Stripe Rust (*Puccinia striiformis, F. sp. tritici*) Data – 2007 Winter Wheat Nurseries

The attached data was provided by Dr. Xianming Chen, Plant Pathologist, USDA/ARS, Pullman, WA that lists the stripe rust evaluations for soft white and hard (red/white) winter wheat varieties included in the 2007 WSU Extension Uniform Cereal Variety Testing Program nurseries. We appreciate the support that Dr. Chen provides on conducting these evaluations. The data represents stripe rust evaluations at six field sites managed by Dr. Chen in 2007. The nurseries were tested at six field sites, of which three sites (Loc 1, Loc 3, and Loc 4) are near Pullman in eastern Washington, one (Loc 5 at Mt. Vernon) in northwestern Washington, one (Loc 6 at Walla Walla) in southeastern Washington, and one (Loc 7 at Lind) in central Washington.

- Pullman, WA locations include:
  - WSU Spillman Agronomy Farm (location 01)
  - WSU Plant Pathology Farm (location 02)
  - WSU Whitlow Farm (location 04)

Included in the data is a listing of Infection Type (IT) {see discussion below) and Severity (%) – the percent of leaf area of a variety that is infected by stripe rust at the time of evaluation. In some situations there are two numbers separated by a comma (,) under the IT (infection type) column. When this occurs the majority of the plants of a variety have an IT represented by the first number and a few have IT represented by the second number. In addition to stripe rust, Dr. Chen reports on other foliar diseases when observed.

This is the message received from Dr. Chen:
Attached is the stripe rust data file for 2007 Winter Wheat Variety Trial Nursery. Except for Lind, we had adequate rust severity for reliable data in all locations. Most entries showed good level of resistance. Let me know if there are any questions. Thanks.

Best wishes,
Xianming
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STRIPE RUST: INFECTION TYPES: A 0-9 scale described below was used for recording infection types (ITs). Generally, an infection type (IT) from 0-4 shows necrotic symptoms with slight rust sporulation. Scores of 5-9 indicate damaging infection – the rust is continuing to develop and infect. **SEVERITY (%):** Severity is a percentage of the leaf area of a variety that is being infected with stripe rust. The following scale is described in: *Technical Bulleting Number 1788, Virulence, Aggressiveness, Evolution, and Distribution of Races of Puccinia striiformis (the Cause of Stripe Rust of Wheat) in North America, 1968-87, Feb. 1992*. Both scales are used in the data sets to depict the impact of stripe rust on varieties.

0 = no visible signs or symptom
1 = necrotic and/or chlorotic flecks; no sporulation
2 = Necrotic and/or chlorotic blotches or stripes; no sporulation
3 = Necrotic and/or chlorotic blotches or stripes; trace sporulation
4 = Necrotic and/or chlorotic blotches or stripes; light sporulation
5 = Necrotic and/or chlorotic blotches or stripes; intermediate sporulation
6 = Necrotic and /or chlorotic blotches or stripes; moderate sporulation
7 = Necrotic and/or chlorotic blotches or stripes; abundant sporulation
8 = Chlorosis behind sporulating areas; abundant sporulation
9 = No necrosis or chlorosis; abundant sporulation

Attached is the stripe rust data file for 2007 Winter Wheat Variety Trial Nursery. Accept for Lind, we had adequate rust severity for reliable data in all locations. Most entries showed good level of resistance. Let me know if there are any questions. Thanks.

TABLE XMC0702. STRIPE RUST INFECTION TYPE (IT) AND SEVERITY (%) ON CULTIVARS AND LINES IN THE WSU EXTENSION UNIFORM CEREAL VARIETY HARD WINTER VARIETY TRIAL NURSERY (EXP02) AT SPILLMAN FARM (LOC 01), PLANT PATH FARM (LOC 03) AND WHITLOW FARM (LOC 04) NEAR PULLMAN, MT VERNON (LOC 05); WALLA WALLA (LOC 06); AND LIND (LOC 07), WA WHEN RECORDED AT THE INDICATED DATES AND STAGES OF PLANT GROWTH IN 2007 UNDER NATURAL INFECTION. SUSCEPTIBILITY TO POWDERY MILDEW (PM) AT MT VERNON (LOC 05) WAS RECORDED AS SEVERITY (%). **Chen, X., Plant Pathologist, USDA/ARS, Pullman, WA., 2007**

				STRIPE RUST[1] (*Puccinia striiformis, f. sp. tritici*)														
				Spillman Farm (Pullman)		**Plant Path Farm (Pullman)**		**Whitlow Farm (Pullman)**		**Mt Vernon, WA**				**Walla Walla**		**Lind**		**Mt Vernon (Powdery Mildew)**
				LOC 01		LOC 03		LOC 04		LOC 05				LOC 06		LOC 07[2]		
				6/21/07		6/27/07		6/22/07		4/18/07		5/31/07		6/22/07		6/14/07		
2007				FS 10.53[3]		FS 11.2		FS 10.53		FS 6		FS 10.1		FS 11.2		FS 11.1		PM
ENTRY	**IDENTITY**	**CLASS**	**VARIETY NAME**	**IT**	**%**	**IT**	**%**	**IT**	**%**	**IT**	**%**	**IT**	**%**	**IT**	**%**	**IT**	**%**	**%**
1	PI586757	HRW	FINLEY	8	40	8	20	5	40	8	40	5	50	8	25	8	10	
3	CI017772	HRW	HATTON	8	100	8	40	8	20	8	60	8	100	8	80	8	20	
4	WA007939	HRW	BAUERMEISTER	2	10	0	0	2	5	3	10	2	10	2	5	0	0	
5	WA007976	HRW	WA007976	0	0	0	0	2	10	2	5	0	0	0	0	0	0	
6	J000048	HRW	WA008022	2	5	0	0	2	5	5	20	3	10	0	0	0	0	
7	WA008003	HRW	WA008003	2	1	0	0	2	20	2	5	2	5	2	5	0	0	20
8	WA007975	HRW	WA007975	3-5	40	5	10	3	20	2	5	2	2	2	10	3	2	20
	PS 279		**(S Check)**	**8**	**90**	**8**	**60**	**8**	**60**	**8**	**40**	**8**	**100**	**8**	**70**	**8**	**20**	40
9	J030410	HRW	WA008023	0	0	0	0	2	10	2	5	0	0	0	0	0	0	
10	J030431	HRW	WA008024	0	0	0	0	2	5	2	5	2	5	0	0	0	0	
11	PI603039	HRW	BOUNDARY	2	5	2	5	2,8	10	3	5	2	5	0,8	15	0	0	
12	IDO00575	HRW	JUNIPER	8	20	2	5	5	40	3	5	5	20	3,8	20	0	0	
13	IDO00621	HRW	IDO621	0	0	5	1	2	10	3	5	2	5	0,8	10	0	0	
14	ORN00B553	HRW	ORN00B553	0	0	0	0	2	5	2	5	0	0	0	0	0	0	
15	BZ96788E	HRW	EDDY	8	5	0	0	2	10	2	5	5	15	0,8	5	0	0	20
16	BZ9W022032	HRW	BZ9W02-2032	2	5	0	0	2	10	2	5	2	10	0	0	0	0	30
17	ACS52025	HRW	ACS 52025	2	1	0	0	5	20	3	15	5	20	2	5	0	0	
18	ACS52035	HRW	ACS 52035	0	0	2	1	2	2	2	5	0	0	0	0	0	0	
19	W9600355	HRW	AGRIPRO PALADIN	0	0	2	1	3	20	8	40	8	70	2	2	0	0	30
20	W9800344	HRW	W98-344	0	0	3	1	2	5	5	10	3	15	0	0	0	0	
21	TX97F4331B	HRW	TX97F4-33-1B	2	1	0	0	2	5	2	5	2	10	0	0	0	0	
22	PI619419	HRW	DECLO	2	5	0	0	2	2	5	5	2	5	0	0	0	0	
23	IMI FINLEY	HRW	FINEWAY	8	50	8	20	5	20	5	30	5	50	2,5	20	0	0	20
24	WA007936	HDWH	MDM	2	10	0	0	2	20	3	10	2	5	3	20	0	0	
25	KKHWWW05	HDWH	WA008019	2	10	2	1	2	10	2	5	2	5	0,5	10	0	0	
26	J010083	HDWH	WA008025	2	10	2	5	2	10	8	20	3	15	0,5	20	0	0	
27	IDO00604	HDWH	UI DARWIN	0	0	0	0	2	5	2	5	2	5	2	2	0	0	
	PS 279		**(S Check)**	**8**	**100**	**8**	**100**	**8**	**60**	**8**	**40**	**8**	**100**	**8**	**100**	**8**	**10**	
28	OR2052046H	HDWH	OR2052046H	0	0	0	0	5	5	8	10	2	5	0	0	0	0	
29	W960359W	HDWH	PALOMINO	8	1	2	1	5	10	8	20	2	15	0,8	10	0	0	
30	PI536994	SWH	ELTAN	2	20	3	5	2	20	2	5	2	5	2	20	2	2	

[1] Infection Type (IT) was recorded based on the 0-9 scale with ITs 8 and 9 combined as 8 (the most susceptible reaction) in field data. Generally IT 0-3 are considered resistant, 4-6 intermediate, and 7-9 susceptible. Heterogenous reactions of an entry were indicated by two or more ITs separated by "," for most plant with the first IT and few plants with the second IT or connected with "-" for entries containing plants with continuous ITs. Entries with a high IT in the first note, but a low IT in the second note may indicate that they have high-temperature, adult-plant (HTAP) resistance.

[2] Stripe rust was too low to have adequate data at Lind, but entries with IT 8 and any level of severity should be considered susceptible.

[3] Feekes wheat development scale: 10.53 (anthesis); 11.2 (soft dough); 6 (1st node); 10.1 (heading), 11.1 (mid-milk).

TABLE XMC0702. STRIPE RUST INFECTION TYPE (IT) AND SEVERITY (%) ON CULTIVARS AND LINES IN THE WSU EXTENSION UNIFORM CEREAL VARIETY SWH WINTER VARIETY TRIAL NURSERY (EXP02) AT SPILLMAN FARM (LOC 01), PLANT PATH FARM (LOC 03) AND WHITLOW FARM (LOC 04) NEAR PULLMAN, MT VERNON (LOC 05); WALLA WALLA (LOC 06); AND LIND (LOC 07), WA WHEN RECORDED AT THE INDICATED DATES AND STAGES OF PLANT GROWTH IN 2007 UNDER NATURAL INFECTION. SUSCEPTIBILITY TO POWDERY MILDEW (PM) AT MT VERNON (LOC 05) WAS RECORDED AS SEVERITY (%). **Chen, X., Plant Pathologist, USDA/ARS, Pullman, WA., 2007.**

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				LOC 01		LOC 03		LOC 04		LOC 05				LOC 06		LOC 07[2]		
				6/21/07		6/27/07		6/22/07		4/18/07		5/31/07		6/22/07		6/14/07		
2007				FS 10.53[3]		FS 11.2		FS 10.53		FS 6		FS 10.1		FS 11.2		FS 11.1		PM
ENTRY	**IDENTITY**	**CLASS**	**VARIETY NAME**	**IT**	**%**	**IT**	**%**	**IT**	**%**	**IT**	**%**	**IT**	**%**	**IT**	**%**	**IT**	**%**	**%**
1	PI542401	WC	RELY	2,8	20	2,8	10	2	10	2	5	2	5	0,8	10	0,5	2	
2	PI594372	WC	CODA	0,8	1	0,5	1	2	15	2	5	2	10	0,3	5	0	0	
3	PI606765	WC	EDWIN	8	5	8	10	5	20	3	5	2	15	5	10	0	0	
4	PI606764	WC	BRUEHL	0	0	0	0	2	5	2	5	2	2	0	0	0	0	
5	PI628641	WC	CHUKAR	0	0	0	0	2	2	2	5	0	0	0	0	0	0	
6	ARS97135-9	WC	CARA	0	0	0	0	2	2	2	5	0	0	0	0	0	0	
7	ARS96059	WC	ARSC96059-1	2	1	0	0	2	5	2	5	2	5	0	0	0	0	
8	ARS970278	WC	ARS970278-2	2	1	0	0	2	5	2	5	2	5	0	0	0	0	
9	ARS00235	WC	ARS00235	0,8	5	0	0	2	10	2	5	2	10	0,8	2	8	5	30
10	PI511673	SWH	MADSEN	0	0	0	0	2	2	5	10	2	5	0	0	0	0	
11	PI536994	SWH	ELTAN	2	20	2	5	2	10	2	5	2	5	2	5	2	2	
12	PI558510	SWH	ROD	0	0	0	0	2	5	3	10	2	10	0	0	0	0	
13	PI628640	SWH	FINCH	0	0	0	0	2	5	3	15	2	10	0	0	0	0	
14	WA007916	SWH	MASAMI	0	0	0	0	2	10	0,8	5	2	2	2	5	0	0	
15	WA007934	SWH	WA007934	2	10	0	0	2	5	3	5	2	5	2	5	0	0	
16	WA007973	SWH	XERPHA	0	0	0	0	2	2	5	20	3	20	0	0	0	0	
17	WA008000	SWH	WA008000	0	0	0	0	2	5	2	5	2	5	0,8	2	0	0	
18	J960793	SWH	WA008020	5	20	0	0	2	2	2	5	2	2	8	15	0	0	20
19	SD02068	SWH	WA008021	2	1	0	0	2	2	5	10	2	5	8	10	0	0	
20	PI583372	SWH	LAMBERT	2	5	0	0	2	5	2	5	2	5	2	5	0	0	
	PS 279		**(S Check)**	**8**	**100**	**8**	**80**	**8**	**60**	**8**	**40**	**8**	**100**	**8**	**80**	**8**	**10**	
21	PI631486	SWH	BRUNDAGE 96	2	5	2	5	2	10	5	10	2	5	2	10	0	0	
22	9134302A	SWH	SIMON	0	0	0	0	2	10	5	15	2	5	2	5	0	0	
23	9922407A	SWH	9222407A	2	5	0	0	2	5	8	30	2	10	2	2	0	0	
24	9364901A	SWH	9364901A	0	0	2	1	2	5	5	10	2	5	2	5	0	0	
25	CI017596	SWH	STEPHENS	0	0	0	0	2	10	2	5	2	5	0	0	0	0	
26	PI 629114	SWH	TUBBS	0	0	0	0	2	5	5	10	2	10	0	0	0	0	
27	NEWTUBBS	SWH	TUBBS 06	0	0	0	0	2	5	5	15	2	5	0	0	0	0	
28	WPB00477	SWH	MOHLER	0	0	0	0	2	5	5	20	2	5	0	0	0	0	20
29	BZ980528	SWH	WB 528	0	0	0	0	2	2	8	40	3	15	0	0	0	0	
30	BU990456	SWH	BU6W99-456	0	0	0	0	2	10	8	20	5	10	0	0	0	0	
31	BU000523	SWH	BU6W00-523	0	0	0	0	2	5	3	5	0	0	0	0	0	0	
32	Q0000001	SWH	GEORGE	2	5	2	1	2	10	2	2	2	5	2	5	0	0	20
33	Q0000002	SWH	RJAMES	0	0	0	0	2	10	2	2	2	2	0	0	0	0	30
34	PI601237	SWH	CASHUP	0	0	0	0	2	5	3	10	2	2	0	0	0	0	
35	GT895880	SWH	CONCEPT	0	0	2	1	2	5	3	10	2	2	0	0	0	0	
36	MJ000004	SWH	MJ-4	0	0	2	1	2	10	3	10	2	5	2	2	0	0	
37	MJ900931	SWH	MJ-9	0	0	0	0	2	10	3	5	3	10	0	0	0	0	
38	99X100802	SWH	SALUTE	0	0	0	0	2	5	2	5	2	5	0	0	0	0	40
39	OSUPOP2813	SWH	AP 700 CL	0	0	0	0	2	10	2	5	2	5	0	0	0	0	20
	PS 279		**(S Check)**	**8**	**100**	**8**	**100**	**8**	**80**	**8**	**40**	**8**	**100**	**8**	**60**	**8**	**20**	40
40	ID990435	SWH	ID990435	2	5	0	0	2	10	2	2	3	10	0	0	0	0	
41	ID02-859	SWH	ID02-859	2	1	2	1	2	5	3	10	2	5	2	5	0	0	
42	IDO00587	SWH	IDAHO 587	2	1	0	0	2	10	2	5	2	5	2	5	0	0	
43	OR210051	SWH	ORCF-101	0	0	2	1	2	10	2	5	2	5	0	0	0	0	
44	OR201007	SWH	ORCF-102	0	0	0	0	2	10	5	30	5	30	0	0	0	0	
45	ORI42037	SWH	ORI2042037	2	1	0	0	2	10	3	10	2	5	2	5	0	0	
46	BZ021020	SWH	BZ6WM02-1020	2	1	0	0	2	10	2	5	0	0	0	0	0	0	
47	MAD50ROD50	SWH	MADSEN/ROD	0	0	0	0	2	5	3	5	3	10	0	0	0	0	
48	ELT50MAD50	SWH	ELTAN/MADSEN	0	0	0	0	2	10	2	5	2	5	2	5	0	0	
49	ELT50TUB50	SWH	ELTAN/TUBBS	2	5	0	0	2	10	5	20	2	10	2	5	0	0	
50	ROD50TUB50	SWH	ROD/TUBBS	2	1	0	0	2	10	3	10	3	10	2	5	0	0	

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