

The attached data was provided by Dr. Xianming Chen, Plant Pathologist, USDA/ARS, Pullman, WA that lists the stripe rust evaluations for winter and spring wheat varieties included in the 2006 WSU Extension Cereal Variety Testing Program nurseries. We appreciate the support that Dr. Chen provides on conducting these evaluations. The data represents stripe rust evaluations at multiple locations in 2006. 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:

Hello, everyone:

Attached are stripe rust data files for the 2006 variety trial nurseries coordinated by John Burns. The nurseries were tested at six field sites, of which 3 (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. Stripe rust developed to adequate severity levels (90-100% on susceptible checks) at all sites by the time to take notes or the last note. Therefore, the entries were adequately tested.

The Infection type (IT) readings were based on the 0-9 scale, of which, ITs 0-3 are considered resistant, 4-5 intermediate, and 7-9 susceptible. Entries with two different ITs were likely not uniform. In these case, the IT of the majority of plants is listed first.

Entries that had different ITs among the locations likely have race-specific resistance. Such difference was more remarkable between the eastern and western sites. The Mt Vernon location allows us recording stripe rust in the early and late plant growth stages. Entries that had higher ITs and severities in the first note and lower ITs and severities in the second note likely have high-temperature adult-plant (HTAP) resistance.

If you have questions, please let me know. Thank you for the cooperation!

*Best wishes,
Xianming*

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 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

TABLE XMC0602. STRIPE RUST INFECTION TYPE (IT) AND SEVERITY (%) ON CULTIVARS AND LINES IN THE WINTER EXTENSION DISEASE NURSERY (EXP02) AT SPILLMAN FARM (LOC 1), PLANT PATH FARM (LOC 3) AND WHITLOW FARM (LOC 4) 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 2006 UNDER NATURAL INFECTION. SUSCEPTIBILITY TO LEAF RUST (LR), POWDERY MILDEW (PM), OR PHYSIOLOGICAL LEAF SPOT (PLS) AT WALLA WALLA (LOC 6) WAS MARKED WITH "X".																										
Entry	VARIETY#	CLASS	VARIETY	2006 PLOT	Stripe rust												Severity (%) of other diseases at Walla Walla									
					LOC 1 SPILLMAN FARM		LOC 3 PL-PATH FARM		LOC 4 WHITLOW FARM		LOC 5 MT VERNON		LOC 6 WALLA WALLA		LOC 7 LIND		LR	PM	PLS							
					6/21	7/5	6/20	6/26	6/26	6/6	5/31	6/29	6/29	6/29												
					Flowering	S. dough	Flowering	S. dough	Early boot	Flowering	Flowering	S. dough	S. dough	S. dough												
IT%	IT%	IT%	IT%	IT%	IT%	IT%	IT%	IT%	IT%																	
1	P1542401	WC	RELY	1	21	2-8	30	51	2-8	10	2-8	20	2-8	5	2-8	20										
2	P1587026	WC	HILLER	2	21	2-3	20	51	8	5	5	30	2	2	5	30	5	20								
3	P1594372	WC	CODA	3	0	0	5-8	20	21	8	5	2	10	2	2	5	10	3	40	8	50					
4	P1606765	WC	EDWIN	4	5	10	5-8	20	5	5	5	20	2	5	5	50	5	30	5	20						
5	P1606764	WC	BRUEHL	5	2	1	2	2	2	2	2	10	2	2	2	1	2	2	0	0						
6	P1628641	WC	CHUKAR	6	2	1	2	5	2	2	2	10	0	0	0	0	0	0	0	0						
7	ARS97135	WC	ARS97135-9	7	2	1	2	5	2	2	2	10	0	0	0	0	0	0	0	0	10					
8	ARS00235	WC	ARS00235	8	2	1	3-5	20	21	8	5	2-8	2	2	8	10	5	20	5	40	3	20				
9	ARS96059	WC	ARSC96059-1	9	2	1	2	5	2	2	2	10	2	2	2	5	2	5	3	10						
10	ARS96592	WC	ARSC96059-2	10	2	1	2-3	10	21	2	2	2	10	2	2	2	1	2	2	2	3	15				
11	ARS99123	WC	ARS99123	11	2	1	2	5	2	2	2	2	0	0	0	0	0	0	0	0						
12	ARS00258	WC	ARS00258	12	2	1	2	5	2	2	2	5	0	0	2	1	2	2	2	2	20					
13	C1017909	SW	LEWJAIN	13	2	10	5	40	2	10	2	8	70	5	30	2	30	3	40	5	40					
14	P1511673	SW	MADSEN	14	2	1	2	5	2	2	2	5	8	30	8	20	2	1	2	2	0		20			
15	P1536994	SW	ELTAN	15	2	5	2-3	15	2	5	5	10	-	-	-	2	20	2	20	5	10					
16	P1558510	SW	ROD	16	2	1	2	5	2	2	3	5	8	30	2	20	5	5	3	10	3	20				
17	P1628940	SW	FINCH	17	2	1	2	5	2	2	2	2	8	30	2	10	2	1	2	2	2	3	10			
18	WA007916	SW	MASAMI	18	2	1	2	5	2	2	8	10	-	-	-	2	1	2-3	10	2-3	10			40		
19	WA007934	SW	WA7934	19	2	10	2	10	2	20	5	15	8	30	2	5	10	2	20	2	10			20		
20	WA007935	SW	WA7935	20	2	5	2-3	40	2	20	5	20	8	20	5	10	2	20	2	10	3	20		20		
PS 279				(S Check)	21	8	90	8	100	8	100	8	90	8	50	8	100	8	100	8	100	8	80	10		
21	WA007973	SW	WA7973	22	2	1	2-3	10	2	1	8	10	8	70	5	30	2	1	5	30	5	20			10	
22	WA007999	SW	J030363	23	2	1	2	5	2	2	2	2	2	2	2	0	0	0	0	3	5			10		
23	WA008000	SW	SSD207247	24	2	1	3-5	20	2	1	8	5	8	40	8	10	0	0	3-5	40	3-5	40			20	
24	WA007970	SW	WA7970	25	2	1	2	10	2	1	8	10	8	30	5	10	2	1	8	50	5	30				
25	WA007971	SW	WA7971	26	2	1	8	40	2	1	8	10	2	10	5	20	2	1	2	2	5	20				
26	P1583372	HW	LAMBERT	27	2	5	2-3	20	2	1	3	5	2	10	2	2	2	5	3	20	3	30			20	
27	P1631486	SW	BRUNDAGE 96	28	3	5	3	40	2	1	8	10	8	0	2	10	2	1	5	30	3	50			20	
28	P1632273	SW	HUBBARD	29	2	1	5	30	2	1	8	20	8	50	2	2	8	5	5	50	5	30				
29	9134302A	SW	SIMON	30	2	1	2	5	2	1	8	10	8	50	5	10	2	1	5	40	0					
30	9922407A	SW	9222407A	31	2	1	2	5	2	1	2	10	8	40	8	30	2	1	3	30	2					
31	ID990435	SW	ID990435	32	2	1	2-3	20	2	5	2	2	2	10	2	5	2	5	5	60	3	20			20	
32	ID990419	SW	ID990419	33	2	2	2	20	2	1	5	10	2	20	2	10	2	1	3	50	2	20				
33	ID000587	SW	IDAHO 587	34	2	1	2	5	2	1	2	10	2	20	2	5	2	1	2	2	0				20	
34	C1017596	SW	STEPHENS	35	2	1	2	5	2	1	2	2	5	20	2	5	2	1	2	2	3	10			20	
35	OR210051	SW	ORCF-101	36	2	1	3-5	20	2	1	8	20	8	30	8	20	0	0	8	50	5	30				
36	OR201007	SW	ORCF-102	37	2	5	5-8	20	2	1	2	2	8	50	8	30	0	0	8	60	5	20				
37	C1017954	SW	HILL 81	38	2	1	3	10	2	1	2	2	8	50	2	2	0	0	2	5	0					
38	PI 629114	SW	TUBBS	39	8	2	3	8	40	2	1	8	5	8	60	5	40	5	1	5	40	3	20			
39	NEWTUBBS	SW	TUBBS 06	40	2	5	2	5	30	2	1	8	10	8	50	5	30	2	1	5	30	0				
PS 279				(S Check)	41	8	90	8	100	8	100	8	90	8	70	8	100	8	30	8	80	8	80	10		
40	OR981757	SW	ORSS-1757	42	2	1	2	5	2	1	2	2	2	2	0	0	2	1	2	2	0					
41	ORH10920	SW	ORH010920	43	2	1	2	5	2	1	2	2	2	2	0	0	2	1	2	2	0					
42	WPB0477	SW	MOHLER	44	2	1	2	5	2	1	2	5	8	50	5	30	2	1	5	30	0					
43	BZ980528	SW	WB 528	45	2	1	2	5	2	1	2	2	8	70	5	8	40	2	1	5	10	0				
44	BU990456	SW	BU6W99-456	46	2	1	2	5	2	1	2	2	8	70	8	40	0	0	3	10	2	20				
45	BU000523	SW	BU6W00-523	47	2	1	2	2	2	1	2	8	5	8	20	0	0	2	1	2	2	0				
46	BZ021020	SW	BZ6W002-1020	48	2	1	2	5	2	1	2	5	5	20	2	2	0	0	5	20	5	20				
47	BZ021154	SW	BZ6W002-1154	49	2	1	2	5	2	1	2	5	2	10	0	0	2	1	2	2	0					
48	Q0000001	SW	GEORGE	50	2	1	2	8	40	2	1	8	10	8	30	8	5	2	1	8	80	5	20			20
49	Q0000002	SW	RJAMES	51	2	1	2	5	2	1	2	5	8	20	2	10	2	1	3	40	0					
50	P1601237	SW	CASHUP	52	2	1	3	30	2	1	3	10	8	50	2	2	0	0	3	30	3	20				
51	GT895880	SW	CONCEPT	53	2	1	3-5	20	2	1	8	5	8	50	2	2	2	1	3	50	3	10				
52	MJ000004	SW	MJ-4	54	2	1	2	5	2	1	8	10	-	-	-	0	0	5	50	3	20					
53	MJ900931	SW	MJ-9	55	2	1	2	5	2	1	2	2	8	20	5	30	2	1	2	2	3	10			20	
54	MAD5R0D5	SW	MADSEN/ROD	56	2	1	2	5	2	1	2	5	8	30	8	15	0	0	0	0	3	10				
55	OR142037	SW	OR12042037	57	2	5	3	40	2	1	5	5	8	30	2	8	10	2	1	3	30	3	20			
1	C1013844	HR	WANSER	58	8	80	8	100	8	90	8	40	8	40	8	100	3	5	8	80	8	40				
2	C1017772	HR	HATTON	59	8	80	8	100	8	100	8	60	8	70	8	100	5	5	8	80	8	80				
3	C1017727	HR	WESTON	60	8	2	8	40	2	5	8	10	2	10	8	5	5	2	8	60	8	40				
PS 279				(S Check)	61	8	100	8	100	8	100	8	50	8	60	8	100	8	30	8	80	8	80	10		
4	P1586757	HR	FINLEY	62	2	5	3-5	10	2	1	8	20	2	10	8	20	2	5	5	40	8	20				
5	P1532994	HR	BUCHANAN	63	8	40	8	80	8	70	8	20	2	2	2	8	20	8	20	8	80	8	40			
6	P1603039	HR	BOUNDARY	64	5	20	3-5	40	2	1	8	10	5	40	3	20	2	5	2	20	3	40				
7	P1638535	HR	WA7975	65	2	1	5	40	2	1	8	10	-	-	-	2	1	5	30	3	20					
8	WA007939	HR	BAUERMEISTER	66	2	10	2-3	20	2	20	3	5	8	40	5	5	2	1	3	50	3	30				
9	WA007976	HR	WA7976	67	2	1	2	2	2	1	2	2	2	2	2	2	0	0	0	0	0	0				
10	WA007977	HR	WA7977	68	2	1	0	0	2	1	2	2	2	5	2	2	0	0	0	8	5	0				

TABLE XMC0632. STRIPE RUST INFECTION TYPE (IT) AND SEVERITY (%) ON CULTIVARS AND LINES IN THE SPRING EXTENSION DISEASE NURSERY (EXP32) AT SPILLMAN FARM (LOC 1), PLANT PATH FARM (LOC 3) AND WHITLOW FARM (LOC 4) 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 2006 UNDER NATURAL INFECTION.

ENTRY	VARIETY ID #	CLASS	VARIETY	2006 Plot	Stripe rust										PM
					LOC 1	LOC 3	LOC 4	LOC 5		LOC 6	LOC 7	LOC 5			
					Spillman Farm	Plant Path Farm	Whitlow Farm (Pullman)	Mt Vernon, WA		Walla Walla	Lind	Mt Vernon			
					7/11 Soft Dough	7/13 L. Flowering	7/11 S. dough	6/6 Tillering	7/6 L. Flowering	6/29 S. dough	6/29 S. dough	7/6 L. flow.			
Soft White Nursery					Lemhi	001	8 90	8 100	8 100	8 30	8 100	8 100	8 100		
1	PI66596	SWH	ALPOWA	002	2 30	5-2 20	2 30	2 5	2 20	2 20	2 20	8 90			
2	PI607839	SWH	ZAK	003	8 80	8 70	8 90	2 10	2 40	8 100	8 100	8 100			
3	PI634865	SWH	LOUISE	004	2 5	2 30	2 10	5 20	2 10	2 10	2 15				
4	PI574538	SWH	WAWAWAI	005	8 20	5 70	5 40	5 5	2 30	3 20	5 50				
5	PI506352	SWH	WAKANZ	006	2 5	2 20	2 10	5 5	2 40	2 15	2 20				
6	PI477919	SWH	EDWALL	007	8 60	8 100	8 100	8 5	8 50	8 70	8 100				
7	CI017268	SWH	FIELDER	008	8 70	8 100	8 100	8 5	8 90	8 100	8 100				
8	BZ698031	SWH	NICK	009	8 50	2 5	8 30	2 2	5 20	8 60	8 60				
9	WA008007	SWH	WA008007	010	3 20	2 20	5 10	2 2	2 5	2 10	2 15				
10	WA008008	SWH	WA008008	011	8 15	2 5	2 5	2 5	2 10	5 40	2 8 15				
11	WA007964	SWH	WA007964	012	2 2	2 1	2 2	2 2	2 1	5 15	3 10				
12	PI620631	SWH	ALTURAS	013	5 10	2 1	2 8 5	2 2	2 5	2 5	2 5				
13	ID000632	SWH	UI PETTIT	014	8 40	8 90	8 70	2 2	8 50	8 100	5 40				
14	ID000642	SWH	UI CATALDO	015	0 0	2 5	0 0	2 2	2 5	2 5	0 0				
15	PI630983	SWH	EDEN	016	8 30	8 70	8 30	2 5	2 20	5 40	8 70				
16	WA007988	SWH	WA007988	017	8 5	2 5	5 5	2 5	2 5	8 60	2 5 15				
17	WA007987	SWH	WA007987	018	5 10	2 10	8 10	2 2	2 20	5 8 30	2 10	50			
18	WA007986	SWH	WA007986	019	8 15	2 10	8 10	2 2	2 5	5 20	2 10				
Hard White Nursery					Lemhi	020	8 90	8 100	8 100	8 30	8 100	8 100	8 100		
Hard White Nursery					Lemhi	(Susceptible Check)	021	8 90	8 100	8 100	8 30	8 100	8 100	8 100	
1	PI617072	HDWH	MACON	022	8 30	8 100	8 50	8 5	5 40	8 80	8 100				
2	PI634866	HDWH	OTIS	023	5 20	2 5 30	5 30	2 5	2 10	5 40	5 20				
3	PI614840	HDWH	LOLO	024	8 30	8 90	8 50	2 5	2 10	8 40	5 20				
4	PI631481	HDWH	BLANCA GRANDE	025	5 10	2 10	2 2	2 5	2 10	0 0	2 5				
5	BZ998447	HDWH	WAIKEA	026	5 5	2 5	5 5	2 2	2 10	5 20	2 10				
6	WA007990	HDWH	WA007990	027	8 10	2 40	8 10	2 2	2 10	8 20	3 15				
7	WA008010	HDWH	WA008010	028	8 30	5 60	8 30	2 2	2 10	8 60	3 20				
8	WA008012	HDWH	WA008012	029	2 5	2 1	2 2	2 8 2	2 5	0 0	2 2				
9	????	HDWH	ALTA BLANCA	030	8 30	5 60	8 40	2 2	2 10	8 70	5 20				
10	ID00377S	HDWH	ID377S	031	8 30	5 60	8 30	8 2	2 10	2 8 20	3 20				
11	????	HDWH	BZ903-455WP-d	032	2 10	2 1	5 10	8 2	2 10	2 10	3 15				
12	WQL9HDAL	HDWH	WWQLHDWH	033	5 30	2 5	2 20	8 5	2 20	2 15	8 90				
Hard Red Nursery					Lemhi	034	8 90	8 100	8 100	8 30	8 100	8 100	8 100		
1	PI601814	HRS	SCARLET	035	5 30	8-2 30	5 50	2 10	5 40	8 80	8 80				
2	PI632887	HRS	HOLLIS	036	5 10	2 10	8 10	2 2	2 5	2 10	2 10				
3	PI617073	HRS	TARA 2002	037	5 10	2 30	8 10	2 2	2 10	5 15	2 10				
4	WA007953	HRS	WA007953	038	2 2	2 1	0 0	2 2	2 5	2 5	2 2				
5	WA007954	HRS	WA007954	039	2 2	2 1	0 0	8 2	2 5	2 5	2 2				
6	WA008015	HRS	WA008015	040	5 5	2 5	3 5	2 5	2 5	2 10	2 10				
Hard Red Nursery					Lemhi	(Susceptible Check)	041	8 90	8 100	8 90	8 40	8 100	8 100	8 100	
7	WA008016	HRS	WA008016	042	3 5	2 5	8 5	2 2	2 5	2 10	3 10				
8	WA008017	HRS	WA008017	043	5 10	2 10	8 10	2 5	5 5	2 10	3 10				
9	WA008018	HRS	WA008018	044	0 0	2 1	0 0	2 2	2 1	2 5	2 5				
10	WA007998	HRS	WA007998	045	5 5	2 10	8 15	2 5	2 5	2 5	3 15				
11	PI603040	HRS	JEFFERSON	046	5 10	2 30	8 15	2 2	2 10	5 20	2 10				
12	ID000566	HRS	JEROME	047	8 10	2 1	8 10	2 2	5 30	5 20	2 10				
13	ID000578	HRS	UI WINCHESTER	048	5 10	2 1	5 10	2 2	2 5	2 5 10	2 10				
14	WPB00926	HRS	WESTBRED 926	049	8 10	2 5	5 5	2 2	2 10	5 40	2 2				
15	PI613585	HRS	HANK	050	8 20	2 50	8 30	2 5	5 30	8 60	3 15				
16	BZ999339	HRS	BZ999-339	051	8 10	2 20	8 10	2 2	5 2	2 10	3 10				
17	????	HRS	BZ9M03-1044	052	8 20	8 70	8 20	5 5	8 50	8 60	3 15				
18	????	HRS	ACS52610	053	2 8 5	2 1	2 5	2 5	2 5	2 5	2 2				
19	T0001052	HRS	BUCK PRONTO	054	5 5	2 10	8 5	2 2	5 5	2 5 10	5 10				
20	JEFF/BUCK	HRS	JEFF/PRONTO	055	5 5	2 20	8 20	2 2	2 20	2 8 50	2 5				
Irrigated Entries					Lemhi	056	8 60	8 100	8 100	8 40	8 100	8 100	8 100		
1	PI673003	HRS	EXPRESS	057	5 10	2 10	5 20	5 10	2 5	2-3 15	3 15				
2	DA900229	HRS	SOLANO	058	2 2	2 5	8 10	5 10	2 5	0 0	2 2				
3	YU999-178	HRS	JOAQUIN	059	8 10	5 10	8 30	8 10	8 60	8 50	3 10				
4	????	HRS	DA901-66	060	2 2	2 5	2 2	2 5	2 20	2 10	2 2				
Irrigated Entries					Lemhi	(Susceptible Check)	061	8 70	8 100	8 100	8 40	8 100	8 100	8 100	
5	????	HRS	EXPRESSO	062	0 0	2 1	2 2	2 2	2 1	0 0	2 2				
6	01W20172	HRS	01W20172	063	2 2	2 1	0 0	2 10	2 5	0 0	2 2				
7	02W50603	HRS	02W50603	064	8 10	2 1	2 2	5 5	2 5	0 0	2 2				
8	02W50076	HRS	02W50076	065	0 0	2 1	2 2	2 2	2 5	2 5	2 2				
9	95V10616	HRS	95V10616	066	0 0	2 1	8 5	2 2	2 5	2 5	0 0				
Irrigated Entries					Lemhi	(Susceptible Check)	067	8 80	8 100	8 100	8 50	8 100	8 100	8 100	
Irrigated Entries					Lemhi	(Susceptible Check)	068	8 70	8 100	8 100	8 30	8 100	8 100	8 100	
	Barley Fill			069	0 0	0 0	8 20	8 20	8 60	0 0	0 0				
	Barley Fill			070	0 0	0 0	8 20	8 20	8 60	0 0	0 0				