

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

The tables below show the stripe rust evaluations for soft white and hard (red/white) winter 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 IN THE SOFT WHITE WINTER VARIETY TRIAL NURSERY (EXP02) (COORDINATED BY JOHN BURNS) 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 2008 UNDER NATURAL INFECTION. DATA PROVIDED BY XIANMING CHEN, USDA-ARS, PULLMAN, WASHINGTON.**

NAME	WINTER WHEAT CLASS	FIELD TEST*													
		LOC 1		LOC 3		LOC 4		LOC 5		LOC 6**		LOC 7**			
		7/11/08		7/14/08		7/10/08		4/23/08		6/4/08		7/1/08		7/3/08	
		Dough		Dough		Soft dough		Stem elong.		Heading		S. dough		S. dough	
IT %		IT %		IT %		IT %		IT %		IT %		IT %			
CODA	Club	3	10	5	40	2	1	2	5	2	10	0	0	0	0
CHUKAR	Club	2	1	2	2	2	1	2	2	2	1	0	0	0	0
CARA	Club	2	1	2	1	2	1	2	5	2	1	0	0	0	0
BRUEHL	Club	2	1	2	1	2	1	2	5	2	5	0	0	0	0
ARS970278-2	Club	2	5	2	5	2	1	2	2	2	1	0	0	0	0
ARS970075-3	Club	2	1	2	5	2	1	2	5	2	1	0	0	0	0
ARS970168-2C	Club	2	1	2	1	2	1	2	5	2	1	0	0	0	0
MADSEN	Soft White	2	1	2	1	2	1	3	10	3	10	0	0	0	0
ELTAN	Soft White	2	5	2	1	2	1	2	5	3	20	0	0	0	0
ROD	Soft White	3	5	2	1	2	1	3	15	5	30	0	0	0	0
FINCH	Soft White	2	1	2	1	2	1	8	40	3	30	0	0	0	0
MASAMI	Soft White	2	20	2	5	2	1	8	20	2	30	0	0	0	0
XERPHA	Soft White	2	10	2	1	2	1	8	20	3	40	0	0	0	0
WA008063	Soft White	2	1	2	5	2	1	8	30	4	50	0	0	0	0
WA008064	Soft White	2	5	2	1	2	5	8	40	5	50	0	0	0	0
WA008065	Soft White	2	2	2	1	2	1	3	10	2	1	0	0	0	0
WA008066	Soft White	2	1	2	1	2	1	3	20	2	30	0	0	0	0
ARS960277L	Soft White	2	1	2	1	2	1	2	10	2	30	0	0	0	0
LAMBERT	Soft White	2	5	2	1	5	5	2	5	2	10	0	0	0	0
BRUNDAGE 96	Soft White	2	10	2	8	5	2	8	20	3	50	0	0	0	0
<b>(S Check)</b>		<b>8</b>	<b>90</b>	<b>8</b>	<b>90</b>	<b>8</b>	<b>100</b>	<b>8</b>	<b>80</b>	<b>8</b>	<b>80</b>	<b>8</b>	<b>40</b>	<b>0</b>	<b>0</b>
SIMON	Soft White	2	1	2	1	2	1	5	20	3	40	0	0	0	0
BITTERROOT	Soft White	2	1	2	1	2	1	8	60	5	50	0	0	0	0
9364901A	Soft White	2	1	2	1	2	1	5	15	3	30	0	0	0	0
STEPHENS	Soft White	2	1	2	2	2	1	3	15	2	10	0	0	0	0
TUBBS 06	Soft White	2	1	8	5	2	1	5	20	6	60	0	0	0	0
ORH010085	Soft White	2	1	2	5	2	1	2	5	3	20	0	0	0	0
OR2050910	Soft White	2	1	2	1	2	1	5	15	3	10	0	0	0	0
WESTBRED 523	Soft White	2	1	2	1	2	1	2	5	2	5	0	0	0	0
WESTBRED 528	Soft White	2	1	2	1	2	1	8	60	5	50	0	0	0	0

NAME	WINTER WHEAT CLASS	FIELD TEST*							
		LOC 1	LOC 3	LOC 4	LOC 5		LOC 6**	LOC 7**	
		7/11/08	7/14/08	7/10/08	4/23/08	6/4/08	7/1/08	7/3/08	
		Dough	Dough	Soft dough	Stem elong.	Heading	S. dough	S. dough	
		IT %	IT %	IT %	IT %	IT %	IT %	IT %	
WESTBRED 456	Soft White	2 2	2 1	2 1	8 60	5 40	0 0	0 0	
GEORGE	Soft White	2 10	2 20	2 1	5 10	3 20	0 0	0 0	
RJAMES	Soft White	2 5	2 1	2 1	2 10	4 30	0 0	0 0	
CASHUP	Soft White	2 1	2 1	2 1	8 20	2 10	0 0	0 0	
CONCEPT	Soft White	2 1	2 1	2 1	8 40	2 5	0 0	0 0	
MJ-9	Soft White	2 1	2 1	2 1	8 20	2 1	0 0	0 0	
SALUTE	Soft White	2 1	3 5	2 1	3 10	3 40	0 0	0 0	
99X1009-23	Soft White	3 1	2 1	2 1	3 10	3 20	0 0	0 0	
ORF2267-03	Soft White	2 1	8 20	2 5	8 40	8 90	0 0	0 0	
ID990435	Soft White	2 5	2,8 10	2 5	2 5	2 10	0 0	0 0	
<b>(S Check)</b>		<b>8 100</b>	<b>8 100</b>	<b>8 100</b>	<b>8 60</b>	<b>8 80</b>	<b>8 40</b>	<b>0 0</b>	
ID02-859	Soft White	2 20	2 10	2 10	5 20	3 20	2 10	0 0	
ORCF-101	Soft White	2 1	2,5 1	2 1	3 10	3 40	0 0	0 0	
ORCF-102	Soft White	2 5	2 1	2 1	8 30	4 60	0 0	0 0	
ORCF-103	Soft White	2 1	2 2	2 1	8 30	3 50	0 0	0 0	
AP700CL	Soft White	2 5	2 1	2 1	3 15	3 50	0 0	0 0	
WESTBRED 1020M	Soft White	2 1	2 1	2 1	5 20	2 10	0 0	0 0	
WESTBRED 1066M	Soft White	2 10	2 5	2 1	2 10	2 20	0 0	0 0	
MADSEN/ROD	Soft White	2 1	2 1	2 1	3 10	3 30	0 0	0 0	
ELTAN/MADSEN	Soft White	2 1	2 10	2 5	2 5	4 40	0 0	0 0	
ELTAN/TUBBS	Soft White	3 5	2 20	5 5	5 15	5 60	0 0	0 0	
ROD/TUBBS	Soft White	5 1	2 1	5 1	5 30	5 60	0 0	0 0	

\* 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.

**STRIPE RUST INFECTION TYPE (IT) AND SEVERITY (%) ON CULTIVARS IN THE HARD WINTER VARIETY TRIAL NURSERY (COORDINATED BY JOHN BURNS) 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 2008 UNDER NATURAL INFECTION. DATA PROVIDED BY XIANMING CHEN, USDA-ARS, PULLMAN, WASHINGTON.**

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		7/11/08		7/14/08		7/10/08		4/23/08		6/4/08		7/1/08		7/3/08	
		Dough		Dough		Soft dough		Stem elong.		Heading		S. dough		S. dough	
IT %		IT %		IT %		IT %		IT %		IT %		IT %			
FINLEY	Hard Red	8	20	8	70	8	5	2	10	8	90	0	0	0	0
HATTON	Hard Red	8	90	8	100	8	90	5	20	8	90	8	40	0	0
BAUERMEISTER	Hard Red	3	10	2	10	2	5	8	20	3	40	0	0	0	0
WA008067	Hard Red	2	5	2	1	2	5	2	2	2	5	0	0	0	0
WA008022	Hard Red	2	2	8	5	2	5	2	5	6	60	0	0	0	0
WA008068	Hard Red	3	5	2	2	3	1	2	5	3	10	0	0	0	0
FARNUM	Hard Red	2	5	8	5	2	1	2	5	2	5	0	0	0	0
WA008023	Hard Red	2	1	2	1	2	1	2	5	2	1	0	0	0	0
<b>(S Check)</b>		<b>8</b>	<b>100</b>	<b>8</b>	<b>100</b>	<b>8</b>	<b>100</b>	<b>8</b>	<b>60</b>	<b>8</b>	<b>90</b>	<b>8</b>	<b>60</b>	<b>0</b>	<b>0</b>
WA008069	Hard Red	2	1	2	2	2	1	2	2	2	20	0	0	0	0
WA008060	Hard Red	5	5	8	5	5	5	2,5	5	2	20	0	0	0	0
WA008061	Hard Red	2	5	8	1	2	1	5	10	2	10	0	0	0	0
BOUNDARY	Hard Red	5	5	5	5	5	1	5	15	2	10	0	0	0	0
IDO621	Hard Red	2	5	2	5	2	1	8	20	2	5	0	0	0	0
ORN00B553	Hard Red	2	5	2	1	2	1	2	5	2	10	0	0	0	0
EDDY	Hard Red	5	5	2	1	8	1	2	5	6	50	8	20	0	0
NORRIS	Hard Red	2	1	2	1	2	1	2	5	2	20	0	0	0	0
ACS 52025	Hard Red	2	1	2	1	5	1	5	30	4	60	0	0	0	0
ML9W05-2506	Hard Red	2	20	2	2	3	1	2	10	4	60	0	0	0	0
AGRIPRO PALADIN	Hard Red	3	1	2	1	8	1	8	80	8	80	0	0	0	0
W98-344	Hard Red	2	2	2	1	2	1	8	50	4	40	0	0	0	0
TX97F4-33-1B	Hard Red	2	1	2	5	2	1	3	10	3	50	0	0	0	0
BC002-2	Hard Red	2	1	2	2	2	1	5	15	6	50	0	0	0	0
DECLO	Hard Red	2	1	2	2	8	1	5	15	8	90	0	0	0	0
DX99-37-100	Hard Red	2	5	2	2	2	1	8	20	5	80	0	0	0	0
MDM	Hard White	2	1	2	5	2	1	2	5	3	20	0	0	0	0
WA008070	Hard White	2	1	2	1	2	1	3	10	2	5	0	0	0	0
UI DARWIN	Hard White	2	1	2	1	2	1	3	10	2	10	0	0	0	0
<b>(S Check)</b>		<b>8</b>	<b>90</b>	<b>8</b>	<b>100</b>	<b>8</b>	<b>100</b>	<b>8</b>	<b>60</b>	<b>8</b>	<b>90</b>	<b>8</b>	<b>60</b>	<b>0</b>	<b>0</b>
PALOMINO	Hard White	2	5	2	1	8	5	8	40	6	60	8	5	0	0

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		7/11/08	7/14/08	7/10/08	4/23/08	6/4/08	7/1/08	7/3/08	
		Dough	Dough	Soft dough	Stem elong.	Heading	S. dough	S. dough	
IT %	IT %	IT %	IT %	IT %	IT %	IT %	IT %		
NUDAKOTA	Hard White	2 5	8 1	8 1	8 60	6 80	8 10	0 0	
ELTAN	Hard White	2 10	2 5	2 5	3 10	3 40	0 0	0 0	

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