-06-16	McCormick/Choptank	Costa, University of Maryland
25	MD99W483-06-11	VA97W358/RENWOOD3260	Costa, University of Maryland
26	NYCalresel-L	Reselection from Caledonia	Sorrells, Cornell University
27	NY94052-9340	Pio2737w/Harus	Sorrells, Cornell University
28	NYW103-1-9100	Cayuga/Caledonia	Sorrells, Cornell University
29	NYW103-70-9232	Cayuga/Caledonia	Sorrells, Cornell University
30	NY93246SP-9070	Harus/3/92145:91009(Geneva/U1273-5-18-8)/NY73116-4W	Sorrells, Cornell University
31	SE911492-4	TAISHANG1/GR863//CARDINAL	Fioritto, Sunbeam Extract
32	SE89-1873-2	NASW84-345/Coker9835//OH419/OH389	Fioritto, Sunbeam Extract
33	SE98-1089-34	P25R57/SE1694-12	Fioritto, Sunbeam Extract
34	SE93-1094-8	OH489/OH490	Fioritto, Sunbeam Extract
35	NE05418	Betty (KS84063-11-6-42)/ SD97457 (= Tomahawk/Bennet)	Baenziger, University of Nebraska
36	NE05549	N198414 (=NE90614/NE87612//NE87612)//Wesley	Baenziger, University of Nebraska
37	NE05537	N197435 (=TAM202/NE86606 (=WRR/SUT//MOW6811/3/AGATE..))//NE94632 (=ABILENE/NORKAN//RAWHIDE)/2/ KS89180B-2-1 (=KS8910-73/KS8010-1-4-2//107349/KARL)	Baenziger, University of Nebraska
38	NE03488	KARIEGA/PRONGHORN//Millennium sib	Baenziger, University of Nebraska
39	NE01643	Millennium sib//Seward/Archer	Baenziger, University of Nebraska
40	KY00C-2059-16	91C-170-3/2552	Van Sanford, University of Kentucky
41	KY00C-2143-08	90C-048-59/90C-160-14	Van Sanford, University of Kentucky
42	KY00C-2755-03	2552/Allegiance	Van Sanford, University of Kentucky
43	KY97C-0321-05-2	Kristy/VA94-52-25//2540	Van Sanford, University of Kentucky
44	M04*5109	VA94-54-479/PIO2628	Fogleman, Syngenta
45	M04-4802	FFR518//ELKHART/MV18	Fogleman, Syngenta
46	M03-3616-B11	HOPEWELL/PATTON	Fogleman, Syngenta
47	M03-3616-C10	HOPEWELL/PATTON	Fogleman, Syngenta
48	OH02-13567	OH581//IN83127E1-24-5-2-1-31//5088B-D-32-1/OH601	Sneller, Ohio State University
49	OH03-235-2	OH552/HOPEWELL	Sneller, Ohio State University
50	OH02-12678	FOSTER/HOPEWELL//OH581/OH569	Sneller, Ohio State University
51	OH02-7217	P92118B4-2/OH561	Sneller, Ohio State University
52	DH 22/8	Ruby/Frontana #1 x AC RON/ Ruby/Frontana #1	Tamburic, U Guelph -Ridgetown
53	DH 22/24	Ruby/Frontana #1 x AC RON/ Ruby/Frontana #1	Tamburic, U Guelph -Ridgetown
54	DH 19/176B	AC RON/WEKO609H3 x AC RON	Tamburic, U Guelph -Ridgetown
55	DH F/SF, 23	Frontana x Sumai 3	Tamburic, U Guelph -Ridgetown
56	IL02-18228	Pio25R26/9634-24437//95-4162	Kolb, University of Illinois
57	IL02-19463	Patton / Cardinal // IL96-2550	Kolb, University of Illinois
58	IL04-10118	IL95-2516/ IL98-12212	Kolb, University of Illinois
59	IL04-10721	IL95-4162/ IL97-7010	Kolb, University of Illinois
60	IL04-10741	IL95-4162/ IL97-7010	Kolb, University of Illinois

Table 3. Entries in the 2008 PNUWWSN

ENTRY	NAME	PEDIGREE	Source
1	ERNIE	CHECK	
2	TRUMAN	CHECK	
3	FREEDOM	CHECK	
4	PIONEER 2545	CHECK	
5	MSU Line E2043	Pioneer 2552/Pioneer 2737W	Lewis, Michigan State University
6	MSU Line E6059	D9070 / Pioneer 2552	Lewis, Michigan State University
7	MSU Line E6042	VA96W-403-WS / CJ9403	Lewis, Michigan State University
8	MSU Line E6038	VA96W-403-WS / CJ9403	Lewis, Michigan State University
9	MSU Line E5024	D6234 / Pioneer 25W33	Lewis, Michigan State University
10	P.992192A1-5-4-5-81	92145//201R/Patton	Ohm, Purdue University
11	P.0172A1-12-1	97395/981129	Ohm, Purdue University
12	P.0175A1-37-4	981419/97397	Ohm, Purdue University
13	P.04281A1-4-5	INW0304/9811//92823/Ernie	Ohm, Purdue University
14	P.04287A1-16	INW0316*2//INW0304//9346/CS5A	Ohm, Purdue University
15	P.03630A1-18	99751//INW0315//981358/97462	Ohm, Purdue University
16	MO050600	MO 960903/Bess 'S'	McKendry, University of Missouri
17	MO050261	MO 94-182/VA 91-54-219	McKendry, University of Missouri
18	MO051150	960815/IL 91-14163	McKendry, University of Missouri
19	MO050617	960815/IL 91-14163	McKendry, University of Missouri
20	MO041020	960429/960112	McKendry, University of Missouri
21	MO050917	Truman 'S'/980815	McKendry, University of Missouri
22	VA06W-553	Roane/3/Ning7840/Coker9904//Pioneer2552	Griffey, Virginia Tech
23	VA06W-558	VA96W-348/P92823A1-1-4-4-5(Clark*4/ Ning7840)// McCormick	Griffey, Virginia Tech
24	VA06W-561	OH618//Roane/Sisson"S" (VA96W234)	Griffey, Virginia Tech
25	VA06W-615	Roane/OH 552//RC-Strategy (VA98W-586)	Griffey, Virginia Tech
26	VA06W-622	IL89-6489/Sisson"S" (VA97W-375)// Ernie	Griffey, Virginia Tech
27	TRIBUTE	VA98W-593=VA92-51-39(IN71761A4-31-5-48//71-54-147/MCN1813)/AL870365 (CK747*2/Amigo)	Griffey, Virginia Tech
28	BDLS. HONEY-6	NASW84-345/Coker9835//OH419/OH389	Fioritto, Sunbeam Extract
29	SE98 1083-14	PION25R57/OH546	Fioritto, Sunbeam Extract
30	SEKY93 C-1699-14	MO800071-56/PION2545//KY88C	Fioritto, Sunbeam Extract
31	SE94 C-0480-2-2	84C-048-2-1/PION2510//FFR555	Fioritto, Sunbeam Extract
32	SE98 1106-6	OH546/SE1694-12	Fioritto, Sunbeam Extract
33	SE94-1012-25	T814/L880119	Fioritto, Sunbeam Extract
34	KY02C-3005-25	25R18/MCCORMICK	Van Sanford, University of Kentucky
35	KY02C-3005-44	25R18/MCCORMICK	Van Sanford, University of Kentucky
36	KY02C-3008-05	25R18/92C-0010-17	Van Sanford, University of Kentucky
37	KY02C-3004-04	25R18/Tribute	Van Sanford, University of Kentucky
38	KY01C-1542-07	Tribute/BL 940582//Tribute/91C-170-3	Van Sanford, University of Kentucky
39	KY99C-1205-06-1	25R26/ USG 3209//2540	Van Sanford, University of Kentucky
40	M04-4566	BRADLEY/ROANE	Fogleman, Syngenta
41	M04-4715	MASON/ERNIE	Fogleman, Syngenta
42	M05-1172	M94-1048-1//O2552	Fogleman, Syngenta
43	M05*1589	GA871339/PIO2540	Fogleman, Syngenta
44	M05-1531	LA87167-D8-/P92118B4-2	Fogleman, Syngenta
45	OH04-213-39	HOPEWELL/IL94-6858	Sneller, Ohio State University
46	OH04-264-58	OH645/HOPEWELL	Sneller, Ohio State University
47	OH04-268-39	HOPEWELL/VA96-54-372	Sneller, Ohio State University
48	OH04-176-29	P.92227C5-1-1/BL930390	Sneller, Ohio State University
49	OH03-41-45	IL91-14167/OH599	Sneller, Ohio State University
50	DH ACF112103 -8T	AC RON x SD97060	Tamburic, U Guelph -Ridgetown
51	RCUOGF110202D/4	SD97060 x Ringo Star	Tamburic, U Guelph -Ridgetown
52	RCUOGDHACF110902D	SD97060 x Freedom	Tamburic, U Guelph -Ridgetown
53	RCATTF174/1C	AC Ron x 25R18	Tamburic, U Guelph -Ridgetown
54	RCATTF203/2	AC Ron x 25R18	Tamburic, U Guelph -Ridgetown
55	RCATL31	Ruby/Frontana #1 x ACRON/ AC RON x SVP72017-17-5-10-1	Tamburic, U Guelph -Ridgetown
56	IL01-34159	IL84-2191 / IL87-2834 // IL90-6364 / IL96-24851 (= IL90-6364 // IL90-9464 / Ning 7840)	Kolb, University of Illinois
57	IL79-002T-B-B	IL94-6727 / IL96-6472	Kolb, University of Illinois
58	IL04-7874	G65201/ IL98-12212	Kolb, University of Illinois
59	IL04-8445	IL94-1653/ IL97-3578	Kolb, University of Illinois
60	IL04-17204	IL97-3578/ Ernie	Kolb, University of Illinois

Table 4. Summary of ANOVA statistics from the 2008 NUWWSN and PNUWWSN

NUWWSN

	R2	CV	% SS Geno	% SS Env	% SS GEI	SS GEI / SS Geno
SEV	0.75	21.4	17.1	52.6	30.3	1.77
INC	0.59	32.6	5.4	73.6	21.0	3.90
IND	0.69	38.7	18.4	53.6	28.0	1.53
FDK	0.71	37.4	12.4	51.4	36.2	2.92
ISK	0.76	20.8	19.6	50.0	30.4	1.55
DON	0.65	52.2	18.0	51.2	30.8	1.71
GH			66.7	3.1	30.2	0.45
HD	0.97	1.2	6.3	89.9	3.8	0.61
HGT	0.93	4.7	36.0	57.0	7.0	0.19

PNUWWSN

	R2	CV	% SS Geno	% SS Env	% SS GEI	SS GEI / SS Geno
SEV	0.75	21.4	11.3	63.4	25.3	2.23
INC	0.59	32.6	25.6	34.0	40.4	1.58
IND	0.69	38.7	20.3	49.0	30.7	1.51
FDK	0.71	37.4	23.9	47.4	28.7	1.20
ISK	0.76	20.8	23.6	52.0	24.5	1.04
DON	0.65	52.2	33.6	31.9	34.5	1.03
GH						
HD	0.97	1.2	6.4	90.8	2.7	0.43
HGT	0.93	4.7	42.0	51.0	7.0	0.17

Table 5. Correlation of means over all locations for the 2008 NUWWSN (above diagonal) and PNUWWSN (below diagonal)

	INC	SEV	IND	FDK	ISK	DON	GH	HD	HGT
INC	1	0.90	0.90	0.72	0.85	0.73	0.46	n	n
SEV	0.77	1	0.96	0.79	0.90	0.84	0.54	n	n
IND	0.84	0.95	1	0.80	0.94	0.83	0.53	n	n
FDK	0.69	0.63	0.73	1	0.91	0.75	0.54	n	n
ISK	0.81	0.78	0.90	0.91	1	0.80	0.55	n	n
DON	0.74	0.60	0.68	0.57	0.66	1	0.47	n	n
GH	0.32	0.60	0.60	0.36	0.46	0.34	1	n	n
HD	0.37	n	n	0.26	n	0.38	n	1	0.53
HGT	n	0.26	n	n	n	n	n	0.53	1

NUWWSN correlations are above the diagonal
 PNUWWSN correlations are below the diagonal

n = not significant at $p \leq 0.05$

Table 6. Correlation, by location, of heading date with FHB traits from the 2008 NUWWSN and PNUWWSN

NUWWSN	INC	SEV	IND	FDK	ISK	DON
ILURB	n	n	n	n	n	n
INLAF	n					n
KSMAN			-0.33	n	-0.33	n
KYLEX	0.54	0.38	0.43	n	0.46	n
MDCLA	-0.68	-0.61	-0.65	-0.37	-0.71	n
MIELA	0.3	0.44	0.44			
MOCOL	n	n	n	-0.3	-0.27	
NEMEA						
NYITH	n	n	n			n
OHWOO	0.29	n	0.3			0.26
ONRID	n	n	n			
ROMAN						
VABLA	0.5	n	n			0.43
PNUWWSN						
	INC	SEV	IND	FDK	ISK	DON
ILURB	n	n	n	n	n	0.29
INLAF	n					n
KYLEX	0.6	0.47	0.57	n	0.56	n
MIELA	n	n	n			
MOCOL	n	n	n	n	n	
OHWOO			n			
ONRID	0.28	0.3	0.33			
ROMAN						
VABLA	0.61	-0.38	n			0.63
n = not significant at p <= 0.05						
blank indicates correlation could not be estimated						

Table 7. Summary of means from 2008 NUWWSN

ENTRY	NAME	SEV	INC	IND	FDK	ISK	DON	GH	#	#h
1	ERNIE	57.4	31.7	22.7	28.5 h	43.7	9.9 |	13.7 |	2	1
2	TRUMAN	47.4 |	21.6 |	14.5 |	16.6 |	31.5 |	6.3 |	4.5 |	7	0
3	FREEDOM	57.4	34.9	23.1	19.5 |	38.5	9.0 |	18.2 |	3	0
4	PIONEER 2545	74.9 h	52.2 h	42.8	36.3 h	56.6 h	18.4	48.3 h	0	5
5	MSU Line E6002	55.2	30.7	25.6	28.4 h	43.9	12.5	25.8 |	1	1
6	MSU Line E6001	61.2	35.1	25.7	26.0 |	41.7	11.0	6.7 |	2	0
7	MSU Line E6003	48.5 |	17.6 |	10.5 |	11.5 |	24.9 |	6.4 |	7.0 |	7	0
8	MSU Line E5011	68.1 h	45.1	40.2	32.2 h	51.7 h	13.9	15.3 |	1	3
9	P.99600A2-4-93	66.6 h	38.1	33.0	33.9 h	51.6 h	10.1 |	26.5 |	2	3
10	P.0179A1-17	63.6	36.3	26.3	30.4 h	44.0	12.8	18.6 |	1	1
11	P.011010A1-15	67.2 h	40.7	33.8	23.6 |	47.8 h	11.4	15.5 |	2	2
12	P.03112A1-7-3	60.7	34.3	22.6	24.5 |	37.1	10.2 |	5.6 |	3	0
13	KS980512-2-2	60.9	40.2	27.9	22.4 |	42.0	16.2	16.1 |	2	0
14	KS05HW14-3	71.9 h	39.3	34.1	32.5 h	48.9 h	14.7	30.2 |	1	3
15	MO050143	52.6 |	28.7	19.4 |	17.3 |	32.2 |	6.5 |	6.7 |	6	0
16	MO050699	61.1	35.5	25.9	26.5	39.8	9.3 |	5.0 |	2	0
17	MO050921	49.6 |	24.1 |	16.4 |	16.0 |	28.2 |	5.7 |	4.9 |	7	0
18	MO050101	49.9 |	27.3	19.5	16.9 |	33.1 |	7.2 |	8.7 |	5	0
19	VA05W-425	60.0	33.1	23.4	24.3 |	38.8	6.7 |	10.3 |	3	0
20	VA05W-775	55.4	28.8	17.7 |	22.5 |	34.7 |	4.4 |	4.1 |	5	0
21	VA05W-777	57.2	28.1	18.5 |	20.7 |	34.7 |	5.5 |	4.9 |	5	0
22	VA05W-534	52.6 |	24.9 |	17.0 |	17.5 |	34.8 |	4.8 |	17.9 |	7	0
23	MD01W233-06-1	53.5 |	26.1	18.8 |	21.4 |	39.0	4.5 |	4.8 |	5	0
24	MD01W233-06-16	56.6	28.5	20.3	22.3 |	37.0 |	5.8 |	20.4 |	4	0
25	MD99W483-06-11	63.3	38.8	27.9	34.3 h	44.0	7.2 |	70.0 h	1	2
26	NYCalresel-L	60.0	40.2	33.1	37.5 h	52.4 h	13.0	51.1 h	0	3
27	NY94052-9340	59.1	31.7	26.2	28.4 h	42.9	11.3	11.2 |	1	1
28	NYW103-1-9100	61.6	37.0	33.1	22.3 |	43.1	10.8	17.8 |	2	0
29	NYW103-70-9232	66.0 h	42.3	38.1	28.0	48.3 h	15.8	34.1 |	1	2
30	NY93246SP-9070	61.9	34.9	32.7	32.7 h	49.6 h	11.5	18.8 |	1	2
31	SE911492-4	64.1	33.2	25.5	24.4 |	39.8	9.2 |	34.2 |	3	0
32	SE89-1873-2	65.5	39.4	31.9	27.0	46.0	12.8	62.2 h	0	1
33	SE98-1089-34	78.5 h	60.7 h	52.1 h	39.2 h	58.6 h	20.8	40.7 h	0	6
34	SE93-1094-8	67.2 h	39.9	32.8	36.1 h	50.8 h	17.4	29.9 |	1	3
35	NE05418	52.0 |	26.3	19.7	26.0 |	39.4	7.3 |	23.7 |	4	0
36	NE05549	68.2 h	46.6	41.0	28.3 h	52.1 h	13.8	31.3 |	1	3
37	NE05537	54.8	36.7	24.7	22.6 |	38.7	10.6	32.2 |	2	0
38	NE03488	62.5	33.7	27.3	22.9 |	39.8	11.5	58.8 h	1	1
39	NE01643	66.4 h	37.7	34.0	28.1 h	48.9 h	13.7	33.7 |	1	3
40	KY00C-2059-16	58.0	36.6	24.8	22.4 |	37.2	14.3	46.3 h	1	1
41	KY00C-2143-08	59.2	32.8	21.2	18.8 |	35.8 |	9.1 |	39.5 h	3	1
42	KY00C-2755-03	61.2	39.0	30.1	24.7 |	44.7	12.1	36.4	1	0
43	KY97C-0321-05-2	67.2 h	46.7	41.6	34.5 h	53.0 h	16.1	49.5 h	0	4
44	MO4*5109	59.5	33.5	26.6	29.5 h	46.3	10.3 |	44.6 h	1	2
45	MO4-4802	65.5	41.0	32.8	32.6 h	50.1 h	13.9	45.5 h	0	3
46	MO3-3616-B11	53.4 |	26.6	19.3 |	18.3 |	34.9 |	7.7 |	13.8 |	6	0
47	MO3-3616-C10	51.9 |	25.4 |	17.3 |	26.8	36.8 |	9.6 |	17.9 |	6	0
48	OH02-13567	54.1 |	28.7	18.3 |	23.6 |	36.5 |	7.2 |	6.2 |	6	0
49	OH03-235-2	59.0	40.7	31.4	28.3 h	47.0 h	11.9	24.5 |	1	2
50	OH02-12678	54.4 |	27.0	20.3	17.0 |	36.0 |	7.5 |	23.3 |	5	0
51	OH02-7217	59.4	28.3	21.2	17.7 |	35.7 |	10.1 |	15.5 |	4	0
52	DH 22/8	58.4	36.8	28.5	30.6 h	47.3 h	11.8	30.1 |	1	2
53	DH 22/24	42.4 |	19.5 |	12.5 |	18.1 |	27.8 |	6.6 |	9.0 |	7	0
54	DH 19/176B	67.4 h	42.4	36.1	28.4 h	47.2 h	17.6	8.1 |	1	3
55	DH F/SF, 23	64.7	50.1 h	39.1	43.1 h	55.9 h	29.3 h	43.1 h	0	5
56	ILO2-18228	41.9 |	15.3 |	13.0 |	14.4 |	29.6 |	4.5 |	24.1 |	7	0
57	ILO2-19463	57.4	31.9	22.0	12.9 |	34.1 |	7.1 |	16.3 |	4	0
58	ILO4-10118	55.9	24.7 |	18.9 |	18.6 |	36.8 |	7.7 |	14.5 |	6	0
59	ILO4-10721	61.1	28.1	21.0	16.8 |	35.5 |	8.7 |	7.6 |	4	0
60	ILO4-10741	48.7 |	24.1 |	18.9 |	22.6 |	36.7 |	6.1 |	29.8 |	7	0
	AVERAGE	59.4	34.0	26.2	25.1	41.6	10.7	23.9		
	MINIMUM	41.9	15.3	10.5	11.5	24.9	4.4	4.1		
	MAXIMUM	78.5	60.7	52.1	43.1	58.6	29.3	70.0		
	LSD(0.05)	12.8	10.6	9.0	15.0	12.1	6.0	31.0		
	# environments	10	11	12	5	6	9	2		

Table 8. Summary of means for the best (top of table) and worst entries in the 2008 NUWWSN.

ENTRY	NAME	SEV	INC	IND	FDK	ISK	DON	GH	#l	#h
56	IL02-18228	41.9 |	15.3 |	13.0 |	14.4 |	29.6 |	4.5 |	24.1 |	7	0
22	VA05W-534	52.6 |	24.9 |	17.0 |	17.5 |	34.8 |	4.8 |	17.9 |	7	0
17	MO050921	49.6 |	24.1 |	16.4 |	16 |	28.2 |	5.7 |	4.9 |	7	0
60	IL04-10741	48.7 |	24.1 |	18.9 |	22.6 |	36.7 |	6.1 |	29.8 |	7	0
2	TRUMAN	47.4 |	21.6 |	14.5 |	16.6 |	31.5 |	6.3 |	4.5 |	7	0
7	MSU Line E6003	48.5 |	17.6 |	10.5 |	11.5 |	24.9 |	6.4 |	7.0 |	7	0
53	DH 22/24	42.4 |	19.5 |	12.5 |	18.1 |	27.8 |	6.6 |	9.0 |	7	0
15	MO050143	52.6 |	28.7	19.4 |	17.3 |	32.2 |	6.5 |	6.7 |	6	0
48	OH02-13567	54.1 |	28.7	18.3 |	23.6 |	36.5 |	7.2 |	6.2 |	6	0
58	IL04-10118	55.9	24.7 |	18.9 |	18.6 |	36.8 |	7.7 |	14.5 |	6	0
46	M03-3616-B11	53.4 |	26.6	19.3 |	18.3 |	34.9 |	7.7 |	13.8 |	6	0
47	M03-3616-C10	51.9 |	25.4 |	17.3 |	26.8	36.8 |	9.6 |	17.9 |	6	0
20	VA05W-775	55.4	28.8	17.7 |	22.5 |	34.7 |	4.4 |	4.1 |	5	0
23	MD01W233-06-1	53.5 |	26.1	18.8 |	21.4 |	39.0	4.5 |	4.8 |	5	0
21	VA05W-777	57.2	28.1	18.5 |	20.7 |	34.7 |	5.5 |	4.9 |	5	0
18	MO050101	49.9 |	27.3	19.5	16.9 |	33.1 |	7.2 |	8.7 |	5	0
50	OH02-12678	54.4 |	27.0	20.3	17 |	36.0 |	7.5 |	23.3 |	5	0
43	KY97C-0321-05-2	67.2 h	46.7	41.6	34.5 h	53.0 h	16.1	49.5 h	0	4
4	PIONEER 2545	74.9 h	52.2 h	42.8	36.3 h	56.6 h	18.4	48.3 h	0	5
55	DH F/SF, 23	64.7	50.1 h	39.1	43.1 h	55.9 h	29.3 h	43.1 h	0	5
33	SE98-1089-34	78.5 h	60.7 h	52.1 h	39.2 h	58.6 h	20.8	40.7 h	0	6
	AVERAGE	59.4	34.0	26.2	25.1	41.6	10.7	23.9		
	MINIMUM	41.9	15.3	10.5	11.5	24.9	4.4	4.1		
	MAXIMUM	78.5	60.7	52.1	43.1	58.6	29.3	70.0		
	LSD(0.05)	12.8	10.6	9.0	15	12.1	6	31.0		
	# environments	10	11	12	5	6	9	2		

Table 9. Summary of means from the 2008 PNUWWSN

NAME	SEV	INC	IND	FDK	ISK	DON	GH	#	#h
ERNIE	57.9 l	24.2 l	18.5 l	25.5 l	41.7	11.5	10.5	4	0
TRUMAN	58.4 l	18.0 l	17.2 l	25.1 l	42.4	10.6	6.4	4	0
FREEDOM	67.5	34.0	24.9	43.1 h	49.2 h	9.5 l	12.5	1	2
PIONEER 2545	85.8 h	46.6 h	42.5 h	57.9 h	62.7 h	21.7 h	98.8	0	6
MSU Line E2043	84.5 h	39.1	33.2	62.0 h	60.0 h	22.9 h	10.5	0	4
MSU Line E6059	85.5 h	40.6 h	33.8 h	47.8 h	56.9 h	27.5 h	24.8	0	6
MSU Line E6042	50.8 l	30.2	20.7	14.2 l	34.7 l	9.3 l	49.7	4	0
MSU Line E6038	63.3	36.9	25.8	29.0 l	44.6	11.9	48.5	1	0
MSU Line E5024	76.0 h	37.1	29.1	27.1 l	47.3	16.6	26.7	1	1
P.992192A1-5-4-5-81	79.6 h	38.0	32.7	48.4 h	55.8 h	11.9	22.3	0	3
P.0172A1-12-1	49.7 l	17.4 l	9.4 l	18.7 l	27.4 l	4.1 l	13.3	6	0
P.0175A1-37-4	63.3	23.6 l	15.7 l	27.7 l	36.9 l	7.0 l	4.5	5	0
P.04281A1-4-5	74.9 h	34.3	27.7	43.4 h	51.3 h	12.5	6.6	0	3
P.04287A1-16	66.5	34.0	26.3	48.3 h	51.3 h	11.4	30.5	0	2
P.03630A1-18	61.5 l	27.3 l	18.9 l	32.6 l	38.8 l	5.7 l	4.0	6	0
MO050600	60.6 l	33.8	24.3	43.3 h	44.9	4.7 l	8.0	2	1
MO050261	65.6	31.2	22.9	37.6	43.8	9.1 l	7.5	1	0
MO051150	75.0 h	31.3	25.2	42.5 h	52.3 h	8.9 l	20.3	1	3
MO050617	78.8 h	37.9	32.0	36.1	53.1 h	10.6	16.3	0	2
MO041020	66.7	24.3 l	20.1	28.5 l	43.5	9.3 l	4.0	3	0
MO050917	77.0 h	35.2	28.1	39.6	51.4 h	10.5	5.8	0	2
VA06W-553	65.1	29.7	16.9 l	21.5 l	36.5 l	4.6 l	5.3	4	0
VA06W-558	55.3 l	25.4 l	15.3 l	25.2 l	38.0 l	4.5 l	43.5	6	0
VA06W-561	59.7 l	20.7 l	16.8 l	33.8 l	43.0	6.4 l	28.8	5	0
VA06W-615	70.3 h	36.8	25.5	30.9 l	42.9	5.8 l	12.7	2	1
VA06W-622	70.6 h	24.1 l	23.0	44.9 h	50.2 h	15.5	25.2	1	3
TRIBUTE	63.9	29.5	23.8	42.1	49.8 h	8.5 l	30.0	1	1
BDLS. HONEY-6	75.5 h	46.5 h	39.4 h	42.8 h	59.9 h	10.8	60.7	0	5
SE98 1083-14	64.8	27.6 l	20.5	31.9 l	41.1 l	8.2 l	7.8	4	0
SEKY93 C-1699-14	70.9 h	35.0	28.0	38.8	48.1	11.7	70.3	0	1
SE94 C-0480-2-2	73.4 h	40.6 h	32.6	44.1 h	53.7 h	10.9	65.3	0	4
SE98 1106-6	71.1 h	35.8	27.2	21.1 l	39.9 l	10.5	6.3	2	1
SE94-1012-25	72.8 h	45.7 h	37.4 h	50.0 h	54.8 h	11.6	72.0	0	5
KY02C-3005-25	52.0 l	18.2 l	11.8 l	27.2 l	34.6 l	3.4 l	4.0	6	0
KY02C-3005-44	64.6	25.7 l	18.3 l	33.5 l	40.1 l	12.6	4.0	4	0
KY02C-3008-05	68.4	22.3 l	16.0 l	37.8	41.9	12.7	3.0	2	0
KY02C-3004-04	63.6	24.6 l	16.7 l	23.5 l	36.1 l	3.9 l	7.7	5	0
KY01C-1542-07	82.4 h	51.8 h	43.6 h	47.0 h	59.6 h	18.7	44.3	0	5
KY99C-1205-06-1	75.0 h	36.1	32.2	53.3 h	57.2 h	13.2	28.5	0	3
M04-4566	74.9 h	45.0 h	34.5 h	53.1 h	59.6 h	13.6	65.5	0	5
M04-4715	70.1 h	41.5 h	34.7 h	44.5 h	53.7 h	13.9	76.3	0	5
M05-1172	72.1 h	33.1	26.3	42.3 h	50.3 h	10.8	29.8	0	3
M05*1589	67.6	31.1	25.3	26.8 l	43.1	10.2 l	21.5	2	0
M05-1531	64.4	24.5 l	24.0	42.3 h	53.8 h	8.8 l	22.7	2	2
OH04-213-39	73.2 h	40.6 h	34.8 h	55.3 h	62.5 h	9.6 l	36.5	1	5
OH04-264-58	77.0 h	38.3	31.1	52.2 h	58.6 h	14.2	23.8	0	3
OH04-268-39	83.9 h	39.2	33.6	53.5 h	57.8 h	12.8	53.3	0	3
OH04-176-29	69.3	34.0	27.3	27.9 l	47.7	5.7 l	29.2	2	0
OH03-41-45	67.6	35.3	29.7	45.0 h	54.1 h	10.1 l	24.5	1	2
DH ACF112103 -8T	73.8 h	35.7	31.2	48.6 h	57.7 h	10.2 l	7.2	1	3
RCUOGF110202D/4	59.5 l	31.1	23.2	29.5 l	44.9	12.4	7.0	2	0
RCUOGDHACF110902D	58.3 l	32.4	23.7	48.3 h	52.0 h	10.7	4.5	1	2
RCATTF174/1C	74.0 h	37.3	29.3	45.9 h	52.2 h	15.3	4.0	0	3
RCATTF203/2	83.3 h	37.6	29.3	27.2 l	44.7	16.7	11.0	1	1
RCATL31	71.0 h	38.4	30.1	36.6	48.4	17.0	61.2	0	1
IL01-34159	45.9 l	16.2 l	10.6 l	20.9 l	27.7 l	2.3 l	3.7	6	0
IL79-002T-B-B	60.2 l	26.3 l	17.6 l	33.1 l	41.2 l	5.2 l	4.5	6	0
IL04-7874	65.9	30.0	21.9	29.5 l	41.1 l	7.4 l	19.8	3	0
IL04-8445	59.8 l	30.5	21.7	30.3 l	41.0 l	6.7 l	28.2	4	0
IL04-17204	60.4 l	33.2	21.2	25.7 l	39.8 l	9.2 l	30.5	4	0
AVERAGE	68.3	32.7	25.6	37.4	47.5	10.7	25.3		
MINIMUM	45.9	16.2	9.4	14.2	27.4	2.3	3.0		
MAXIMUM	85.8	51.8	43.6	62.0	62.7	27.5	98.8		
LSD(0.05)	15.6	12.3	9.9	19.8	14.0	7.9			
# Environments	7	6	8	4	4	4	1		

Table 10. Summary of the best (top of table) and worst (bottom of table) entries from the 2008 PNUWWSN

NAME	SEV	INC	IND	FDK	ISK	DON	GH	#l	#h
IL01-34159	45.9 |	16.2 |	10.6 |	20.9 |	27.7 |	2.3 |	3.7	6	0
KY02C-3005-25	52.0 |	18.2 |	11.8 |	27.2 |	34.6 |	3.4 |	4.0	6	0
P.0172A1-12-1	49.7 |	17.4 |	9.4 |	18.7 |	27.4 |	4.1 |	13.3	6	0
VA06W-558	55.3 |	25.4 |	15.3 |	25.2 |	38.0 |	4.5 |	43.5	6	0
IL79-002T-B-B	60.2 |	26.3 |	17.6 |	33.1 |	41.2 |	5.2 |	4.5	6	0
P.03630A1-18	61.5 |	27.3 |	18.9 |	32.6 |	38.8 |	5.7 |	4.0	6	0
KY02C-3004-04	63.6	24.6 |	16.7 |	23.5 |	36.1 |	3.9 |	7.7	5	0
VA06W-561	59.7 |	20.7 |	16.8 |	33.8 |	43.0	6.4 |	28.8	5	0
P.0175A1-37-4	63.3	23.6 |	15.7 |	27.7 |	36.9 |	7.0 |	4.5	5	0
VA06W-553	65.1	29.7	16.9 |	21.5 |	36.5 |	4.6 |	5.3	4	0
IL04-8445	59.8 |	30.5	21.7	30.3 |	41.0 |	6.7 |	28.2	4	0
SE98 1083-14	64.8	27.6 |	20.5	31.9 |	41.1 |	8.2 |	7.8	4	0
IL04-17204	60.4 |	33.2	21.2	25.7 |	39.8 |	9.2 |	30.5	4	0
MSU Line E6042	50.8 |	30.2	20.7	14.2 |	34.7 |	9.3 |	49.7	4	0
TRUMAN	58.4 |	18.0 |	17.2 |	25.1 |	42.4	10.6	6.4	4	0
ERNIE	57.9 |	24.2 |	18.5 |	25.5 |	41.7	11.5	10.5	4	0
KY02C-3005-44	64.6	25.7 |	18.3 |	33.5 |	40.1 |	12.6	4.0	4	0
SE94 C-0480-2-2	73.4 h	40.6 h	32.6	44.1 h	53.7 h	10.9	65.3	0	4
MSU Line E2043	84.5 h	39.1	33.2	62.0 h	60.0 h	22.9 h	10.5	0	4
OH04-213-39	73.2 h	40.6 h	34.8 h	55.3 h	62.5 h	9.6 |	36.5	1	5
BDLS. HONEY-6	75.5 h	46.5 h	39.4 h	42.8 h	59.9 h	10.8	60.7	0	5
SE94-1012-25	72.8 h	45.7 h	37.4 h	50.0 h	54.8 h	11.6	72.0	0	5
M04-4566	74.9 h	45.0 h	34.5 h	53.1 h	59.6 h	13.6	65.5	0	5
M04-4715	70.1 h	41.5 h	34.7 h	44.5 h	53.7 h	13.9	76.3	0	5
KY01C-1542-07	82.4 h	51.8 h	43.6 h	47.0 h	59.6 h	18.7	44.3	0	5
PIONEER 2545	85.8 h	46.6 h	42.5 h	57.9 h	62.7 h	21.7 h	98.8	0	6
MSU Line E6059	85.5 h	40.6 h	33.8 h	47.8 h	56.9 h	27.5 h	24.8	0	6
AVERAGE	68.3	32.7	25.6	37.4	47.5	10.7	30.0		
MINIMUM	45.9	16.2	9.4	14.2	27.4	2.3	3.7		
MAXIMUM	85.8	51.8	43.6	62.0	62.7	27.5	98.8		
LSD(0.05)	15.6	12.3	9.9	19.8	14.0	7.9			
# Environments	7	6	8	4	4	4	1		

Table 14. Mean Fusarium damaged kernels (FDK, %) from the 2008 NUWWSN.

ENTRY	NAME	AVG	ILURB	KSMAN	KYLEX	MDSAL	MOCOL	ROMAN
1	ERNIE	28.5 h	33.0	15.0	25.1	15.0	40.0	43.0
2	TRUMAN	16.6 l	12.0	2.5	16.7	3.5	20.0	44.6
3	FREEDOM	19.5 l	43.0	4.8	19.4	9.5	25.0	15.0
4	PIO2545	36.3 h	73.0	9.3	49.0	17.0	5.0	64.5
5	MSULineE6002	28.4 h	30.0	9.5	15.4	14.0	40.0	61.7
6	MSULineE6001	26.0 l	70.0	6.5	15.3	16.5	20.0	27.6
7	MSULineE6003	11.5 l	15.0	4.3	2.9	3.5	20.0	23.4
8	MSULineE5011	32.2 h	70.0	5.3	26.6	8.5	20.0	62.8
9	P.99600A2-4-93	33.9 h	53.0	5.3	30.4	19.0	25.0	70.6
10	P.0179A1-17	30.4 h	47.0	4.8	20.7	13.5	65.0	31.3
11	P.011010A1-15	23.6 l	37.0	10.3	27.5	18.5	20.0	28.4
12	P.03112A1-7-3	24.5 l	27.0	2.3	13.8	14.5	50.0	39.6
13	KS980512-2-2	22.4 l	53.0	6.3	13.6	9.5	25.0	26.8
14	KS05HW14-3	32.5 h	57.0	11.5	15.3	21.0	40.0	50.0
15	MO050143	17.3 l	27.0	3.5	13.7	3.5	10.0	45.8
16	MO050699	26.5	37.0	4.3	15.2	6.5	50.0	46.1
17	MO050921	16.0 l	27.0	5.0	8.1	7.0	20.0	28.6
18	MO050101	16.9 l	18.0	3.3	23.5	5.5	20.0	31.2
19	VA05W-425	24.3 l	22.0	4.8	14.9	8.0	65.0	31.2
20	VA05W-775	22.5 l	12.0	3.3	9.6	14.5	60.0	35.5
21	VA05W-777	20.7 l	18.0	5.3	10.9	10.5	40.0	39.5
22	VA05W-534	17.5 l	23.0	5.0	9.4	2.5	30.0	34.8
23	MD01W233-06-1	21.4 l	23.0	3.5	12.9	7.5	50.0	31.4
24	MD01W233-06-16	22.3 l	40.0	3.8	13.9	11.5	30.0	34.7
25	MD99W483-06-11	34.3 h	70.0	7.5	8.3	22.0	60.0	37.7
26	NYCalresel-L	37.5 h	70.0	7.5	35.5	3.0	50.0	58.9
27	NY94052-9340	28.4 h	63.0	9.8	17.2	5.5	25.0	50.0
28	NYW103-1-9100	22.3 l	60.0	3.5	11.6	4.0	5.0	49.7
29	NYW103-70-9232	28.0	67.0	3.5	16.4	5.5	20.0	55.6
30	NY93246SP-9070	32.7 h	57.0	5.8	21.6	6.0	55.0	50.6
31	SE911492-4	24.4 l	37.0	4.8	15.8	9.0	50.0	29.9
32	SE89-1873-2	27.0	53.0	5.3	27.0	7.5	25.0	44.3
33	SE98-1089-34	39.2 h	92.0	9.3	54.0	19.0	20.0	40.7
34	SE93-1094-8	36.1 h	80.0	9.5	40.7	23.5	5.0	57.9
35	NE05418	26.0 l	28.0	8.5	9.1	12.0	65.0	33.3
36	NE05549	28.3 h	70.0	5.3	18.4	19.0	3.0	53.8
37	NE05537	22.6 l	53.0	3.0	17.6	8.0	30.0	24.0
38	NE03488	22.9 l	57.0	5.3	13.8	19.5	25.0	17.0
39	NE01643	28.1 h	43.0	5.3	12.7	15.0	25.0	67.7
40	KY00C-2059-16	22.4 l	47.0	9.8	7.9	15.5	25.0	28.9
41	KY00C-2143-08	18.8 l	40.0	7.0	8.5	10.5	25.0	21.6
42	KY00C-2755-03	24.7 l	53.0	6.8	12.9	7.0	40.0	28.3
43	KY97C-0321-05-2	34.5 h	73.0	6.0	34.5	11.0	55.0	27.2
44	M04*5109	29.5 h	43.0	6.8	28.1	11.5	40.0	47.6
45	M04-4802	32.6 h	70.0	5.0	32.2	14.5	40.0	33.9
46	M03-3616-B11	18.3 l	28.0	4.8	22.7	14.5	25.0	14.8
47	M03-3616-C10	26.8	28.0	13.0	16.8	14.0	50.0	39.0
48	OH02-13567	23.6 l	30.0	20.5	16.1	7.5	40.0	27.7
49	OH03-235-2	28.3 h	60.0	4.5	26.8	11.5	20.0	47.0
50	OH02-12678	17.0 l	43.0	5.8	19.9	7.5	5.0	20.7
51	OH02-7217	17.7 l	22.0	7.3	21.7	5.5	25.0	24.5
52	DH22/8	30.6 h	50.0	3.0	20.9	10.5	25.0	73.9
53	DH22/24	18.1 l	15.0	2.3	12.7	15.0	40.0	23.6
54	DH19/176B	28.4 h	53.0	6.8	36.7	6.5	15.0	52.4
55	DHF/SF,23	43.1 h	92.0	11.5	50.8	13.5	20.0	70.5
56	IL02-18228	14.4 l	10.0	4.5	7.0	2.0	30.0	33.1
57	IL02-19463	12.9 l	32.0	9.3	7.1	10.5	5.0	13.5
58	IL04-10118	18.6 l	30.0	4.3	11.6	3.5	3.0	59.1
59	IL04-10721	16.8 l	22.0	7.0	12.2	4.0	30.0	25.5
60	IL04-10741	22.6 l	22.0	4.0	12.7	9.5	60.0	27.1
	AVERAGE	25.1	43.8	6.4	19.4	10.7	31.2	39.3
	MINIMUM	11.5	10.0	2.3	2.9	2.0	3.0	13.5
	MAXIMUM	43.1	92.0	20.5	54.0	23.5	65.0	73.9
	LSD(0.05)	15.0						

Table 15. Mean Incidence/Severity/Kernel index (ISK, %) from the 2008 NUWWSN.

ENTRY	NAME	AVG	ILURB	KSMAN	KYLEX	MDSAL	MOCOL	ROMAN
1	ERNIE	43.7	53.8	31.2	42.0	39.0	59.9	36.2
2	TRUMAN	31.5 l	29.1	14.7	46.0	8.9	43.3	46.8
3	FREEDOM	38.5	55.5	26.4	53.9	20.3	52.7	22.4
4	PIO2545	56.6 h	79.4	44.0	72.3	36.8	46.5	60.8
5	MSULineE6002	43.9	52.7	30.7	28.0	32.6	56.6	62.7
6	MSULineE6001	41.7	76.8	36.1	44.0	29.1	42.9	21.1
7	MSULineE6003	24.9 l	35.8	7.2	26.8	7.4	45.2	27.1
8	MSULineE5011	51.7 h	78.1	33.8	55.9	13.9	54.1	74.1
9	P.99600A2-4-93	51.6 h	63.2	33.6	55.8	33.1	53.4	70.3
10	P.0179A1-17	44.0	64.0	37.3	40.5	23.4	68.1	30.4
11	P.011010A1-15	47.8 h	61.7	43.0	58.3	35.9	50.8	37.2
12	P.03112A1-7-3	37.1	51.7	20.3	46.4	16.3	59.0	29.0
13	KS980512-2-2	42.0	64.9	28.1	54.6	24.8	48.7	31.0
14	KS05HW14-3	48.9 h	71.5	39.1	36.0	30.9	56.5	59.6
15	MO050143	32.2 l	42.4	24.4	30.6	14.9	47.0	34.0
16	MO050699	39.8	53.7	33.1	39.5	19.1	59.0	34.2
17	MO050921	28.2 l	38.8	16.8	28.4	13.3	38.6	33.5
18	MO050101	33.1 l	40.3	24.7	29.2	17.2	48.4	38.7
19	VA05W-425	38.8	43.3	29.2	34.4	19.7	66.4	39.5
20	VA05W-775	34.7 l	31.6	19.6	45.0	25.3	61.8	25.2
21	VA05W-777	34.7 l	41.1	23.2	38.9	19.2	55.5	30.0
22	VA05W-534	34.8 l	45.6	26.5	39.5	17.5	49.7	30.2
23	MD01W233-06-1	39.0	51.4	23.6	38.6	27.0	59.0	34.4
24	MD01W233-06-16	37.0 l	61.1	21.0	28.5	27.1	50.2	33.9
25	MD99W483-06-11	44.0	75.6	33.1	14.2	35.8	70.2	35.0
26	NYCalresel-L	52.4 h	75.5	32.6	54.4	16.2	68.6	67.3
27	NY94052-9340	42.9	67.9	28.2	48.7	8.2	50.2	54.1
28	NYW103-1-9100	43.1	69.5	20.0	43.6	7.6	43.1	74.8
29	NYW103-70-9232	48.3 h	75.6	28.5	45.3	12.7	48.9	78.7
30	NY93246SP-9070	49.6 h	67.3	33.7	49.3	15.9	61.5	69.7
31	SE911492-4	39.8	51.6	22.3	37.5	26.1	61.7	39.3
32	SE89-1873-2	46.0	64.0	36.5	50.4	19.5	53.5	52.1
33	SE98-1089-34	58.6 h	89.2	43.6	78.4	31.6	54.9	53.9
34	SE93-1094-8	50.8 h	82.8	42.9	52.7	36.4	42.5	47.6
35	NE05418	39.4	47.5	31.2	23.0	31.8	63.9	39.0
36	NE05549	52.1 h	80.2	42.7	53.6	27.1	42.6	66.2
37	NE05537	38.7	64.4	23.7	30.5	24.2	47.0	42.1
38	NE03488	39.8	67.0	26.5	20.6	31.8	50.1	42.8
39	NE01643	48.9 h	58.3	32.9	52.9	18.0	53.7	77.7
40	KY00C-2059-16	37.2	61.3	33.9	29.1	19.7	52.5	26.4
41	KY00C-2143-08	35.8 l	58.1	28.8	24.9	31.2	50.6	21.4
42	KY00C-2755-03	44.7	66.0	30.5	57.5	17.8	55.0	41.4
43	KY97C-0321-05-2	53.0 h	80.4	34.8	67.5	17.9	65.3	52.1
44	M04*5109	46.3	61.5	33.3	47.4	30.1	58.5	47.0
45	M04-4802	50.1 h	76.9	36.1	46.2	31.3	58.1	51.9
46	M03-3616-B11	34.9 l	42.0	19.0	51.0	19.3	53.0	25.1
47	M03-3616-C10	36.8 l	39.6	28.9	37.9	22.1	56.6	35.6
48	OH02-13567	36.5 l	45.9	25.3	41.3	25.5	55.9	25.1
49	OH03-235-2	47.0 h	68.1	25.8	63.3	18.1	51.9	54.7
50	OH02-12678	36.0 l	58.5	22.4	47.7	17.3	44.0	25.8
51	OH02-7217	35.7 l	45.4	19.9	52.6	12.7	47.7	35.6
52	DH22/8	47.3 h	71.7	28.1	36.6	41.7	52.6	53.0
53	DH22/24	27.8 l	25.1	20.9	22.1	33.0	46.3	19.4
54	DH19/176B	47.2 h	70.0	29.4	63.3	14.6	45.7	60.3
55	DHF/SF,23	55.9 h	87.5	42.6	54.6	32.4	48.3	69.7
56	IL02-18228	29.6 l	29.4	28.4	29.4	9.8	43.9	36.5
57	IL02-19463	34.1 l	58.2	35.9	9.8	35.7	39.8	25.3
58	IL04-10118	36.8 l	44.5	23.9	37.9	20.9	39.6	53.8
59	IL04-10721	35.5 l	46.0	29.1	29.9	30.1	49.1	28.7
60	IL04-10741	36.7 l	42.7	28.0	21.2	29.3	60.8	38.0
	AVERAGE	41.6	58.4	29.2	42.3	23.4	52.7	43.5
	MINIMUM	24.9	25.1	7.2	9.8	7.4	38.6	19.4
	MAXIMUM	58.6	89.2	44.0	78.4	41.7	70.2	78.7
	LSD(0.05)	12.1						

Table 17. Mean greenhouse severity (GH, %) from the 2008 NUWWSN.

ENTRY	NAME	AVG	ILURB	MOCOL
1	ERNIE	13.7 |	16.5	10.9
2	TRUMAN	4.5 |	4.7	4.3
3	FREEDOM	18.2 |	25.5	10.8
4	PIONEER 2545	48.3 h	72.8	23.8
5	MSU Line E6002	25.8 |	35.8	15.8
6	MSU Line E6001	6.7 |	7.0	6.4
7	MSU Line E6003	7.0 |	6.3	7.7
8	MSU Line E5011	15.3 |	21.0	9.5
9	P.99600A2-4-93	26.5 |	29.8	23.2
10	P.0179A1-17	18.6 |	31.8	5.4
11	P.011010A1-15	15.5 |	20.2	10.7
12	P.03112A1-7-3	5.6 |	5.0	6.2
13	KS980512-2-2	16.1 |	23.3	8.9
14	KS05HW14-3	30.2 |	35.3	25.0
15	MO050143	6.7 |	4.3	9.2
16	MO050699	5.0 |	6.2	3.9
17	MO050921	4.9 |	4.0	5.9
18	MO050101	8.7 |	12.0	5.5
19	VA05W-425	10.3 |	5.5	15.2
20	VA05W-775	4.1 |	3.5	4.8
21	VA05W-777	4.9 |	4.4	5.5
22	VA05W-534	17.9 |	29.7	6.1
23	MD01W233-06-1	4.8 |	4.4	5.3
24	MD01W233-06-16	20.4 |	17.3	23.4
25	MD99W483-06-11	70.0 h	100.0	40.0
26	NYCalresel-L	51.1 h	67.6	34.6
27	NY94052-9340	11.2 |	8.6	13.8
28	NYW103-1-9100	17.8 |	11.3	24.3
29	NYW103-70-9232	34.1 |	43.8	24.4
30	NY93246SP-9070	18.8 |	10.0	27.5
31	SE911492-4	34.2 |	39.0	29.3
32	SE89-1873-2	62.2 h	91.8	32.6
33	SE98-1089-34	40.7 h	37.5	43.8
34	SE93-1094-8	29.9 |	32.7	27.1
35	NE05418	23.7 |	17.5	29.8
36	NE05549	31.3 |	27.4	35.1
37	NE05537	32.2 |	13.3	51.1
38	NE03488	58.8 h	56.7	60.9
39	NE01643	33.7 |	25.0	42.4
40	KY00C-2059-16	46.3 h	36.5	56.0
41	KY00C-2143-08	39.5 h	71.2	7.8
42	KY00C-2755-03	36.4	19.7	53.0
43	KY97C-0321-05-2	49.5 h	65.7	33.2
44	M04*5109	44.6 h	34.8	54.5
45	M04-4802	45.5 h	30.2	60.7
46	M03-3616-B11	13.8 |	15.5	12.0
47	M03-3616-C10	17.9 |	16.0	19.7
48	OH02-13567	6.2 |	3.3	9.1
49	OH03-235-2	24.5 |	25.0	24.0
50	OH02-12678	23.3 |	30.0	16.5
51	OH02-7217	15.5 |	21.6	9.4
52	DH 22/8	30.1 |	50.2	10.0
53	DH 22/24	9.0 |	9.7	8.2
54	DH 19/176B	8.1 |	9.0	7.2
55	DH F/SF, 23	43.1 h	67.5	18.8
56	IL02-18228	24.1 |	38.0	10.2
57	IL02-19463	16.3 |	16.2	16.4
58	IL04-10118	14.5 |	16.2	12.7
59	IL04-10721	7.6 |	8.2	7.1
60	IL04-10741	29.8 |	52.2	7.3
	AVERAGE	23.9	27.4	20.4
	MINIMUM	4.1	3.3	3.9
	MAXIMUM	70.0	100.0	60.9
	LSD(0.05)	31.0	.	.

Table 19. Mean plant height (HGT, inches) from the 2008 NUWWSN.

ENTRY	NAME	AVG	KYLEX	MDSAL	MIELA
1	ERNIE	28.7	| 34	24	28
2	TRUMAN	31.3	36	26	32
3	FREEDOM	32.7	38	29	31
4	PIO2545	31.3	35	28	31
5	MSULineE6002	32.0	36	28	32
6	MSULineE6001	27.7	| 33	23	27
7	MSULineE6003	31.3	38	26	30
8	MSULineE5011	30.7	37	26	29
9	P.99600A2-4-93	30.3	33	28	30
10	P.0179A1-17	29.3	| 34	27	27
11	P.011010A1-15	29.7	35	25	29
12	P.03112A1-7-3	27.0	| 31	26	24
13	KS980512-2-2	31.7	36	28	31
14	KS05HW14-3	31.0	36	28	29
15	MO050143	31.0	35	28	30
16	MO050699	30.0	34	28	28
17	MO050921	31.3	36	30	28
18	MO050101	31.3	36	27	31
19	VA05W-425	29.3	| 34	26	28
20	VA05W-775	28.7	| 34	25	27
21	VA05W-777	29.7	35	26	28
22	VA05W-534	29.0	| 36	24	27
23	MD01W233-06-1	30.0	34	29	27
24	MD01W233-06-16	29.7	33	28	28
25	MD99W483-06-11	28.0	| 33	23	28
26	NYCalresel-L	34.3	39	31	33
27	NY94052-9340	36.7	42	35	33
28	NYW103-1-9100	43.0	h 49	40	40
29	NYW103-70-9232	38.7	45	35	36
30	NY93246SP-9070	35.7	41	33	33
31	SE911492-4	28.7	| 34	25	27
32	SE89-1873-2	31.0	37	25	31
33	SE98-1089-34	27.3	| 32	25	25
34	SE93-1094-8	29.7	35	24	30
35	NE05418	32.3	39	25	33
36	NE05549	34.0	37	32	33
37	NE05537	33.3	38	30	32
38	NE03488	34.3	40	31	32
39	NE01643	33.3	38	30	32
40	KY00C-2059-16	32.7	38	28	32
41	KY00C-2143-08	29.0	| 31	27	29
42	KY00C-2755-03	34.0	38	31	33
43	KY97C-0321-05-2	31.3	35	28	31
44	M04*5109	32.0	36	28	32
45	M04-4802	32.0	36	29	31
46	M03-3616-B11	32.7	36	31	31
47	M03-3616-C10	31.0	35	28	30
48	OH02-13567	33.7	38	32	31
49	OH03-235-2	32.0	38	27	31
50	OH02-12678	33.0	37	31	31
51	OH02-7217	33.7	39	31	31
52	DH22/8	35.3	41	27	38
53	DH22/24	31.7	36	29	30
54	DH19/176B	36.3	41	34	34
55	DHF/SF,23	30.7	34	29	29
56	IL02-18228	34.0	39	32	31
57	IL02-19463	29.7	34	25	30
58	IL04-10118	29.7	35	26	28
59	IL04-10721	31.7	37	27	31
60	IL04-10741	31.0	36	26	31
	AVERAGE	31.7	37	28	30
	MINIMUM	27.0	31	23	24
	MAXIMUM	43.0	49	40	40
	LSD(0.05)	2.5	.	.	.

Table 20. Quality assessment for the 2008 NUWWSN. Provided by the USDA Soft Wheat Quality Lab and Dr. Ed Souza using grain from Lafayette IN provided by Herb Ohm

ENTRY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	SOFT. EQUIV. SCORE	TEST WT. LB/BU	FLOUR YIELD %	SOFTNESS EQUIV. %	FLOUR PROT. %	LACTIC ACID SRC %	SUCROSE SRC %							
ERNIE	66.3	C	82.4	A	63.6	C	58.4	*	68.7	58.0	8.7	75.0	78.6			
TRUMAN (STD)	62.6	C	38.0	F	64.1	C	60.0		68.0	58.2	8.0	83.8	99.3			
FREEDOM	68.4	C	71.7	B	59.9	D	59.3		69.1	56.7	8.3	77.0	83.1			
PIONEER 2545	51.3	D	59.7	D	53.4	D	59.3		65.7	Q	54.5	*	8.7	80.5	85.9	
MSU LINE E6002	56.6	D	53.5	D	30.6	F	59.0		66.8	*	46.5	Q	9.4	*	65.8	81.5
MSU LINE E6001	53.7	D	51.7	D	62.7	C	58.7	*	66.2	Q	57.7		9.3	*	90.8	90.5
MSU LINE E6003	63.4	C	57.8	D	35.3	F	62.9		68.2		48.2	Q	8.8	*	101.4	82.0
MSU LINE E5011	79.7	B	86.7	A	73.1	B	59.3		71.4		61.4		7.2		88.9	82.3
P.99600A2-4-93	67.1	C	39.7	F	61.2	C	60.4		68.9		57.2		8.5		85.5	96.7
P.0179A1-17	69.7	C	64.4	C	57.4	D	58.5	*	69.4		55.9		8.9	*	68.5	84.5
P.011010A1-15	66.9	C	68.2	C	69.3	C	58.4	*	68.8		60.0		8.8	*	90.9	85.9
P.03112A1-7-3	74.3	B	60.5	C	44.7	E	60.2		70.3		51.4	Q	8.7		70.6	83.5
KS980512-2-2	62.7	C	32.1	F	19.7	F	60.7		68.0		42.7	Q	9.2	*	93.1	88.4
KS05HW14-3	73.2	B	43.1	E	24.7	F	59.7		70.1		44.4	Q	9.3	*	94.0	84.7
MO 050143	56.7	D	72.9	B	56.9	D	60.0		66.8	*	55.7		8.5		80.8	81.6
MO 050699	64.7	C	67.9	C	59.5	D	59.3		68.4		56.6		8.2		80.4	85.1
MO 050921	76.8	B	72.9	B	61.5	C	60.5		70.8		57.3		7.9		87.3	84.0
MO 050101	56.8	D	74.0	B	58.0	D	59.9		66.8	*	56.1		8.4		77.6	81.5
VA05W-425	55.5	D	58.3	D	54.7	D	59.6		66.6	*	54.9	*	9.1	*	88.2	86.0
VA05W-775	54.6	D	49.9	E	65.9	C	62.4		66.4	Q	58.8		8.4		99.3	93.8
VA05W-777	53.9	D	47.9	E	64.4	C	62.4		66.2	Q	58.3		8.7		97.1	93.7
VA05W-534	59.4	D	61.3	C	69.4	C	58.8	*	67.4		60.1		8.9	*	96.4	88.7
MD01W233-06-1	61.8	C	55.6	D	59.5	D	62.0		67.8		56.6		9.1	*	75.8	88.4
MD01W233-06-16	45.0	E	32.5	F	45.0	E	62.8		64.5	Q	51.5	Q	9.8	Q	87.3	93.2
MD99W483-06-11	75.2	B	56.6	D	74.5	B	59.4		70.5		61.9		8.7		91.8	92.5
NYCALRESEL-L	74.1	B	85.6	A	77.4	B	59.3		70.3		62.9		7.5		87.9	83.1
NY94052-9340	61.4	C	65.5	C	66.6	C	59.9		67.7		59.1		8.4		89.5	87.3
NYW103-1-9100	69.3	C	65.8	C	65.5	C	61.2		69.3		58.7		9.0	*	82.1	85.8
NYW103-70-9232	67.4	C	56.1	D	60.6	C	62.1		68.9		57.0		8.7		84.4	89.1
NY93246SP-9070	60.4	C	65.2	C	63.8	C	61.1		67.5		58.1		8.6		83.6	86.3
SE91 1492-4	42.4	E	26.0	F	44.8	E	61.8		64.0	Q	51.5	Q	8.7		83.3	98.4
SE89-1873-2	67.0	C	70.9	B	67.1	C	59.5		68.9		59.3		8.3		104.2	85.4
SE98-1089-34	57.2	D	26.8	F	56.6	D	57.9	*	66.9	*	55.6		8.6		87.1	101.0
SE93-1094-8	73.9	B	86.4	A	72.2	B	59.2		70.2		61.1		8.3		98.1	80.0
NE05418	77.8	B	48.7	E	31.4	F	62.1		71.0		46.8	Q	10.1	Q	77.1	82.4
NE05549	73.2	B	38.8	F	29.5	F	59.7		70.1		46.1	Q	9.1	*	90.4	88.2
NE05537	71.8	B	21.1	F	16.9	F	61.1		69.8		41.7	Q	10.0	Q	92.6	90.7
NE03488	74.0	B	54.6	D	35.4	F	61.3		70.3		48.2	Q	8.3		90.7	84.5
NE01643	76.8	B	53.7	D	53.7	D	59.3		70.8		54.6	*	7.5		87.2	91.1
KY00C-2059-16	67.5	C	53.9	D	77.2	B	60.2		69.0		62.8		8.4		111.9	94.9
KY00C-2143-08	63.9	C	51.4	D	53.5	D	60.1		68.2		54.5	*	9.2	*	86.1	88.5
KY00C-2755-03	62.7	C	33.0	F	64.6	C	59.6		68.0		58.4		8.9	*	95.8	99.7
KY97C-0321-05-2		F	140.3	A	126.4	A	60.2		41.4	Q	80.0				157.4	87.3
M04*5109	71.3	B	38.4	F	74.6	B	60.9		69.7		61.9		8.2		110.8	101.3
M04-4802	67.9	C	39.6	F	70.3	B	59.9		69.0		60.4		8.5		111.3	99.2
M03-3616-B11	67.7	C	73.9	B	54.5	D	60.5		69.0		54.9	*	9.1	*	71.4	79.3
M03-3616-C10	60.3	C	60.7	C	69.5	C	58.3	*	67.5		60.1		8.8	*	71.1	89.2
OH02-13567	69.6	C	42.5	E	61.8	C	58.5	*	69.4		57.4		8.0		84.4	96.8
OH03-235-2	72.7	B	67.0	C	72.2	B	60.7		70.0		61.1		8.5		108.4	87.7
OH02-12678	67.6	C	40.4	E	55.5	D	60.6		69.0		55.2		8.5		85.0	95.1
OH02-7217	68.2	C	87.2	A	72.3	B	59.0		69.1		61.1		7.7		93.0	80.8
DH22/8	72.4	B	47.3	E	27.2	F	61.3		69.9		45.3	Q	9.7	Q	75.8	82.9
DH22/24	56.9	D	80.1	A	78.9	B	56.0	Q	66.8	*	63.4		7.3		87.1	86.4
DH19/176B	61.0	C	71.5	B	60.0	D	58.9		67.7		56.8		8.4		77.5	83.2
DHF/SF,23	66.3	C	66.0	C	68.1	C	58.7	*	68.7		59.6		8.0		84.2	88.3
IL02-18228	63.8	C	42.7	E	49.5	E	59.6		68.2		53.1	*	8.9	*	85.4	92.0
IL02-19463	61.9	C	77.7	B	84.1	A	58.5	*	67.8		65.2		8.3		99.0	86.6
IL04-10118	65.3	C	74.8	B	82.2	A	58.6	*	68.5		64.5		8.5		86.6	86.9
IL04-10721	65.8	C	78.9	B	74.5	B	60.2		68.6		61.9		7.9		93.1	84.5
IL04-10741	64.6	C	54.9	D	54.1	D	62.3		68.4		54.7	*	8.9	*	81.1	87.7
AVERAGE	62.8		59.1		59.4		60.0		68.0		56.6		8.5		88.7	88.1
MINIMUM	42.4		21.1		16.9		56.0		41.4		41.7		7.2		65.8	78.6
MAXIMUM	79.7		140.3		126.4		62.9		71.4		80.0		10.1		157.4	101.3

Table 21. Means for other traits for the 2008 NUWWSN as reported by cooperators.

		VABLA	VABLA	VABLA	ROMAN	VABLA	MDSAL	ROMAN	ILURB	MOCOL	MOCOL	MDSAL
		BYDV (0 9)	SGB (0-9)	LR (0-9)	LR	PM 0-9	PM (0-9)	AUDPC	WINTER SURVIVAL (%)	TW	YIELD	SEED WGT
1	ERNIE	0.0	3.0	6.5	20MR	6.0	2.0	363.7	50.0	27.6	29.1	2.7
2	TRUMAN	0.5	1.0	7.0	20R-MR	7.0	5.0	367.4	76.7	53.2	66.3	1.7
3	FREEDOM	3.0	1.5	3.5	15MR	4.0	6.0	258.6	83.3	40.4	46.6	2.0
4	PIONEER 2545	1.5	3.5	5.5	TRMR	5.0	0.0	601.1	100.0	40.2	49.3	1.6
5	MSU Line E6002	0.0	3.0	5.0	30MS	6.5	0.0	518.1	7.0	27.4	29.9	2.2
6	MSU Line E6001	3.0	5.5	7.0	20MR-MS	0.0	0.0	167.7	6.7	25.2	29.6	1.9
7	MSU Line E6003	4.0	5.0	7.0	50MS-S	7.0	0.0	302.2	7.0	22.3	25.3	1.4
8	MSU Line E5011	1.5	1.5	8.5	50MS-S	2.5	5.0	671.7	100.0	30.3	36.2	1.8
9	P.99600A2-4-93	0.5	6.5	0.0	TRR	5.0	6.0	596.8	91.7	23.9	30.6	2.1
10	P.0179A1-17	0.0	4.0	0.5	20MR	4.5	6.0	269.7	100.0	27.4	30.3	1.8
11	P.011010A1-15	0.5	3.5	2.5	TRMR	5.5	0.0	414.9	100.0	47.4	58.3	1.9
12	P.03112A1-7-3	0.0	0.5	6.0	TRR	0.0	0.0	262.0	100.0	28.5	30.3	1.4
13	KS980512-2-2	2.0	3.0	0.5	TR MR	6.5	3.0	307.8	63.3	38.0	40.8	2.1
14	KS05HW14-3	1.0	5.5	2.0	20 MR	3.5	4.0	542.4	100.0	22.2	25.2	1.4
15	MO050143	0.0	2.5	5.5	60MS	5.5	6.0	257.7	60.0	30.3	33.7	1.8
16	MO050699	0.0	2.0	1.5	15MR	5.0	0.0	271.4	100.0	42.8	51.1	1.8
17	MO050921	0.0	3.5	5.0	80MR-MS	2.5	0.0	363.3	86.7	35.8	38.3	2.2
18	MO050101	0.0	2.0	5.5	50 MS	6.5	0.0	395.9	63.3	52.2	66.1	1.8
19	VA05W-425	1.5	4.5	6.0	40 MS	5.5	3.0	351.0	60.0	30.6	31.6	2.1
20	VA05W-775	0.0	5.5	6.0	10 MR	6.0	6.0	176.0	100.0	49.6	60.8	1.9
21	VA05W-777	0.0	5.0	7.5	TR MR	4.0	7.0	230.8	100.0	43.8	45.7	1.7
22	VA05W-534	3.0	2.0	1.0	TR R	5.5	7.0	321.6	100.0	44.7	53.2	2.2
23	MD01W233-06-1	1.0	0.0	1.0		1.5	0.0	336.8	68.3	32.7	40.5	2.5
24	MD01W233-06-16	1.0	0.5	0.0	TR R	0.5	0.0	332.4	38.3	45.9	51.8	2.5
25	MD99W483-06-11	0.0	3.0	6.0	20 MR	6.0	6.0	406.7	40.0	22.2	27.7	2.3
26	NYCalresel-L	0.0	1.5	7.5	60 MS	2.0	0.0	692.8	100.0	23.4	27.8	1.8
27	NY94052-9340	5.0	1.0	6.0	10 MR	3.0	3.0	558.0	100.0	10.0	13.9	2.0
28	NYW103-1-9100	2.0	1.5	7.5	30 MR	4.0	6.0	790.3	93.3	21.8	24.4	2.1
29	NYW103-70-9232	1.5	3.5	7.5	20 MR	7.0	6.0	762.8	100.0	33.0	43.4	1.6
30	NY93246SP-9070	2.0	2.5	6.5	TR MR	5.0	6.0	653.7	100.0	30.4	32.6	2.4
31	SE911492-4	2.5	0.5	1.5	TR R	0.0	0.0	372.6	100.0	23.7	28.9	2.2
32	SE89-1873-2	0.5	2.5	7.5	TR MR	6.5	0.0	419.3	100.0	30.7	39.5	1.6
33	SE98-1089-34	0.0	1.0	7.5	20 MR-MS	2.5	0.0	559.2	100.0	23.5	26.2	2.0
34	SE93-1094-8	2.5	5.5	7.5	30 MS	5.0	0.0	373.0	100.0	36.1	39.6	2.0
35	NE05418	2.5	1.5	5.5	30 MS	6.0	4.0	351.1	100.0	38.1	39.5	1.8
36	NE05549	4.0	5.0	4.0	TR R	5.5	6.0	574.8	100.0	21.2	24.7	1.9
37	NE05537	4.5	4.5	0.5	OR	9.0	0.0	411.7	93.3	26.1	27.4	2.2
38	NE03488	0.0	6.5	0.0	TR R	7.0	5.0	462.0	86.7	36.0	39.7	2.8
39	NE01643	2.0	5.5	1.5	20MR	5.5	7.0	617.6	100.0	36.5	38.2	1.9
40	KY00C-2059-16	0.5	2.5	5.0	20 MS	2.0	3.0	239.4	100.0	38.3	43.1	2.5
41	KY00C-2143-08	0.0	1.0	6.0	30 MS	1.5	0.0	226.9	91.7	42.3	45.9	3.1
42	KY00C-2755-03	0.0	1.0	5.0	40 MS	4.5	4.0	411.2	100.0	30.3	31.7	2.5
43	KY97C-0321-05-2	0.5	0.5	1.5	20 MR-MS	2.0	0.0	496.5	91.7	32.9	37.3	2.0
44	M04*5109	0.5	4.5	3.5	20 MR	6.5	7.0	373.8	68.3	42.3	44.2	2.6
45	M04-4802	3.5	6.0	6.5	20 MS	2.5	2.0	494.3	100.0	39.5	49.8	1.5
46	M03-3616-B11	1.0	0.5	4.0	TR R	3.5	6.0	287.7	100.0	39.1	42.6	2.3
47	M03-3616-C10	4.0	2.0	4.0	TR R	3.5	0.0	313.6	100.0	43.9	50.3	2.3
48	OH02-13567	3.5	2.5	6.5	20 MR	7.0	0.0	259.3	100.0	31.4	32.7	2.1
49	OH03-235-2	3.5	3.0	3.5	OR	0.5	0.0	525.9	100.0	32.3	38.7	2.1
50	OH02-12678	1.5	0.5	5.0	30 MS	0.0	0.0	280.6	100.0	48.5	51.4	2.6
51	OH02-7217	1.5	2.5	7.5	50 MS	6.0	4.0	366.8	100.0	39.0	41.8	1.9
52	DH 22/8	2.5	4.5	7.0	80MS-S	4.5	0.0	423.9	8.3	16.8	34.1	2.2
53	DH 22/24	2.5	6.0	6.5	80MS-S	6.5	7.0	160.3	93.3	50.4	56.6	2.0
54	DH 19/176B	2.5	4.0	5.5	TR MR	5.5	2.0	563.3	83.3	18.7	23.1	1.5
55	DH F/SF, 23	4.0	2.0	7.0	20 MS	5.0	5.0	642.9	100.0	18.2	22.8	1.6
56	IL02-18228	0.0	1.5	3.5	TR MS	6.0	6.0	358.4	100.0	53.3	58.9	2.4
57	IL02-19463	0.0	3.5	1.5	70 MS	5.0	0.0	415.8	100.0	47.9	57.3	2.1
58	IL04-10118	0.0	1.0	6.5	10 MR-MS	5.5	5.0	462.4	100.0	36.9	42.1	2.2
59	IL04-10721	0.0	4.5	2.0	TR MR	2.5	0.0	254.0	100.0	51.9	57.0	1.8
60	IL04-10741	3.0	1.5	2.5	TR R-MR	2.5	0.0	425.2	100.0	54.8	64.9	1.7
	AVERAGE	1.5	2.9	4.6		4.4	2.8	411.1	85.2	34.7	40.0	2.0
	MINIMUM	0.0	0.0	0.0		0.0	0.0	160.3	6.7	10.0	13.9	1.4
	MAXIMUM	5.0	6.5	8.5		9.0	7.0	790.3	100.0	54.8	66.3	3.1

Table 22. Presence (yes) or absence (no) of genes in the entries of the 2008 NUWWSN based on marker analyses performed by the USDA Small Grains Genotyping Lab and provided by Gina Brown-Guedira. Band size data is available from Dr. Brown-Guedira.

ENTRY	NAME	FHB1	FHB QTL from 3BS cent.	FHB3 QTL from Wuhan1	FHB QTL from 5AS Asian sources	Sr24	1RS	Sr36	H13	H9	Bx7 over-expression allele	Yr17/ Lr37/ Sr38	Bvd2/ Bvd3
1	ERNIE	no	yes	no	no	no	no	hetero	no	no	no	no	no
2	TRUMAN	no	no	no	no	no	no	no	no	no	no	no	no
3	FREEDOM	no	hetero	no	no	no	t1RS.1BL	hetero	no	no	no	no	no
4	PIONEER 2545	no	no	no	no	no	no	no	no	no	no	no	no
5	MSU Line E6002	no	no	no	no	no	no	no	no	no	no	no	no
6	MSU Line E6001	nd	no	yes?	yes	no	t1RS.1BL	no	no	nd	no	no	no
7	MSU Line E6003	nd	no	yes?	yes	no	no	no	no	no	no	no	no
8	MSU Line E5011	no	no	no	no	no	no	no	no	no	no	no	no
9	P.99600A2-4-93	no	no	no	no	no	no	no	no	nd	no	yes	no
10	P.0179A1-17	nd	no	no	no	no	t1RS.1BL	yes	no	no	yes	no	yes
11	P.011010A1-15	no	no	no	no	no	no	hetero	no	no	no	yes	yes
12	P.03112A1-7-3	no	no	no	no	no	t1RS.1BL	yes	no	no	no	yes	yes
13	KS980512-2-2	no	no	no	no	no	t1RS.1AL	no	no	no	no	yes	nd
14	KS05HW14-3	no	no	no	no	no	no	no	no	no	no	no	no
15	MO050143	no	no	no	no	no	no	no	no	no	no	no	no
16	MO050699	no	no	no	no	no	no	yes	no	no	no	no	no
17	MO050921	no	yes	no	no	no	no	hetero	no	no	no	no	no
18	MO050101	no	no	no	no	no	no	no	no	no	no	no	no
19	VA05W-425	no	no	yes?	?	no	no	no	no	nd	no	no	no
20	VA05W-775	yes	?	no	no	no	no	no	no	no	no	no	no
21	VA05W-777	no	?	no	no	no	no	no	no	no	no	no	no
22	VA05W-534	no	yes	no	no	no	t1RS.1AL	no	no	no	no	no	no
23	MD01W233-06-1	no	no	no	no	no	t1RS.1AL	no	no	no	no	no	no
24	MD01W233-06-16	no	no	no	no	yes	t1RS.1AL	no	no	no	no	no	no
25	MD99W483-06-11	no	no	no	no	no	no	yes	no	no	no	no	no
26	NYCalresel-L	no	no	no	no	no	no	no	no	no	no	no	no
27	NY94052-9340	no	no	no	no	no	no	no	no	no	no	no	no
28	NYW103-1-9100	no	no	no	no	no	no	no	no	no	no	no	no
29	NYW103-70-9232	no	no	no	no	no	no	no	no	no	no	no	no
30	NY93246SP-9070	no	no	no	no	yes	no	no	no	no	no	no	no
31	SE911492-4	no	no	no	no	yes	t1RS.1AL	no	no	no	no	no	no
32	SE89-1873-2	no	no	no	no	no	no	no	no	no	no	no	no
33	SE98-1089-34	no	no	no	no	no	no	no	no	no	no	no	no
34	SE93-1094-8	no	no	no	no	no	t1RS.1AL	no	no	no	no	no	no
35	NE05418	no	no	no	no	no	no	no	no	no	no	no	no
36	NE05549	no	no	no	no	yes	no	no	no	no	no	no	no
37	NE05537	no	no	no	no	yes	no	no	no	no	no	yes	no
38	NE03488	no	no	no	no	no	no	no	no	no	no	yes	no
39	NE01643	no	no	no	no	no	t1RS.1AL	no	no	no	no	no	no
40	KY00C-2059-16	no	no	no	no	no	no	no	no	no	no	no	no
41	KY00C-2143-08	no	no	no	no	no	t1RS.1BL	yes	no	no	no	no	no
42	KY00C-2755-03	no	no	no	no	no	no	no	no	no	yes	no	no
43	KY97C-0321-05-2	no	no	no	no	no	no	no	no	no	no	no	no
44	M04*5109	no	no	no	no	no	no	no	no	no	no	no	no
45	M04-4802	no	no	no	no	no	no	no	no	no	hetero	no	no
46	M03-3616-B11	no	no	no	no	no	no	no	no	no	nd	no	no
47	M03-3616-C10	no	no	no	no	no	both?	no	no	no	no	no	no
48	OH02-13567	no	yes	no	no	no	no	no	no	no	no	no	no
49	OH03-235-2	no	no	no	no	no	no	no	no	no	no	no	no
50	OH02-12678	no	no	no	yes?	no	t1RS.1AL	no	no	no	no	no	no
51	OH02-7217	no	yes	no	no	no	no	no	no	no	no	no	no
52	DH 22/8	no	no	no	no	no	no	no	no	no	nd	no	no
53	DH 22/24	no	no	no	no	no	no	no	no	no	no	no	no
54	DH 19/176B	no	no	no	no	no	no	no	no	no	no	no	no
55	DH F/SF, 23	no	no	no	no	no	no	no	no	no	yes	no	no
56	IL02-18228	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
57	IL02-19463	no	no	no	no	no	no	no	no	no	no	no	no
58	IL04-10118	no	no	no	no	no	t1RS.1AL	no	no	no	no	no	no
59	IL04-10721	no	no	no	no	no	no	no	no	no	no	no	no
60	IL04-10741	no	no	no	no	no	no	no	no	no	nd	no	no

Table 23. Mean incidence (INC, %) from the 2008 PNUWWSN.

ENTRY	NAME	AVG	ILURB	KYLEX	MIELA	MOCOL	ONRID	VABLA
1	ERNIE	24.2	39.0	21.9	16.3	21.3	26.7	20.0
2	TRUMAN	18.0	28.7	16.3	12.0	27.4	16.3	7.5
3	FREEDOM	34.0	47.4	19.7	37.1	45.6	29.0	25.0
4	PIONEER 2545	46.6	63.5	41.1	34.4	50.0	60.7	30.0
5	MSU Line E2043	39.1	58.3	43.4	31.1	24.2	55.3	22.5
6	MSU Line E6059	40.6	65.8	46.3	29.7	40.1	44.3	17.5
7	MSU Line E6042	30.2	44.3	10.6	49.8	21.2	22.7	32.5
8	MSU Line E6038	36.9	41.2	20.4	53.0	40.0	26.7	40.0
9	MSU Line E5024	37.1	55.7	44.7	20.1	38.0	44.3	20.0
10	P.992192A1-5-4-5-81	38.0	52.5	18.2	32.7	27.4	59.7	37.5
11	P.0172A1-12-1	17.4	23.6	15.4	9.7	14.4	29.0	12.5
12	P.0175A1-37-4	23.6	32.7	16.4	10.5	23.1	38.7	20.0
13	P.04281A1-4-5	34.3	34.7	22.6	18.9	55.3	44.3	30.0
14	P.04287A1-16	34.0	40.9	35.5	26.5	34.6	54.0	12.5
15	P.03630A1-18	27.3	34.9	8.7	14.8	33.9	38.7	32.5
16	MO050600	33.8	52.4	10.0	43.1	23.8	60.7	12.5
17	MO050261	31.2	39.5	21.2	19.7	36.5	55.3	15.0
18	MO051150	31.3	58.5	36.4	19.3	27.8	33.0	12.5
19	MO050617	37.9	65.9	21.2	31.8	49.4	29.0	30.0
20	MO041020	24.3	37.9	22.7	17.8	25.0	34.7	7.5
21	MO050917	35.2	59.6	32.0	20.8	32.3	38.7	27.5
22	VA06W-553	29.7	32.2	12.7	10.7	27.8	34.7	60.0
23	VA06W-558	25.4	27.7	17.5	21.6	21.6	16.3	47.5
24	VA06W-561	20.7	25.6	17.5	18.7	33.5	16.3	12.5
25	VA06W-615	36.8	35.5	22.4	23.7	39.6	44.3	55.0
26	VA06W-622	24.1	25.7	17.8	25.5	24.2	29.0	22.5
27	TRIBUTE	29.5	46.5	17.5	24.9	40.8	34.7	12.5
28	BDLS. HONEY-6	46.5	80.1	30.5	39.2	45.7	38.7	45.0
29	SE98 1083-14	27.6	41.2	15.3	25.0	38.8	33.0	12.5
30	SEKY93 C-1699-14	35.0	55.5	19.7	40.9	34.8	44.3	15.0
31	SE94 C-0480-2-2	40.6	65.6	25.2	31.6	41.6	44.3	35.0
32	SE98 1106-6	35.8	58.0	27.9	38.0	31.7	44.3	15.0
33	SE94-1012-25	45.7	74.2	19.3	50.9	44.8	59.7	25.0
34	KY02C-3005-25	18.2	18.4	14.0	7.6	26.3	33.0	10.0
35	KY02C-3005-44	25.7	27.7	20.1	13.3	33.3	49.7	10.0
36	KY02C-3008-05	22.3	26.5	22.1	9.1	28.6	40.0	7.5
37	KY02C-3004-04	24.6	36.3	24.9	16.6	33.3	29.0	7.5
38	KY01C-1542-07	51.8	87.1	35.9	50.0	47.0	66.0	25.0
39	KY99C-1205-06-1	36.1	58.3	18.4	42.3	40.5	44.3	12.5
40	M04-4566	45.0	75.2	43.0	47.9	42.0	44.3	17.5
41	M04-4715	41.5	73.6	8.8	28.6	44.3	38.7	55.0
42	M05-1172	33.1	52.9	21.2	26.5	49.7	33.0	15.0
43	M05*1589	31.1	45.4	15.5	28.1	33.1	34.7	30.0
44	M05-1531	24.5	34.7	12.7	13.4	33.0	33.0	20.0
45	OH04-213-39	40.6	59.6	55.5	44.9	36.3	34.7	12.5
46	OH04-264-58	38.3	49.4	28.7	32.1	39.1	40.3	40.0
47	OH04-268-39	39.2	63.1	22.9	40.2	28.8	50.0	30.0
48	OH04-176-29	34.0	66.9	16.0	28.6	44.3	12.5	.
49	OH03-41-45	35.3	59.1	16.6	37.0	30.1	38.7	30.0
50	DH ACF112103 -8T	35.7	40.3	49.0	18.3	46.5	50.0	10.0
51	RCUOGF110202D/4	31.1	38.1	21.5	16.9	23.3	44.3	42.5
52	RCUOGDHACF110902D	32.4	49.6	16.9	49.1	26.7	25.0	.
53	RCATTF174/1C	37.3	60.5	14.0	34.8	36.8	50.0	27.5
54	RCATTF203/2	37.6	50.6	21.1	48.8	33.3	44.3	27.5
55	RCATL31	38.4	66.4	24.4	45.2	16.8	55.3	22.5
56	IL01-34159	16.2	11.9	18.5	4.6	34.7	10.0	.
57	IL79-002T-B-B	26.3	37.6	17.6	12.6	21.1	29.0	40.0
58	IL04-7874	30.0	40.2	22.1	25.0	30.4	34.7	27.5
59	IL04-8445	30.5	33.4	21.1	24.1	45.0	44.3	15.0
60	IL04-17204	33.2	49.3	18.4	20.8	36.7	29.0	45.0
	AVERAGE	32.7	47.6	23.1	27.8	34.3	38.7	24.6
	MINIMUM	16.2	11.9	8.7	4.6	14.4	10.0	7.5
	MAXIMUM	51.8	87.1	55.5	53.0	55.3	66.0	60.0
	LSD(0.05)	12.3	.	.	.	.	.	.

Table 24. Mean field severity (SEV, %) from the 2008 PNUWWSN

ENTRY	NAME	AVG	ILURB	INLAF	KYLEX	MIELA	MOCOL	ONRID	VABLA
1	ERNIE	57.9 |	83.3	29.5	70.0	64.9	100.0	40.0	17.5
2	TRUMAN	58.4 |	71.7	30.2	85.0	44.3	100.0	60.0	17.5
3	FREEDOM	67.5	90.0	32.2	80.0	77.9	100.0	70.0	22.5
4	PIONEER 2545	85.8 h	100.0	90.7	75.0	94.8	100.0	80.0	60.0
5	MSU Line E2043	84.5 h	95.0	53.9	85.0	91.6	100.0	83.3	82.5
6	MSU Line E6059	85.5 h	93.3	53.5	95.0	91.5	100.0	80.0	85.0
7	MSU Line E6042	50.8 |	76.7	40.6	30.0	55.0	90.0	43.3	20.0
8	MSU Line E6038	63.3	90.0	65.6	45.0	80.1	100.0	50.0	12.5
9	MSU Line E5024	76.0 h	96.7	41.0	95.0	82.9	100.0	86.7	30.0
10	P.992192A1-5-4-5-81	79.6 h	96.7	74.4	70.0	93.1	100.0	83.3	40.0
11	P.0172A1-12-1	49.7 |	60.0	15.0	30.0	60.5	100.0	70.0	12.5
12	P.0175A1-37-4	63.3	90.0	7.0	60.0	83.3	100.0	80.0	22.5
13	P.04281A1-4-5	74.9 h	90.0	50.0	75.0	69.5	100.0	80.0	60.0
14	P.04287A1-16	66.5	100.0	22.0	55.0	78.5	100.0	80.0	30.0
15	P.03630A1-18	61.5 |	95.0	32.5	25.0	82.0	100.0	73.3	22.5
16	MO050600	60.6 |	73.3	80.0	30.0	50.9	90.0	80.0	20.0
17	MO050261	65.6	96.7	12.5	55.0	87.5	100.0	90.0	17.5
18	MO051150	75.0 h	91.7	56.3	95.0	80.9	100.0	73.3	27.5
19	MO050617	78.8 h	95.0	68.6	95.0	81.6	100.0	76.7	35.0
20	MO041020	66.7	88.3	29.4	90.0	58.5	100.0	83.3	17.5
21	MO050917	77.0 h	93.3	22.5	95.0	92.2	100.0	83.3	52.5
22	VA06W-553	65.1	90.0	28.5	65.0	79.9	100.0	80.0	12.5
23	VA06W-558	55.3 |	83.3	21.9	70.0	69.4	90.0	40.0	12.5
24	VA06W-561	59.7 |	91.7	23.0	50.0	73.1	100.0	60.0	20.0
25	VA06W-615	70.3 h	85.0	44.4	80.0	69.9	100.0	70.0	42.5
26	VA06W-622	70.6 h	95.0	61.0	60.0	92.6	90.0	73.3	22.5
27	TRIBUTE	63.9	83.3	67.5	55.0	62.0	100.0	66.7	12.5
28	BDLS. HONEY-6	75.5 h	100.0	41.5	90.0	85.3	100.0	76.7	35.0
29	SE98 1083-14	64.8	76.7	57.1	40.0	87.9	100.0	76.7	15.0
30	SEKY93 C-1699-14	70.9 h	90.0	84.4	50.0	76.0	100.0	73.3	22.5
31	SE94 C-0480-2-2	73.4 h	98.3	50.5	70.0	85.8	100.0	76.7	32.5
32	SE98 1106-6	71.1 h	88.3	48.0	65.0	90.7	90.0	83.3	32.5
33	SE94-1012-25	72.8 h	100.0	54.5	50.0	92.4	100.0	80.0	32.5
34	KY02C-3005-25	52.0 |	36.7	7.5	95.0	39.5	100.0	70.0	15.0
35	KY02C-3005-44	64.6	85.0	13.0	70.0	76.7	100.0	80.0	27.5
36	KY02C-3008-05	68.4	85.0	16.7	80.0	86.0	100.0	83.3	27.5
37	KY02C-3004-04	63.6	63.3	50.6	65.0	68.3	100.0	73.3	25.0
38	KY01C-1542-07	82.4 h	100.0	100.0	60.0	88.4	100.0	83.3	45.0
39	KY99C-1205-06-1	75.0 h	100.0	68.8	55.0	91.3	100.0	80.0	30.0
40	M04-4566	74.9 h	95.0	66.1	85.0	91.3	100.0	66.7	20.0
41	M04-4715	70.1 h	96.7	81.5	35.0	72.0	100.0	73.3	32.5
42	M05-1172	72.1 h	91.7	52.5	80.0	91.4	100.0	66.7	22.5
43	M05*1589	67.6	96.7	29.0	55.0	84.7	100.0	80.0	27.5
44	M05-1531	64.4	81.7	29.3	90.0	55.8	100.0	76.7	17.5
45	OH04-213-39	73.2 h	88.3	55.0	90.0	71.5	100.0	80.0	27.5
46	OH04-264-58	77.0 h	96.7	39.5	95.0	87.9	100.0	80.0	40.0
47	OH04-268-39	83.9 h	93.3	79.4	90.0	67.1	100.0	90.0	67.5
48	OH04-176-29	69.3	86.7	59.0	75.0	76.0	76.7	12.5	.
49	OH03-41-45	67.6	90.0	83.9	40.0	74.3	90.0	70.0	25.0
50	DH ACF112103 -8T	73.8 h	88.3	35.6	95.0	61.3	100.0	86.7	50.0
51	RCUOGF110202D/4	59.5 |	88.3	32.5	60.0	39.2	100.0	76.7	20.0
52	RCUOGDHACF110902D	58.3 |	70.0	61.0	45.0	100.0	40.0	27.5	.
53	RCATTF174/1C	74.0 h	93.3	28.0	75.0	82.8	100.0	76.7	62.5
54	RCATTF203/2	83.3 h	95.0	74.0	90.0	78.2	100.0	73.3	72.5
55	RCATL31	71.0 h	85.0	93.5	40.0	73.8	80.0	70.0	55.0
56	IL01-34159	45.9 |	33.3	20.7	85.0	15.7	73.3	17.5	.
57	IL79-002T-B-B	60.2 |	80.0	28.1	60.0	71.6	100.0	66.7	15.0
58	IL04-7874	65.9	73.3	50.0	65.0	65.7	100.0	70.0	37.5
59	IL04-8445	59.8 |	83.3	33.0	40.0	74.2	100.0	73.3	15.0
60	IL04-17204	60.4 |	80.0	52.5	55.0	55.5	100.0	60.0	20.0
	AVERAGE	68.3	86.7	47.2	67.5	75.1	96.8	71.1	31.5
	MINIMUM	45.9	33.3	7.0	25.0	15.7	40.0	12.5	12.5
	MAXIMUM	85.8	100.0	100.0	95.0	100.0	100.0	90.0	85.0
	LSD(0.05)	15.6	.	.	.	.	.	.	.

Table 26. Mean Fusarium damaged kernels (FDK, %) from the 2008 PNUWWSN

ENTRY	NAME	AVG	ILURB	KYLEX	MOCOL	ROMAN
1	ERNIE	25.5 l	30.0	7.6	25.0	39.4
2	TRUMAN	25.1 l	18.0	12.2	25.0	45.3
3	FREEDOM	43.1 h	53.0	10.8	80.0	28.7
4	PIONEER 2545	57.9 h	80.0	25.9	60.0	65.7
5	MSU Line E2043	62.0 h	73.0	22.1	97.0	55.8
6	MSU Line E6059	47.8 h	60.0	16.5	75.0	39.6
7	MSU Line E6042	14.2 l	17.0	8.5	20.0	11.2
8	MSU Line E6038	29.0 l	50.0	11.6	25.0	29.3
9	MSU Line E5024	27.1 l	47.0	16.0	25.0	20.6
10	P.992192A1-5-4-5-81	48.4 h	57.0	21.1	80.0	35.4
11	P.0172A1-12-1	18.7 l	13.0	6.4	20.0	35.3
12	P.0175A1-37-4	27.7 l	25.0	13.0	50.0	22.9
13	P.04281A1-4-5	43.4 h	37.0	30.4	60.0	46.4
14	P.04287A1-16	48.3 h	30.0	36.6	80.0	46.4
15	P.03630A1-18	32.6 l	40.0	7.5	50.0	33.0
16	MO050600	43.3 h	27.0	10.0	80.0	56.3
17	MO050261	37.6	30.0	17.9	75.0	27.7
18	MO051150	42.5 h	40.0	11.6	80.0	38.2
19	MO050617	36.1	47.0	12.0	40.0	45.3
20	MO041020	28.5 l	30.0	10.4	30.0	43.5
21	MO050917	39.6	40.0	10.3	60.0	48.0
22	VA06W-553	21.5 l	18.0	6.6	40.0	21.4
23	VA06W-558	25.2 l	22.0	7.0	30.0	42.0
24	VA06W-561	33.8 l	28.0	9.9	80.0	17.4
25	VA06W-615	30.9 l	25.0	18.0	50.0	30.5
26	VA06W-622	44.9 h	43.0	11.1	80.0	45.4
27	TRIBUTE	42.1	33.0	25.0	50.0	60.4
28	BDLS. HONEY-6	42.8 h	63.0	7.3	60.0	40.9
29	SE98 1083-14	31.9 l	28.0	10.6	60.0	29.2
30	SEKY93 C-1699-14	38.8	53.0	17.1	25.0	60.3
31	SE94 C-0480-2-2	44.1 h	72.0	12.5	60.0	31.8
32	SE98 1106-6	21.1 l	32.0	15.0	25.0	12.2
33	SE94-1012-25	50.0 h	75.0	6.3	80.0	38.9
34	KY02C-3005-25	27.2 l	7.0	11.9	60.0	30.0
35	KY02C-3005-44	33.5 l	37.0	10.5	60.0	26.6
36	KY02C-3008-05	37.8	37.0	7.1	80.0	27.2
37	KY02C-3004-04	23.5 l	17.0	16.7	40.0	20.3
38	KY01C-1542-07	47.0 h	63.0	11.1	60.0	53.9
39	KY99C-1205-06-1	53.3 h	57.0	29.6	80.0	46.5
40	M04-4566	53.1 h	73.0	18.9	60.0	60.7
41	M04-4715	44.5 h	67.0	19.4	40.0	51.6
42	M05-1172	42.3 h	57.0	12.2	60.0	40.2
43	M05*1589	26.8 l	33.0	13.1	25.0	36.2
44	M05-1531	42.3 h	35.0	19.1	75.0	40.0
45	OH04-213-39	55.3 h	60.0	19.6	90.0	51.7
46	OH04-264-58	52.2 h	63.0	6.9	95.0	43.9
47	OH04-268-39	53.5 h	57.0	4.2	95.0	57.9
48	OH04-176-29	27.9 l	27.0	12.3	25.5	.
49	OH03-41-45	45.0 h	37.0	12.4	60.0	70.4
50	DH ACF112103 -8T	48.6 h	33.0	17.6	90.0	54.0
51	RCUOGF110202D/4	29.5 l	47.0	11.8	25.0	34.1
52	RCUOGDHACF110902D	48.3 h	47.0	11.7	95.0	39.4
53	RCATTF174/1C	45.9 h	40.0	14.0	80.0	49.8
54	RCATTF203/2	27.2 l	40.0	6.5	45.0	17.4
55	RCATL31	36.6	43.0	8.2	50.0	45.3
56	IL01-34159	20.9 l	4.0	9.2	30.5	.
57	IL79-002T-B-B	33.1 l	17.0	12.1	50.0	53.2
58	IL04-7874	29.5 l	33.0	12.1	40.0	32.8
59	IL04-8445	30.3 l	33.0	13.0	40.0	35.0
60	IL04-17204	25.7 l	23.0	12.7	25.0	42.0
	AVERAGE	37.4	40.4	13.6	55.9	39.7
	MINIMUM	14.2	4.0	4.2	20.0	11.2
	MAXIMUM	62.0	80.0	36.6	97.0	70.4
	LSD(0.05)	19.8	.	.	.	.

Table 27. Mean Incidence/Severity/Kernel rating (ISK, %) from the 2008 PNUWWSN

ENTRY	NAME	AVG	ILURB	KYLEX	MOCOL	ROMAN
1	ERNIE	41.7	48.7	30.6	46.4	40.9
2	TRUMAN	42.4	37.5	35.3	48.2	48.7
3	FREEDOM	49.2 h	62.5	34.2	75.7	24.3
4	PIONEER 2545	62.7 h	81.1	45.2	69.0	55.3
5	MSU Line E2043	60.0 h	75.3	47.4	76.1	41.2
6	MSU Line E6059	56.9 h	71.7	49.0	72.0	34.8
7	MSU Line E6042	34.7 l	43.0	15.6	41.4	39.0
8	MSU Line E6038	44.6	59.4	24.3	52.0	42.6
9	MSU Line E5024	47.3	64.4	48.3	51.4	25.2
10	P.992192A1-5-4-5-81	55.8 h	67.4	34.9	70.2	50.6
11	P.0172A1-12-1	27.4 l	30.4	16.2	42.3	20.8
12	P.0175A1-37-4	36.9 l	46.8	28.1	56.9	15.8
13	P.04281A1-4-5	51.3 h	52.1	41.5	70.6	40.8
14	P.04287A1-16	51.3 h	54.3	41.8	72.4	36.8
15	P.03630A1-18	38.8 l	55.0	13.1	60.2	27.0
16	MO050600	44.9	48.4	16.0	66.1	48.9
17	MO050261	43.8	52.9	30.0	71.0	21.3
18	MO051150	52.3 h	61.0	44.1	70.4	33.5
19	MO050617	53.1 h	66.9	39.6	60.8	45.0
20	MO041020	43.5	49.9	38.0	49.5	36.4
21	MO050917	51.4 h	61.9	42.2	63.7	37.6
22	VA06W-553	36.5 l	44.0	26.0	54.4	21.6
23	VA06W-558	38.0 l	42.0	29.1	45.5	35.5
24	VA06W-561	43.0	46.5	24.2	72.1	29.0
25	VA06W-615	42.9	46.1	37.9	61.9	25.6
26	VA06W-622	50.2 h	53.5	27.8	66.3	53.3
27	TRIBUTE	49.8 h	52.3	31.8	62.3	52.7
28	BDLS. HONEY-6	59.9 h	79.4	39.1	67.7	53.3
29	SE98 1083-14	41.1 l	46.7	20.8	65.6	31.1
30	SEKY93 C-1699-14	48.1	65.0	27.7	50.4	49.3
31	SE94 C-0480-2-2	53.7 h	77.8	33.6	66.5	36.9
32	SE98 1106-6	39.9 l	56.6	33.8	46.5	22.6
33	SE94-1012-25	54.8 h	82.3	23.3	75.4	38.2
34	KY02C-3005-25	34.6 l	19.2	37.5	61.9	19.8
35	KY02C-3005-44	40.1 l	48.5	31.2	64.0	16.7
36	KY02C-3008-05	41.9	48.1	33.5	70.6	15.2
37	KY02C-3004-04	36.1 l	36.6	33.6	56.0	18.3
38	KY01C-1542-07	59.6 h	81.5	33.2	68.1	55.5
39	KY99C-1205-06-1	57.2 h	70.2	33.9	74.2	50.3
40	M04-4566	59.6 h	80.4	46.0	66.6	45.5
41	M04-4715	53.7 h	77.8	20.9	59.3	56.9
42	M05-1172	50.3 h	66.0	35.3	68.9	30.8
43	M05*1589	43.1	56.0	26.4	49.9	40.0
44	M05-1531	53.8 h	48.9	38.5	69.9	57.8
45	OH04-213-39	62.5 h	68.4	51.5	76.9	53.1
46	OH04-264-58	58.6 h	69.2	39.9	79.7	45.6
47	OH04-268-39	57.8 h	69.6	35.5	76.7	49.3
48	OH04-176-29	47.7	56.7	32.2	39.3	.
49	OH03-41-45	54.1 h	59.4	21.9	60.0	75.1
50	DH ACF112103 -8T	57.7 h	51.9	50.2	80.0	48.7
51	RCUOGF110202D/4	44.9	56.6	29.2	47.0	46.9
52	RCUOGDHACF110902D	52.0 h	54.6	23.2	82.7	47.3
53	RCATTF174/1C	52.2 h	62.2	32.3	73.0	41.2
54	RCATTF203/2	44.7	59.7	35.9	58.0	25.2
55	RCATL31	48.4	62.7	22.6	49.0	59.1
56	IL01-34159	27.7 l	15.3	34.8	18.1	.
57	IL79-002T-B-B	41.2 l	41.9	28.1	56.3	38.3
58	IL04-7874	41.1 l	47.4	31.0	55.1	30.9
59	IL04-8445	41.0 l	48.4	23.5	59.5	32.6
60	IL04-17204	39.8 l	48.1	27.1	51.0	33.1
	AVERAGE	47.5	56.5	32.7	61.5	38.8
	MINIMUM	27.4	15.3	13.1	18.1	15.2
	MAXIMUM	62.7	82.3	51.5	82.7	75.1
	LSD(0.05)	14.0	.	.	.	.

Table 28. Mean deoxynivalenol content of grain (DON, ppm) from the 2008 PNUWWSN

ENTRY	NAME	AVG	ILURB	INLAF	KYLEX	VABLA
1	ERNIE	11.5	15.1	13.3	16.0	1.5
2	TRUMAN	10.6	11.2	12.3	13.9	5.1
3	FREEDOM	9.5 l	17.7	5.6	11.8	2.9
4	PIONEER 2545	21.7 h	36.6	8.4	28.1	13.7
5	MSU Line E2043	22.9 h	26.0	14.1	17.4	34.2
6	MSU Line E6059	27.5 h	26.8	4.4	26.8	52.0
7	MSU Line E6042	9.3 l	11.9	8.4	10.7	6.2
8	MSU Line E6038	11.9	17.2	11.8	11.3	7.2
9	MSU Line E5024	16.6	21.7	10.1	27.6	6.9
10	P.992192A1-5-4-5-81	11.9	24.3	5.2	13.6	4.4
11	P.0172A1-12-1	4.1 l	7.9	1.5	5.0	1.9
12	P.0175A1-37-4	7.0 l	13.0	1.1	10.5	3.6
13	P.04281A1-4-5	12.5	14.9	11.0	17.7	6.5
14	P.04287A1-16	11.4	14.9	2.0	22.8	6.1
15	P.03630A1-18	5.7 l	8.6	1.1	10.8	2.3
16	MO050600	4.7 l	6.8	3.4	6.8	1.7
17	MO050261	9.1 l	14.6	2.7	16.8	2.3
18	MO051150	8.9 l	14.5	5.0	12.2	4.0
19	MO050617	10.6	18.4	7.7	12.4	4.1
20	MO041020	9.3 l	15.3	2.0	15.1	4.7
21	MO050917	10.5	20.3	2.9	7.6	11.2
22	VA06W-553	4.6 l	6.1	1.2	9.8	1.3
23	VA06W-558	4.5 l	7.4	3.5	6.3	0.7
24	VA06W-561	6.4 l	9.9	3.5	8.6	3.7
25	VA06W-615	5.8 l	7.2	6.6	7.9	1.4
26	VA06W-622	15.5	18.0	25.4	16.5	2.0
27	TRIBUTE	8.5 l	15.5	8.6	8.2	1.7
28	BDLS. HONEY-6	10.8	22.7	5.9	11.3	3.4
29	SE98 1083-14	8.2 l	11.0	12.8	7.8	1.2
30	SEKY93 C-1699-14	11.7	18.5	15.8	9.9	2.5
31	SE94 C-0480-2-2	10.9	24.7	3.7	12.1	3.1
32	SE98 1106-6	10.5	17.9	11.3	8.3	4.6
33	SE94-1012-25	11.6	24.1	7.6	9.7	5.2
34	KY02C-3005-25	3.4 l	2.6	0.9	7.0	3.3
35	KY02C-3005-44	12.6	22.7	0.7	22.0	5.0
36	KY02C-3008-05	12.7	22.5	2.5	22.9	3.1
37	KY02C-3004-04	3.9 l	5.6	2.3	6.0	1.9
38	KY01C-1542-07	18.7	40.9	14.4	12.2	7.3
39	KY99C-1205-06-1	13.2	21.3	14.2	11.6	5.6
40	M04-4566	13.6	22.8	11.3	15.4	4.8
41	M04-4715	13.9	28.0	14.4	11.6	1.5
42	M05-1172	10.8	23.8	3.7	13.1	2.8
43	M05*1589	10.2 l	19.1	2.6	13.3	5.7
44	M05-1531	8.8 l	14.8	4.5	14.0	1.8
45	OH04-213-39	9.6 l	17.7	8.3	9.1	3.2
46	OH04-264-58	14.2	26.5	5.1	20.3	5.0
47	OH04-268-39	12.8	22.6	5.6	14.3	8.8
48	OH04-176-29	5.7 l	12.7	4.3	4.2	1.8
49	OH03-41-45	10.1 l	17.2	9.4	11.5	2.3
50	DH ACF112103 -8T	10.2 l	15.4	5.6	10.6	9.3
51	RCUOGF110202D/4	12.4	20.1	5.9	19.1	4.4
52	RCUOGDHACF110902D	10.7	22.0	5.3	9.7	5.8
53	RCATTF174/1C	15.3	24.1	3.9	11.0	22.2
54	RCATTF203/2	16.7	25.9	4.4	13.2	23.3
55	RCATL31	17.0	30.1	14.5	8.3	15.3
56	IL01-34159	2.3 l	2.1	1.6	4.2	1.3
57	IL79-002T-B-B	5.2 l	8.0	1.8	9.0	2.0
58	IL04-7874	7.4 l	11.8	4.5	9.9	3.3
59	IL04-8445	6.7 l	11.8	4.1	8.7	2.2
60	IL04-17204	9.2 l	13.5	9.7	12.2	1.5
	AVERAGE	10.7	17.4	6.8	12.6	6.1
	MINIMUM	2.3	2.1	0.7	4.2	0.7
	MAXIMUM	27.5	40.9	25.4	28.1	52.0
	LSD(0.05)	7.9	.	.	.	.

Table 29. Mean greenhouse severity (GH, %) from the 2008 PNUWWSN

	NAME	AVG
1	ERNIE	10.5
2	TRUMAN	6.4
3	FREEDOM	12.5
4	PIONEER 2545	98.8
5	MSU Line E2043	10.5
6	MSU Line E6059	24.8
7	MSU Line E6042	49.7
8	MSU Line E6038	48.5
9	MSU Line E5024	26.7
10	P.992192A1-5-4-5-81	22.3
11	P.0172A1-12-1	13.3
12	P.0175A1-37-4	4.5
13	P.04281A1-4-5	6.6
14	P.04287A1-16	30.5
15	P.03630A1-18	4.0
16	MO050600	8.0
17	MO050261	7.5
18	MO051150	20.3
19	MO050617	16.3
20	MO041020	4.0
21	MO050917	5.8
22	VA06W-553	5.3
23	VA06W-558	43.5
24	VA06W-561	28.8
25	VA06W-615	12.7
26	VA06W-622	25.2
27	TRIBUTE	30.0
28	BDLS. HONEY-6	60.7
29	SE98 1083-14	7.8
30	SEKY93 C-1699-14	70.3
31	SE94 C-0480-2-2	65.3
32	SE98 1106-6	6.3
33	SE94-1012-25	72.0
34	KY02C-3005-25	4.0
35	KY02C-3005-44	4.0
36	KY02C-3008-05	3.0
37	KY02C-3004-04	7.7
38	KY01C-1542-07	44.3
39	KY99C-1205-06-1	28.5
40	M04-4566	65.5
41	M04-4715	76.3
42	M05-1172	29.8
43	M05*1589	21.5
44	M05-1531	22.7
45	OH04-213-39	36.5
46	OH04-264-58	23.8
47	OH04-268-39	53.3
48	OH04-176-29	29.2
49	OH03-41-45	24.5
50	DH ACF112103 -8T	7.2
51	RCUOGF110202D/4	7.0
52	RCUOGDHACF110902D	4.5
53	RCATTF174/1C	4.0
54	RCATTF203/2	11.0
55	RCATL31	61.2
56	IL01-34159	3.7
57	IL79-002T-B-B	4.5
58	IL04-7874	19.8
59	IL04-8445	28.2
60	IL04-17204	30.5
	AVERAGE	25.3
	MIN	3.0
	MAX	98.8

Table 31. Mean plant height (HGT, inches) from the 2008 PNUWWSN

ENTRY	NAME	AVG	KYLEX	MIELA
1	ERNIE	29.5 |	31.5	27.5
2	TRUMAN	35.1	38.0	32.1
3	FREEDOM	34.0	36.0	32.0
4	PIONEER 2545	32.7	35.5	29.9
5	MSU Line E2043	36.8	40.5	33.1
6	MSU Line E6059	34.0	38.5	29.5
7	MSU Line E6042	37.4	42.0	32.8
8	MSU Line E6038	37.3	39.5	35.1
9	MSU Line E5024	33.2	37.0	29.3
10	P.992192A1-5-4-5-81	29.4 |	32.5	26.2
11	P.0172A1-12-1	32.2	37.0	27.3
12	P.0175A1-37-4	30.3 |	34.5	26.0
13	P.04281A1-4-5	31.7	36.0	27.3
14	P.04287A1-16	31.3 |	35.5	27.1
15	P.03630A1-18	32.2	33.5	30.9
16	MO050600	37.3	41.0	33.6
17	MO050261	32.9	35.5	30.3
18	MO051150	34.9	39.5	30.2
19	MO050617	35.0	38.5	31.5
20	MO041020	37.2	40.5	33.8
21	MO050917	35.8	39.5	32.0
22	VA06W-553	31.5 |	33.0	30.0
23	VA06W-558	33.6	37.5	29.6
24	VA06W-561	34.2	36.0	32.3
25	VA06W-615	30.6 |	32.5	28.6
26	VA06W-622	28.4 |	29.0	27.7
27	TRIBUTE	30.1 |	32.5	27.6
28	BDLS. HONEY-6	33.9	37.0	30.8
29	SE98 1083-14	34.7	38.0	31.4
30	SEKY93 C-1699-14	35.6	39.5	31.6
31	SE94 C-0480-2-2	31.0 |	32.5	29.5
32	SE98 1106-6	33.5	35.0	31.9
33	SE94-1012-25	34.4	37.0	31.7
34	KY02C-3005-25	31.9	35.0	28.8
35	KY02C-3005-44	30.5 |	33.0	28.0
36	KY02C-3008-05	32.1	34.5	29.7
37	KY02C-3004-04	32.5	35.5	29.5
38	KY01C-1542-07	33.1	36.0	30.2
39	KY99C-1205-06-1	35.4	38.5	32.3
40	M04-4566	34.2	37.0	31.3
41	M04-4715	31.8	33.5	30.1
42	M05-1172	32.8	34.5	31.0
43	M05*1589	33.6	36.0	31.1
44	M05-1531	32.6	34.5	30.7
45	OH04-213-39	35.3	38.5	32.1
46	OH04-264-58	31.3 |	33.5	29.1
47	OH04-268-39	36.5	40.0	33.0
48	OH04-176-29	35.2	37.0	33.4
49	OH03-41-45	35.9	41.0	30.8
50	DH ACF112103 -8T	33.2	36.5	29.9
51	RCUOGF110202D/4	34.4	39.0	29.8
52	RCUOGDHACF110902D	35.0	37.5	32.4
53	RCATTF174/1C	42.2 h	48.0	36.4
54	RCATTF203/2	41.3 h	47.0	35.6
55	RCATL31	39.8 h	43.5	36.1
56	IL01-34159	31.3 |	34.0	28.5
57	IL79-002T-B-B	32.8	35.0	30.5
58	IL04-7874	34.4	36.0	32.8
59	IL04-8445	30.3 |	33.0	27.6
60	IL04-17204	30.5 |	33.0	27.9
	AVERAGE	33.7	36.7	30.6
	MINIMUM	28.4	29.0	26.0
	MAXIMUM	42.2	48.0	36.4
	LSD(0.05)	3.2		

Table 32. Means for other traits for the 2008 PNUWWSN as reported by cooperators.

ENTRY	NAME	ILURB	VABLA	VABLA	VABLA	VABLA	ROMAN
		WINTER SURVIVAL (%)	BYDV 0-9	SGB 0-9	LR 0-9	PM 0-9	FHB AUDPC
1	ERNIE	32	2.5	3.0	0.5	6.0	567
2	TRUMAN	87	1.0	1.0	5.5	7.5	699
3	FREEDOM	100	2.5	2.5	2.0	2.5	207
4	PIONEER 2545	100	1.5	2.5	5.5	4.0	453
5	MSU Line E2043	70	4.5	0.5	5.5	1.5	378
6	MSU Line E6059	100	2.0	5.0	5.5	7.0	358
7	MSU Line E6042	33	1.5	5.5	1.5	7.5	467
8	MSU Line E6038	2	1.5	4.5	4.0	8.5	473
9	MSU Line E5024	100	1.0	0.5	6.0	1.0	328
10	P.992192A1-5-4-5-81	100	1.0	2.5	8.5	2.0	530
11	P.0172A1-12-1	75	3.0	2.0	3.0	7.5	167
12	P.0175A1-37-4	87	1.5	4.5	3.5	6.0	154
13	P.04281A1-4-5	93	0.5	3.5	1.5	7.5	427
14	P.04287A1-16	68	1.0	3.0	0.0	3.0	324
15	P.03630A1-18	100	2.0	3.5	1.5	4.0	290
16	MO050600	70	1.0	0.0	0.0	1.0	487
17	MO050261	100	0.5	2.0	5.5	3.0	202
18	MO051150	100	0.5	2.5	0.0	5.5	297
19	MO050617	87	0.5	1.5	3.5	4.0	405
20	MO041020	100	1.0	5.0	3.5	4.0	339
21	MO050917	93	3.0	0.5	7.5	1.5	367
22	VA06W-553	73	0.5	3.5	4.5	0.5	223
23	VA06W-558	93	1.5	1.5	0.5	2.5	322
24	VA06W-561	77	0.5	3.0	2.0	3.5	380
25	VA06W-615	93	0.0	1.0	5.0	4.5	288
26	VA06W-622	100	1.0	2.5	1.5	2.0	971
27	TRIBUTE	100	1.0	0.0	0.5	2.5	522
28	BDLS. HONEY-6	100	1.5	2.5	6.5	5.0	490
29	SE98 1083-14	100	0.0	2.5	5.0	6.0	265
30	SEKY93 C-1699-14	100	4.0	2.0	8.0	7.0	429
31	SE94 C-0480-2-2	77	2.0	3.5	4.0	4.5	464
32	SE98 1106-6	100	1.5	4.5	4.5	0.5	324
33	SE94-1012-25	100	2.5	1.5	6.5	6.0	434
34	KY02C-3005-25	93	4.0	0.5	1.0	6.5	169
35	KY02C-3005-44	100	1.5	0.0	2.5	8.0	133
36	KY02C-3008-05	100	2.5	1.5	1.5	8.0	114
37	KY02C-3004-04	83	3.5	2.5	1.5	2.5	194
38	KY01C-1542-07	77	1.0	4.5	3.5	2.0	549
39	KY99C-1205-06-1	100	1.0	2.5	3.5	1.5	484
40	M04-4566	93	3.0	1.0	5.5	0.0	349
41	M04-4715	100	2.5	2.0	4.5	4.0	668
42	M05-1172	100	0.5	0.5	6.0	7.5	232
43	M05*1589	100	1.0	2.5	3.0	6.0	506
44	M05-1531	93	2.5	0.5	3.0	7.5	701
45	OH04-213-39	100	1.5	2.0	2.0	2.0	573
46	OH04-264-58	100	2.0	7.0	0.5	7.5	413
47	OH04-268-39	100	1.5	3.0	0.5	0.0	535
48	OH04-176-29	80	0.5	1.0	6.0	7.0	435
49	OH03-41-45	100	2.5	2.0	0.0	5.5	796
50	DH ACF112103 -8T	100	3.0	2.0	5.0	0.5	555
51	RCUOGF110202D/4	100	4.5	2.5	4.5	2.5	401
52	RCUOGDHACF1109O2D	100	5.0	2.5	1.5	0.0	724
53	RCATTF174/1C	100	1.5	1.0	7.0	8.0	389
54	RCATTF203/2	100	4.0	2.5	7.5	7.5	348
55	RCATL31	100	4.0	2.5	6.5	6.5	724
56	IL01-34159	100	2.5	1.5	1.5	7.0	152
57	IL79-002T-B-B	100	2.0	1.5	0.5	6.0	246
58	IL04-7874	100	0.5	0.5	4.5	5.0	346
59	IL04-8445	100	1.5	0.0	1.0	3.5	380
60	IL04-17204	100	2.0	2.5	3.0	3.0	345
	AVERAGE	91	1.9	2.3	3.5	4.4	408
	MINIMUM	2	0.0	0.0	0.0	0.0	114
	MAXIMUM	100	5.0	7.0	8.5	8.5	971

Table 33. Presence (yes) or absence (no) of genes in the entries of the 2008 PNUWWSN based on marker analyses performed by the USDA Small Grains Genotyping Lab and provided by Gina Brown-Guedira. Band size data is available from Dr. Brown-Guedira.

ENTRY	NAME	FHB1	FHB QTL from 3BS cent.	FHB3 QTL from Wuhan1	FHB QTL from 5AS Asian sources	Sr24	1RS	Sr36	H13	H9	Bx7 over- expressio n allele	Yr17/ Lr37/ Sr38	Bvd2/ Bvd3
1	ERNIE	no	yes	no	no	no	no	yes	no	no	no	no	no
2	TRUMAN	no	no	no	no	no	no	no	no	no	no	no	no
3	FREEDOM	no	yes	no	no	no	t1RS.1BL	hetero	no	no	no	no	no
4	PIONEER 2545	no	no	no	no	no	no	no	no	nd	no	no	no
5	MSU Line E2043	no	no	no	no	no	no	no	no	no	no	no	no
6	MSU Line E6059	no	no	no	no	no	no	no	no	no	nd	no	no
7	MSU Line E6042	no	no	yes?	no	no	no	no	no	no	nd	no	no
8	MSU Line E6038	no	no	yes?	no	no	no	no	no	no	no	no	no
9	MSU Line E5024	no	no	no	no	yes	t1RS.1BL	no	no	no	no	no	no
10	P.992192A1-5-4-5-81	no	no	no	no	no	t1RS.1BL	no	no	no	no	no	no
11	P.0172A1-12-1	no	no	no	no	no	no	no	no	no	no	no	no
12	P.0175A1-37-4	no	no	no	?	no	t1RS.1BL	yes	no	no	yes	no	no
13	P.04281A1-4-5	no	yes	no	no	no	no	yes	no	no	no	no	yes
14	P.04287A1-16	no	no	no	no	no	t1RS.1BL	yes	no	no	no	no	yes
15	P.03630A1-18	hetero	no	no	no	no	t1RS.1BL	no	no	no	nd	no	no
16	MO050600	no	no	no	no	no	no	no	no	no	no	no	no
17	MO050261	no	no	no	no	no	no	no	no	no	no	no	no
18	MO051150	no	no	no	no	no	no	no	no	no	no	no	no
19	MO050617	no	no	no	no	no	no	no	no	no	no	no	no
20	MO041020	no	no	no	no	no	no	no	no	no	no	no	no
21	MO050917	no	no	no	no	no	no	no	no	no	no	no	no
22	VA06W-553	no	no	yes?	hetero	no	no	no	no	no	no	yes	no
23	VA06W-558	no	no	no	no	no	t1RS.1AL	no	no	no	no	no	no
24	VA06W-561	no	no	no	no	no	no	no	no	no	no	no	no
25	VA06W-615	no	no	no	no	no	no	yes	no	no	nd	no	no
26	VA06W-622	no	no	no	no	no	no	yes	no	no	no	no	no
27	TRIBUTE	nd	nd	nd	nd	no	no	no	no	no	no	no	nd
28	BDLS. HONEY-6	no	no	no	no	no	no	no	no	no	no	no	no
29	SE98 1083-14	no	no	no	no	no	no	no	no	no	no	no	nd
30	SEKY93 C-1699-14	no	no	no	no	no	t1RS.1BL	no	no	no	no	no	no
31	SE94 C-0480-2-2	no	no	no	no	no	no	yes	no	no	no	no	no
32	SE98 1106-6	no	no	no	no	no	no	no	no	no	no	no	no
33	SE94-1012-25	no	no	no	no	no	t1RS.1BL	no	no	no	no	no	no
34	KY02C-3005-25	yes	no	no	no	yes	t1RS.1AL	no	no	no	no	no	no
35	KY02C-3005-44	yes	no	no	no	no	t1RS.1BL	no	no	no	no	no	no
36	KY02C-3008-05	yes	no	no	no	no	t1RS.1BL	no	no	no	no	no	no
37	KY02C-3004-04	hetero	no	no	no	no	t1RS.1BL	no	no	no	no	no	no
38	KY01C-1542-07	no	no	no	no	no	no	no	no	no	nd	no	no
39	KY99C-1205-06-1	no	no	no	no	no	no	yes	no	no	no	no	no
40	M04-4566	no	no	no	no	no	t1RS.1BL	no	no	no	no	no	no
41	M04-4715	no	yes	no	no	no	t1RS.1BL	no	no	no	yes	no	no
42	M05-1172	no	yes	no	no	no	no	no	no	no	yes	no	no
43	M05*1589	no	?	no	no	no	no	no	no	no	no	no	no
44	M05-1531	nd	yes?	no	no	no	t1RS.1BL	no	no	no	no	no	no
45	OH04-213-39	no	no	no	no	no	no	no	no	no	no	no	no
46	OH04-264-58	nd	no	no	no	no	no	no	no	no	yes	no	no
47	OH04-268-39	no	no	no	no	no	no	no	no	no	no	no	no
48	OH04-176-29	no	no	no	no	nd	no	no	no	no	no	no	no
49	OH03-41-45	no	no	no	no	no	t1RS.1AL	no	no	no	no	no	no
50	DH ACF112103 -8T	no	no	no	no	no	t1RS.1AL	no	no	nd	no	no	no
51	RCUOGF110202D/4	no	no	no	no	no	both?	yes	no	no	no	no	no
52	RCUOGDHACF110902												
53	D	no	no	no	no	no	both?	no	no	no	no	no	no
54	RCATTF174/1C	no	no	no	no	no	no	no	no	no	no	no	no
55	RCATTF203/2	no	no	no	no	no	no	no	no	no	no	no	no
56	RCATL31	no	no	no	no	no	no	no	no	no	hetero	no	no
57	IL01-34159	yes	yes	no	no	no	no	no	no	no	no	no	no
58	IL79-002T-B-B	no	no	no	no	no	no	no	no	no	no	no	no
59	IL04-7874	no	yes	no	no	no	no	no	no	nd	no	no	no
60	IL04-8445	no	no	no	no	no	no	no	no	no	no	no	no
61	IL04-17204	no	no	no	no	no	no	yes	no	no	no	no	no