

## **Stripe Rust (*Puccinia striiformis*, *F. sp. tritici*) Data – 2008 Spring Wheat Nurseries** **Data provided by Dr. Xianming Chen, Plant Pathologist, USDA/ARS, Pullman, WA**

The table below shows the stripe rust evaluations for soft white and hard (red/white) spring wheat varieties included in the 2008 WSU Extension Uniform Cereal Variety Testing Program nurseries. We appreciate the support that Dr. Chen provides on conducting these evaluations. These data represent stripe rust evaluations at six field sites managed by Dr. Chen in 2008. The nurseries were located at six field sites. 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. The 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 notations 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 will report other foliar diseases when they were observed.

### **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 Bulletin 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 these 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

**STRIPE RUST INFECTION TYPE (IT) AND SEVERITY (%) ON CULTIVARS AND LINES IN THE SPRING EXTENSION DISEASE NURSERY (COORDINATED BY JOHN KUEHNER) AT SPILLMAN (LOC 1), PLANT PATH FARM (LOC 3) AND WHITLOW (LOC 4) FARMS NEAR PULLMAN, MT VERNON (LOC 5); WALLA WALLA (LOC 6); AND LIND (LOC 7), WA WHEN RECORDED AT THE INDICATED DATES AND STAGES OF PLANT GROWTH IN 2008 UNDER NATURAL INFECTION. DATA PROVIDED BY XIANMING CHEN, USDA-ARS, PULLMAN, WASHINGTON.**

VARIETY name	Spring Wheat Class	2008 Plot	LOC1	LOC3	LOC4	LOC5		LOC6	LOC7
			7/23/2008	7/22/2008	7/15/2008	6/4/2008	7/8/2008	7/1/2008	7/3/2008
			Dough	Milk	Early milk	Stem elong.	L. flowering	Milk	Milk
			IT %	IT %	IT %	IT %	IT %	IT %	IT %
<b>Lemhi (S check)</b>		<b>1</b>	<b>8 70</b>	<b>8 100</b>	<b>8 90</b>	<b>8 50</b>	<b>9 100</b>	<b>8 5</b>	<b>0 0</b>
ALPOWA	Soft White	2	3 20	2 30	2 20	8 20	2 10	1 5	0 0
ZAK	Soft White	3	5 80	8 100	8 50	8 10	2 10	8 80	3 2
LOUISE	Soft White	4	2 5	2 5	2 1	8 5	2 10	3 20	0 0
WAKANZ	Soft White	5	2 5	2 1	2 5	1 5	2 10	3 20	2 2
NICK	Soft White	6	2 1	2 1	2 10	8 5	2 10	3 5	0 0
BZ604-026	Soft White	7	2 1	8 5	5 10	0 0	2 1	8 10	0 0
WHIT	Soft White	8	2 1	2 1	2 5	0 0	2 1	1 5	0 0
WA008039	Soft White	9	2 1	2 1	2 5	0 0	2 1	1 5	0 0
WA008041	Soft White	10	2 1	2 1	2 1	0 0	1 1	3 10	0 0
WA008046	Soft White	11	2 1	2 1	2 1	0 0	2 1	3 10	0 0
WA008042	Soft White	12	2 1	2 1	2 1	0 0	2 10	1 5	0 0
WA008090	Soft White	13	2 1	2 1	2 1	8 5	2 10	1 5	0 0
WA008089	Soft White	14	2 1	2 5	2 5	8 5	2 20	3 5	0 0
WA008058	Soft White	15	2 20	2 5	2 5	0 0	2 5	5 5	0 0
WA008059	Soft White	16	2 20	2 5	2 5	0 0	2 1	3 5	0 0
ALTURAS	Soft White	17	2 1	2 1	2 1	8 10	2 1	1 5	0 0
UI CATALDO	Soft White	18	2 5	2 1	2 5	8 5	3 1	1 5	0 0
EDEN	Club	19	2 5	2 1	8 5	8 10	8 10	1 5	0 0
WA008049	Club	20	2 1	2 5	2 1	8 5	0 0	1 5	0 0
<b>Lemhi (S Check)</b>		<b>21</b>	<b>8 80</b>	<b>8 80</b>	<b>8 90</b>	<b>8 60</b>	<b>8 100</b>	<b>8 5</b>	<b>0 0</b>
WA008047	Club	22	2 1	2 10	2 1	1 5	3 10	3 5	0 0
WA008082	Club	23	2 1	2 5	2 5	8 5	2 10	1 5	0 0
<b>Lemhi (S check)</b>		<b>24</b>	<b>8 90</b>	<b>8 60</b>	<b>8 90</b>	<b>8 80</b>	<b>8 100</b>	<b>8 20</b>	<b>0 0</b>
SCARLET	Hard Red	25	8 20	8 10	8 10	8 20	8 10	8 10	0 0
HOLLIS	Hard Red	26	2 5	2 1	3 10	0 0	2 10	1 5	0 0
TARA 2002	Hard Red	27	2 5	2 1	8 30	1 5	2 1	1 5	0 0
KELSE	Hard Red	28	2 1	2 1	8 5	0 0	1 1	3 10	0 0
WA008026	Hard Red	29	2 1	2 1	2 1	0 0	5 10	3 10	0 0

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			Dough	Milk	Early milk	Stem elong.	L. flowering	Milk	Milk
			IT %	IT %	IT %	IT %	IT %	IT %	IT %
WA008027	Hard Red	30	2 1	2 1	3 1	0 0	2 1	3 5	0 0
WA008030	Hard Red	31	2 1	2 5	2 1	1 5	1 1	3 5	0 0
WA008033	Hard Red	32	2 1	2 5	2 1	1 5	1 1	1 5	0 0
WA008034	Hard Red	33	2 1	2 1	2 1	1 5	1 1	1 5	0 0
WA008077	Hard Red	34	5 70	3 5	5 20	8 20	5 5	8 20	0 0
JEFFERSON	Hard Red	35	2 1	2 1	2 1	8 10	3 10	3 10	0 0
UI WINCHESTER	Hard Red	36	2 1	2 1	3 1	0 0	3 5	1 5	0 0
WESTBRED 926	Hard Red	37	2 5	2 1	2 5	0 0	3 10	1 5	0 0
HANK	Hard Red	38	2 1	2 1	8 30	8 20	6 50	1 5	0 0
BZ901-717	Hard Red	39	2 1	2 1	8 5	8 20	8 50	1 5	0 0
JEDD	Hard Red	40	2 5	2 10	8 40	1 10	8 60	1 5	0 0
<b>Lemhi (S check)</b>		<b>41</b>	<b>8 70</b>	<b>8 50</b>	<b>8 90</b>	<b>8 80</b>	<b>8 100</b>	<b>8 30</b>	<b>8 2</b>
VOLT	Hard Red	42	2 1	2 1	2 1	1 10	0 0	1 5	0 0
NPBHR70	Hard Red	43	2 1	2 1	5 5	8 20	5 20	1 5	0 0
RSI20035	Hard Red	44	2 1	2 1	5 1	1 5	0 0	3 5	0 0
BUCK PRONTO	Hard Red	45	2 1	2 5	2 1	1 5	5 20	3 10	0 0
AP-81	Hard Red	46	2 1	2 1	2 1	8 5	3 20	1 5	0 0
<b>Lemhi (S check)</b>		<b>47</b>	<b>8 70</b>	<b>8 90</b>	<b>8 80</b>	<b>8 60</b>	<b>9 100</b>	<b>8 30</b>	<b>0 0</b>
MACON	Hard White	48	8 30	8 30	8 30	8 20	3 20	5 30	0 0
OTIS	Hard White	49	2 1	2 5	3 5	1 10	3 10	1 5	0 0
WA008037	Hard White	50	2 1	2 1	2 1	1 10	1 5	1 5	0 0
WA008078	Hard White	51	2 1	2 1	8 1	1 10	5 10	3 10	0 0
WA008079	Hard White	52	2 1	2 1	3 5	1 10	3 10	3 10	0 0
WA008080	Hard White	53	2 1	2 5	3 1	1 10	3 10	3 5	0 0
WA008081	Hard White	54	2 1	2 1	2 1	1 5	3 10	3 5	0 0
LOLO	Hard White	55	2 1	8 1	8 1	8 20	8 60	3 1	0 0
BLANCA GRANDE	Hard White	56	2 5	2 5	2 5	1 10	1 5	3 10	0 0
RSI10348W	Hard White	57	2 1	2 1	5 1	1 5	1 5	3 5	0 0
07M SP1	Hard White	58	2 1	2 1	2 1	1 5	0 0	1 5	0 0
CLEAR WHITE	Hard White	59	2 1	2 1	2,8 1	1 5	2 1	3 10	0 0
<b>Lemhi (S check)</b>	<b>Irr. Only Trial</b>	<b>60</b>	<b>8 80</b>	<b>8 90</b>	<b>8 80</b>	<b>8 80</b>	<b>8 100</b>	<b>8 50</b>	<b>0 0</b>
EXPRESS	Hard Red	61	2 1	2 1	5 1	1 10	3 1	8 1	0 0
SOLANO	Hard Red	62	2 5	2 1	5 1	8 10	0 0	1 1	0 0
EXPRESSO	Hard Red	63	2 1	2 1	2 1	1 5	0 0	3 5	0 0

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			7/23/2008		7/22/2008		7/15/2008		6/4/2008		7/8/2008		7/1/2008		7/3/2008	
			Dough		Milk		Early milk		Stem elong.		L. flowering		Milk		Milk	
			IT	%	IT	%	IT	%	IT	%	IT	%	IT	%	IT	%
BZ904-336WP	Hard White	64	2	1	8	1	2	1	1	5	8	40	1	1	0	0
CABERNET	Hard Red	65	2	1	2	1	2	5	1	5	0	0	1	1	0	0
RSI50076	Hard Red	66	2	1	2	1	2	1	0	0	0	0	3	1	0	0
RSI50603	Hard Red	67	2	1	5	5	3	5	0	0	1	1	1	5	0	0
<b>Lemhi (S check)</b>		<b>68</b>	<b>8</b>	<b>80</b>	<b>8</b>	<b>90</b>	<b>8</b>	<b>80</b>	<b>8</b>	<b>60</b>	<b>8</b>	<b>100</b>	<b>8</b>	<b>20</b>	<b>0</b>	<b>0</b>
<b>Lemhi (S check)</b>		<b>69</b>	<b>8</b>	<b>80</b>	<b>8</b>	<b>90</b>	<b>8</b>	<b>80</b>	<b>8</b>	<b>80</b>	<b>8</b>	<b>100</b>	<b>8</b>	<b>20</b>	<b>0</b>	<b>0</b>

\* 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 plants 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. \*\* Stripe rust at the Walla Walla (LOC 6) occurred in hotspots and lacked uniformity, and therefore, some entries possibly escaped from infection. No rust occurred in the winter nurseries and very low infection occurred in the spring nurseries at the Lind (LOC 7) location.