CEREAL RUST BULLETIN

Report No. 6

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From:

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AGRICULTURAL RESEARCH SERVICE
U.S. DEPARTMENT OF AGRICULTURE
(In cooperation with the Minnesota Agricultural Experiment Station)

- Wheat stem rust has been found in fields in Kansas, Illinois, and Indiana.
- Trace amounts of wheat leaf rust have spread as far north as central Michigan.

The small grain harvest is underway from southern South Carolina to central Kansas. In the northern grain-growing area, most the of the small grains are about 2 weeks behind normal in development and moisture is adequate in most areas.

Wheat stem rust. During the second week in June, wheat stem rust severities ranged from trace to 1% in fields of soft red winter wheat in southern Illinois, southern and northwestern Indiana and in wheat plots in central Indiana at the soft dough stage. Since the crop is close to maturity, losses to stem rust will be minimal.

During the second week in June, traces of stem rust were observed in plots in central and northeastern Kansas. The date of the first stem rust observation was two weeks later than normal for the northeastern Kansas location.

The stem rust races identified so far in the 1996 survey (Table 1) were also identified in 1995. Races QFCS and TPMK were identified from collections made in mid-April in wheat fields south of Houston, Texas. Races QCCS and TPMK were identified from collections made in early May in central Texas.

Wheat leaf rust. During the third week in June, leaf rust was widespread throughout Kansas on wheat plants where there still was green tissue. Severities ranged from trace-5% on cultivars in plots and traces in fields in northeastern Kansas. Rust development was late this year because leaf rust did not overwinter in Kansas and the climatic conditions were less than ideal for rust development in early spring.

In mid-June, trace to 15% severities were observed in soft red winter wheat fields and nurseries at the soft dough stage throughout Indiana and Illinois. In the third week in June, traces of leaf rust were observed in fields in the Thumb area and central Michigan. In all of these locations the leaf rust that developed was from spores that were deposited with rain from southern inoculum sources and not overwintering sources. Trace amounts of leaf rust were found in nurseries in southern Minnesota on June 24. Twenty-percent severities were noted on Karl 92 in a nursery in Lincoln, Nebraska, the third week of June.

Wheat in central Washington is in the late milk to early dough stage. There are no new developments with leaf rust in that area since the last bulletin. There was some spraying to control leaf rust on soft white wheat. An emergency label was obtained for the use of Folicur on wheat in

Washington, because supplies of Bayleton ran low. Leaf rust development in western Oregon and Washington and northern Idaho were delayed by dry weather for the first 2 weeks of June, but recent rains have set the stage for a rapid buildup of leaf rust in that area. Winter wheat in the Palouse area is not as far along in development as in central Washington, so there is still time for damage from rust to occur. Growers are watching the rust development closely and preparing to spray wheat for control of leaf rust if necessary. The recent rains may have set the stage for a rust outbreak within 7-10 days. An explosion of leaf rust on the soft white wheat in the Palouse area is a good possibility.

The leaf rust races identified so far in the 1996 survey (Table 2) were also identified in previous surveys. The MCD-10 race was identified from collections made in Louisiana and this was the first time this race was identified from a cultivar other than Jagger.

Wheat stripe rust. There are no new developments with stripe rust in central Washington since the last CRB. Growers used lots of fungicide to control stripe rust on the susceptible varieties of hard red and club wheats. Stripe rust was going strong on susceptible wheat varieties at Pendleton, Oregon (northeastern Oregon) last week. Stripe rust development in eastern Oregon and Washington and northern Idaho were delayed by dry weather for the first 2 weeks of June, but recent rains have set the stage for a rapid rust buildup in that area. Winter wheat in the Palouse area is not as far along in development as in central Washington, so there is still time for damage from rust to occur.

Oat stem rust. There have been no new reports of oat stem rust since bulletin #4. The oat stem rust races identified so far in the 1996 survey are presented in Table 3. Race NA-27, virulent to Pg-1,2,3,4, and 8 remains the predominant race of oat stem rust population. Race NA-10, which was isolated from a wild oat collection made in California, is unusual and has not been found for a number of years. This race has low virulence and is not a threat to cultivated oat.

Oat crown rust. By the third week in June, traces of crown rust were found on oats in south central Wisconsin and in Iowa fields. Traces of crown rust were also found in south central Minnesota and east central South Dakota plots at this same time. Crown rust is beginning to build up on susceptible oat lines near buckthorn, the alternate host, in St. Paul, MN. Recent warm wet weather should accelerate the increase of crown rust in this area.

Barley stem rust. As of June 26, no barley stem rust has been reported in the U.S. this year.

Barley leaf rust. In early June, traces of barley leaf rust were found in plots in southern Illinois. During the second week in June, leaf rust was starting to increase in winter barley plots in Guelph, Canada, where it likely overwintered. Because of cool conditions the crop developed late so some damage is expected in the winter barley crop and damage is likely in spring barley. Traces of barley leaf rust were found in southern Minnesota plots the third week in June.

Barley crown rust. Barley crown rust was observed in a Brookings, South Dakota, nursery on June 17. On susceptible barleys, severities were as high as 15% on all leaves except for the flag. It is expected that the severities will increase in the next week or so. Barley crown rust was also found at severities up to 10% on wild barley, *Hordeum jubatum*, near buckthorn in St. Paul, MN.

Barley stripe rust. Stripe rust was extremely severe on winter barley in irrigated plots at Hermiston, Oregon (north central -northeast part of state) last week. Peduncles of the very susceptible variety Gwen were covered with telia. Barley stripe rust has been found on both winter and spring barley

varieties in western Washington for the past 3 weeks. It is also present in plots and fields in northern Idaho and was found in plots near Parma in southwest Idaho. Barley stripe rust was going strong in plots of spring barley in the Williamette Valley, but there is not much barley grown in fields in that area. An emergency label was also obtained for use of Folicur to control stripe rust on barley in Washington, Oregon, and Idaho.

Rye leaf rust. Traces of rye leaf rust were found in southern Minnesota plots the third week of June.

Stem rust on barberry. The first report of the aecial stage of stem rust found this year on common barberry, the alternate host, was in southeastern Minnesota in Fillmore county on June 13.

Crown rust on buckthorn. During the second week in June, light to moderate aecial infections were found on buckthorn in east central Illinois, southern Minnesota and east central South Dakota. Due to the cool spring, infections on buckthorn appeared 2 to 3 weeks later than normal throughout this area. Late-planted oats in this area will be at risk to crown rust.

In mid-June, aecial development was severe in the Guelph, Canada, area. The oat crop is very late so crown rust may cause losses.

TABLE 1. Wheat stem rust races identified through June 24, 1996.

		No. of isolates by state	
Pgt code	Virulence formula*	TX	LA
QFCS	5,8a,9a,9d,9g,10,17,21	3	0
TPMK	5,7b,8a,9d,9e,9g,10,11,17,21,36,Tmp	14	9
QCCS	5,9a,9d,9g,10,17,21	2	0
QCCJ	5,9d,9g,10,17,21	2	0
Number of isolates		21	9
Number of collections		7	3

* Single gene resistances evaluated: *Sr*5,6,7b,7a,9a,9b9d,9e,9g,10, 11,17,21,30,36,Tmp

TABLE 2. Wheat leaf rust races identified through June 24, 1996.

Prt code	Virulence formula*	Number of isolates by state			
		GA	LA	TX	CA
MBB	1,3		2		
MBB-10	1,3,10		1		
MBG-10	1,3,10,11	1		2	
MBR-10	1,3,3ka,10,11,30		2	5	
MCB-10	1,3,10,26				2
MCD-10	1,3,10,17,26		4	2	
MGB-10	1,3,10,16			2	
MLR-10,18	1,3,3Ka,9,10,11,18,30			2	
TBG-10	1,2a,2c,3,10,11		2		
TDB-10	1,2a,2c,3,10,24			2	
TDG-10	1,2a,2c,3,10,11,24			5	
TLG-18	1,2a,2c,3,9,11,18		2		
No. of Isolates		1	13	20	2
No. of Collections		1	8	12	2

* Single gene resistance evaluated: *Lr*1,2a,2c,3,3ka,9,10,11,16,17, 18,24,26,30

TABLE 3. Oat stem rust races identified through June 24,1996.

Race	Virulence formula*	No. of isolates by state		
		TX	MEX	CA
NA-27	9,13,15,16,a/1,2,3,4,8	22	3	0
NA-16	2,4,9,13,15,16,a/1,3,8	3	0	0
NA-10	1,4,8,9,13,16,a/2,3,15	0	0	4
Number of isolates		25	3	4
Number of collections		9	2	2

* Avirulence/virulence.

Special Note:

This and all previous 1996 rust bulletins can be viewed on the Cereal Rust Laboratory's web page (http://www.umn.edu/rustlab).

Fig. 1. Leaf rust severities in wheat fields on June 24, 1996