

CEREAL RUST BULLETIN

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From:

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The winter wheat harvest has begun from southwestern New York to northeastern South Dakota. In the northern Great Plains, most of the spring-sown grains are in good condition and near normal crop development.

Wheat stem rust. In mid-July, traces of stem rust were found in a winter wheat plot of Norstar and in the susceptible spring wheat plot of Max in southeastern North Dakota. There is much less stem rust development throughout the northern plains area this year than last year on the same date. This low level of stem rust was due to less stem rust development in the southern inoculum source areas.

The first report of wheat stem rust this year in the Pacific Northwest was in early July, where 5% severity readings were made on the cultivar Tres at the soft dough stage in Pullman, Washington plots.

Race Pgt-TPMK was identified from collections made in south Texas and Louisiana in early spring. Race Pgt-QCCJ (which infects barley) was identified from a stem rust collection made in a field of Mit located 100 km southwest of Houston, Texas.

Wheat leaf rust. Severities of 5-60% were common on flag leaves in east central Minnesota and southeastern North Dakota susceptible winter wheat plots in early July. In susceptible spring wheat plots, 40% severities were common, while in fields only traces were noted in the northern Great Plains.

In early July, light leaf rust was found on winter wheat in the Gallatin Valley in Montana and in central and western New York.

During the first week in July, trace severity levels of wheat leaf rust were observed on winter wheat plots 75 km southwest of Winnipeg, Canada.

The preliminary leaf rust races identified in the 1994 survey are given in Table 1. The major differences between this survey and the 1993 survey is the increase in virulences on *Lr24* (i.e. race TDB-10) and *Lr3ka* (i.e. race MBR-10). From three *Triticum (Aegilops) cylindrica* collections from southwestern Oklahoma, race SBD (virulent on *Lr1,2a,2c,17*) was identified. This was the same race identified from *T. cylindrica* collections in previous surveys. The interesting thing about this race is that it is avirulent on *Lr3* and 10 and has not been identified from collections made from wheat in southwestern Oklahoma.

TABLE 1. Wheat leaf rust races identified through July 18, 1994.

Prt code	Virulence formula ¹	Number of isolates by state													
		AL	AR	CA	FL	GA	KS	LA	MN	MS	NC	OK	TX	VA	
FBR-10,18	2c,3,3ka,10,11,18,30													1	
MBB-10	1,3,10	1		1		1									
MBG-10	1,3,10,11	12	3	6	3	16		6			2	2	6	2	
MBR	1,3,3ka,11,30		2												
MBR-10	1,3,3ka,10,11,30	9	2	1	1	4	7	4	1		3		13		
MCB-10	1,3,10,26			10											
MCD-10	1,3,10,17,26			2									2		
MCG-10	1,3,10,11,26			3			1								
MDB-10	1,3,10,24												1		
MDG-10	1,3,10,11,24												1		
MFB-10	1,3,10,24,26					1		1					10		
MGD-10	1,3,10,16,17												2		
MLM-10	1,3,3ka,9,10,30												1		
PBR-10,18	1,2c,3,3ka,10,11,18,30	4												1	
PNM-10,18	1,2c,3,3ka,9,10,18,24,30	1						1							
TBD-10	1,2a,2c,3,10,17												2		
TBG-10	1,2a,2c,3,10,11												3		
TDB-10	1,2a,2c,3,10,24		3					1	1			2		1	
TDG-10	1,2a,2c,3,10,11,24							1		2			12		
TFB-10	1,2a,2c,3,10,24,26												16		
TLG-18	1,2a,2c,3,9,11,18	1				2							2		
Number of isolates		28	10	23	4	24	8	14	2	2	6	4	71	4	
Number of collections		15	6	16	2	12	4	7	1	1	3	2	40	2	

¹ Near isogenic resistances evaluated: *Lr* 1,2a,2c,3,3ka,9,10,11,16,17,18,24,26,30

Wheat stripe rust. During the first week in July, traces of wheat stripe rust were found in the Gallatin valley in Montana.

Oat stem rust. In early July, trace amounts of stem rust were found in oat fields in west central Wisconsin. In mid-July, traces of oat stem rust were found in fields in central Minnesota and northeastern South Dakota and in plots in east central Minnesota and east central South Dakota. In a field of oats in north central South Dakota traces of stem rust were observed on wild oats (*Avena fatua*). This year oat stem rust developed late in the northern oat growing area and losses will be light except for late maturing fields. Oat stem rust races identified through July 18 are presented in Table 2.

TABLE 2. Oat stem rust races identified through July 18, 1994.

State/collections	Number of isolates		Number of isolates of race		
	NA-5	NA-16	NA-27		
Alabama	3	9			9
California	1	3	3		
Florida	4	12			12
Louisiana	3	9		3	6
Mississippi	1	3			3
Texas	7	21		9	12
Total	19	57	3	12	42

Oat crown rust. In mid-July, trace-10% severities were found on oat flag leaves throughout the eastern Dakotas, southern Minnesota and southern Wisconsin fields. In east and west central Minnesota and east central South Dakota plots, 80% severities were observed. In mid-July, plots in northwestern North Dakota had only traces of crown rust.

Crown rust is severe and widespread this year. The most severe rust is found in fields where rust occurred early and conditions were conducive for rust development. Buckthorn growing in close proximity to oat fields provided some of the initial inoculum in these areas, i.e. southern Wisconsin and southern Minnesota. Buckthorn bushes appear to be common in southeastern South Dakota and may contribute to oat crown rust in that area.

Among the 32 oat crown rust isolates from Texas that have been tested, 31% were virulent on Pc38, 16% on Pc39, and 13% on Pc68. A high proportion of the isolates collected from breeder's nurseries were virulent on TAM-0-386, but only 16% were virulent on the resistant selection, TAM-0-386R. From the same nurseries, 13% of the isolates were virulent on TAM-0-393. No virulence was found in Texas for Pc45, Pc48, Pc52, Pc62.

Barley stem rust. During mid-July, traces of stem rust were found in southeastern North Dakota plots and north central South Dakota and central and southeastern Minnesota fields. Traces of stem rust were found on wild barley (*Hordeum jubatum*) growing in a northeastern South Dakota roadside ditch in mid-July. Losses to barley stem rust will be light since most of the crop is in the soft dough + maturity stage.

Barley leaf rust. In mid-July, traces of barley leaf rust were found in commercial fields in east central South Dakota and central North Dakota.

Barley stripe rust. There have been no new reports of barley stripe rust since the May 16 bulletin.

Rye stem rust. The first report of rye stem rust this year was in a plot of the susceptible cultivar Prolific in central Minnesota, in mid-July.

Rye leaf rust In mid-July, 30% rye leaf rust severities were observed in a southeastern Pennsylvania field and traces were found in northwestern North Dakota plots.