CEREAL RUST BULLETIN

Report No: 1
April 21, 1981

From:
CEREAL RUST LABORATORY
U. S. DEPARTMENT OF AGRICULTURE
UNIVERSITY OF MINNESOTA, ST. PAUL 55108

Issued By:
SCIENCE AND EDUCATION ADMINISTRATION
AGRICULTURAL RESEARCH
U. S. DEPARTMENT OF AGRICULTURE
(In cooperation with the Minnesota Agricultural Experiment Station)

The 1980-81 winter was warmer and drier than normal throughout much of the United States small grain-growing area. Scattered areas of drought still exist in parts of the Great Plains. Winter wheat is generally rated fair to good in the major producing states. The Kansas wheat crop remains good, but in the southwest, south central, and north central areas, the conditions are rated fair to poor. Moisture is needed throughout most of the Great Plains due to the advance crop maturity and warm, windy weather. The earlier than normal spring has accelerated small grain planting in the upper midwest.

Wheat stem rust--The first wheat stem rust in the United States in 1981 was found on April 6 in the Beeville, Texas nursery in a McNair 701 trap plot. Rust was also found in a similar plot at Uvalde, Texas on April 7. In both cases, only trace amounts of rust were found. At Beeville, the initial infection occurred approximately 30 days earlier at mid-plant height. Rust had been at Uvalde for almost two weeks. Last year no stem rust was found in south Texas.

Wheat leaf rust--During the first full week in April, leaf rust was light in south Texas commercial fields. In the Beeville nursery, leaf rust was severe on some cultivars but prevailed on the lower part of the plant because of dry weather. Northward from Beeville, leaf rust becomes more severe. This was especially true in susceptible cultivars in the Giddings and Temple, Texas nurseries. Some losses may occur in late planted fields. Sturdy, the principle hard wheat cultivar, remains resistant. No virulence for Lr9 resistance was observed.

Wheat stripe rust--The soft red winter wheats in general are heavily infected with stripe rust in south Texas. East of San Antonio, two fields of Coker 68-15 were severely infected with stripe rust. These fields were in the flowering stage and moderate losses are expected. Most of the Texas soft wheats are grown in the Dallas area; therefore, this area should be watched very closely for stripe rust. Increase of stripe rust is generally limited as temperatures increase.

Oat stem rust--In 1981, oat stem rust is widespread but light in south Texas. It has not been this widespread in the past five years. The oat crop is later than normal and with spring rains and warmer temperatures rust could become severe enough to result in some losses in south Texas. This area could also provide a source of inoculum for the northern oat crop. Stem rust was found on wild oats (Avena fatua) growing near San Antonio. Rust prevalence and severity were higher than normal and this was the only place where an overwintering center of oat stem rust was found.

Oat crown rust--In early April, crown rust in south Texas was heavier than last year but lighter than normal. Crown rust was heavy on susceptible cultivars in south Texas nurseries and light in all commercial fields observed. If the weather becomes more suitable for rust development crown rust could become severe in the late planted fields and result in a large increase of inoculum.

Barley stem rust--No stem rust was found on barley in south Texas.

Barley leaf rust--Barley leaf rust was heavy in the south Texas nurseries. No commercial barley fields were observed.

Other diseases--Powdery mildew and Septoria tritici were two other diseases observed in the south Texas fields and nurseries. Powdery mildew was severe on the lower leaves in fields of Sturdy wheat. Aphids had been a problem but numbers were low by early April.

CEREAL RUST BULLETIN

Report No: 2
May 12, 1981

From:
CEREAL RUST LABORATORY
U. S. DEPARTMENT OF AGRICULTURE
UNIVERSITY OF MINNESOTA, ST. PAUL 55108

Issued By:
SCIENCE AND EDUCATION ADMINISTRATION
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U. S. DEPARTMENT OF AGRICULTURE
(In cooperation with the Minnesota Agricultural Experiment Station)

Development of the winter wheat crop continues well ahead of recent years and is rated good throughout most of the major producing areas. Rainfall over much of the central plains and southern U.S. provided needed moisture for the growing crop. However, scattered local dry areas still remain in the southern Great Plains. Spring grain seeding progressed ahead of normal with more rain needed to replenish soil moisture and promote good growth. Recent cold and freezing temperatures will retard spring sown cereals in the Dakotas, Minnesota, and Wisconsin.

Wheat stem rust--Stem rust was found in soft red winter wheat varietal plots during a southeastern U.S. small grain disease survey the last week of April. Stem rust was more severe than normal and scattered throughout the survey area. Overwintering rust centers were found in varietal plots in the southern most counties of Louisiana and Alabama. In a few scattered instances traces were found in commercial fields that were near maturity. The rust spread was retarded by dry weather and the crop is maturing rapidly; therefore, little loss is expected due to stem rust. More stem rust development in the northern regions of the soft red winter wheat is possible with favorable weather conditions. Stem rust was found in susceptible trap plots south of a line from Temple to Abilene, Texas. A few infections were found in commercial fields (wheat near maturity) south of Temple, Texas.

Wheat leaf rust--During the last full week of April, leaf rust severities varied from light to heavy in the southeastern U.S. varietal plot cultivars. In the commercial fields severities generally were light (10% or less). The latest rains will provide better conditions for leaf rust increase in the soft red winter wheats. In the Arthur-type wheats (Lr9 resistance), the rust severities were generally lower than 1980. This indicates a change in the race distribution in this area of the U.S. for 1981. Leaf rust in Texas is generally light except for an area around Abilene where flag leaf severities ranged from 50 to 100 percent in susceptible fields (mid-dough stage). Several fields in this area were defoliated by leaf rust which will result in some grain shriveling. Most of the leaf rust in Texas is avirulent on Lr9 and Lr24, two major sources of resistance. However, Lr9 virulence was found in trap plots at College Station where it did not occur a month ago and Lr24 virulence was found in Baylor County, Texas plots on the cultivar Osage. Traces of leaf rust were reported in fields as far north as northeastern Kansas. Leaf rust is widespread and earlier than normal in the Pacific Northwest and poses a potential threat, if dew periods occur.

Wheat stripe rust--In the Pacific Northwest a high potential stripe rust epidemic is possible on susceptible cultivars if cool moist weather prevails (Line). Traces of stripe rust were found in commercial fields of soft red winter wheats south of Dallas, Texas and at an experimental wheat plot in Franklin County, Kansas (Eversmeyer).

Oat stem rust--In general oat stem rust was scattered and light in varietal plots throughout the southeastern U.S. In the same area traces of stem rust were found in commercial fields now in the soft dough stage. Oat stem rust is widespread

across north central Texas generally in trace amounts. In the southern part of this area oats are in the dough stage and most escaped damage. In the northern part of the area the oats are in the milk stage and considerable rust increase is expected. Currently the amount of spores being produced in Texas is much greater than normal.

Oat crown rust--Crown rust is generally light throughout Texas causing only light losses. Traces of crown rust were found in southeastern U.S. nurseries. Aecia have developed on buckthorns in southern Minnesota and southern Wisconsin. An early increase of rust on buckthorn is a source of inoculum for early infection of oats.

Barley stem rust--Stem rust was found on a few barley lines in the Baton Rouge, Louisiana nursery.

Barley leaf rust--Barley leaf rust occurs throughout north-central Texas in moderate amounts. However, this is not a major barley growing area. No barley leaf rust was found in the southeastern U.S. small grain nurseries.

Rye and Triticale leaf rust--Light amounts of leaf rust were observed in the rye and triticales nurseries in the southeastern states.

Barberry rust--The first aecial collections in 1981 were made in Monroe County, West Virginia on May 5. Most the infection was in the pycnial stage and it appears that there will be more rust development on barberry than in several years (Bostic).

Other diseases--Wheat--In north-central Texas, powdery mildew has caused considerable loss in a few fields. Tan spot and speckled leaf blotch occurs but generally in light amounts. North of Dallas, several fields were observed to be defoliated by Army worms. Due to lack of moisture in the southeastern states Septoria nodorum (glume blotch) was lighter than normal in many of the cultivars grown in the nurseries and commercial fields. Other cereals--Traces of mildew were observed on both barley and oats in north-central Texas.

CEREAL RUST BULLETIN

Report No: 3
May 27, 1981

From:
CEREAL RUST LABORATORY
U. S. DEPARTMENT OF AGRICULTURE
UNIVERSITY OF MINNESOTA, ST. PAUL 55108

Issued By:
SCIENCE AND EDUCATION ADMINISTRATION
AGRICULTURAL RESEARCH
U. S. DEPARTMENT OF AGRICULTURE
(In cooperation with the Minnesota Agricultural Experiment Station)

The small grain harvest is in full swing throughout the deep south of the U.S. and several fields have been cut in southern Oklahoma. The May freeze caused heavy losses in some wheat fields in north central and northwest Kansas and northward. Much of the wheat in southern and eastern Kansas suffered from the early drought but recent rains have stabilized the condition and crop prospects are good to fair. Throughout the Central Plains the small grains are at least 7 to 10 days ahead of normal growth stage. In the Northern Plains, recovery from the early May freeze of spring seeded grain is promising. The crop is ahead of normal maturity but in many areas it had deteriorated due to stress from lack of moisture before recent rains.

Wheat stem rust--Isolated centers of wheat stem rust were found in McNair 701 trap plots in southwestern Oklahoma on May 19 and 20. Normally the first stem rust is found in this area on May 23. Large centers of stem rust infection were found in mature fields of Sturdy wheat in Bee County, Texas on May 8. No reports of further rust development in the soft red winter wheat area were received in the past two weeks. Races identified from collections received prior to April 15 are as follows:

Location	No. of Collections	Wheat stem rust CRL races (No. of isolates)
Beeville, TX	2	HNL (4)
Uvalde, TX	1	QFB (3)

Race HNL was not identified in 1980 but was an important race in this area in 1979 and in most years is a part of the race population from northeastern Mexico through Michigan.

Wheat leaf rust--Leaf rust is common across northern Georgia, Alabama, Oklahoma and Kansas. Severities before harvest in central Kansas could be high but losses should be light as the disease is developing near crop maturity. Traces of leaf rust were observed on both spring and winter wheats in southern Minnesota by mid-May. Leaf rust will be severe in some areas of the Pacific Northwest if the weather remains fairly moist. UN races 2, 13, and 17 were identified from the first leaf rust collected in southern Texas in 1981.

Wheat stripe rust--Stripe rust is scattered in trap plots of soft wheat across Arkansas (Jones), Oklahoma, and the western edge of central Kansas as far north as Stockton, Kansas. Stripe rust is severe throughout the Pacific Northwest and some of the susceptible varieties are expected to be significantly damaged. It is reported that some growers are using a fungicide control program.

Oat stem rust--During the past two weeks rust collections were made in a McGregor, Texas oat nursery on many of the Texas commercial cultivars. Oat stem rust generally occurs throughout southwestern Oklahoma in commercial fields; however, due to the advanced growth stage no losses will occur. However, the

disease is more severe and occurring at an earlier date than normal. In 1981, the first oat stem rust collections were made one week earlier than the 10-year average (1971-80) in Oklahoma and north-central Texas. This early rust buildup could provide inoculum for rust infection and losses in fields of the northern oat-growing area of the U.S.; however, most of these fields were planted earlier than normal in 1981. Races identified from collections made in south Texas in early April are NA 27 (90%) and NA 16 (10%).

Oat crown rust--Crown rust is in general scattered and light across Oklahoma and south-central Kansas. No losses will occur in this area. Time remains for crown rust to develop in northern Kansas where the oats are in the late jointing to early boot stage. Aecial development is heavy on buckthorns in southern Minnesota, providing a heavy local inoculum source.

Barley leaf rust--Leaf rust is light but general in barley nurseries as far north as Manhattan, Kansas. There are few commercial fields in this area.

Rye stem and leaf rust--No rust was observed on rye in Oklahoma and Kansas.

Barberry rust--Two aecial collections were made from Barberis canadensis in Monroe County, West Virginia on May 19 (Bostic).

CEREAL RUST BULLETIN

Report No: 4
June 9, 1981

From:
CEREAL RUST LABORATORY
U. S. DEPARTMENT OF AGRICULTURE
UNIVERSITY OF MINNESOTA, ST. PAUL 55108

Issued By:
SCIENCE AND EDUCATION ADMINISTRATION
AGRICULTURAL RESEARCH
U. S. DEPARTMENT OF AGRICULTURE
(In cooperation with the Minnesota Agricultural Experiment Station)

The winter wheat harvest progressed into northern Oklahoma and southern Kansas. An accurate assessment of the severe freeze damage in Kansas, east central Colorado, Nebraska, and South Dakota won't be possible until harvest; however, a loss of 100 million bushels is expected (Crop Quality Council). The widespread rains and cooler temperatures during the last week in May improved crop prospects but are delaying harvest in the south. Throughout much of the central and northern Great Plains, the crop is 7 to 10 days ahead of normal growth stage.

Wheat stem rust--In Texas, stem rust infections were found scattered on different cultivars in a Bell County nursery at maturity (McDaniel). In Kansas, the first wheat stem rust was found May 28 in a Sumner County nursery (Willis). This is three days later than the 10 year average for southern Kansas. On June 1, stem rust was found in a northeastern Missouri soft wheat nursery (Foudin) and a few pustules were found in north central Kansas (Browder). Races identified from collections received prior to May 1 are as follows:

Location	No. of Collections	Wheat stem rust CRL races (No. of isolates)
Southern TX	3	QFB(3) HNL(4)
Alabama	2	QFB(6)
Florida	1	RCR(3)
Louisiana	13	QFB(29) RCR(7) QSH(1) RTQ(1)
Georgia	2	QFB(6)
Mississippi	1	QFB(3)

The race QFB in past years has comprised an important part of the race population in the southeastern U.S. No race 15-TNM has been found from the collections from the deep south.

Wheat leaf rust--UN races 2 and 17 were identified from some of the leaf rust collections made in the southeastern U.S. in 1981. Many of the UN 2 races had Lr9 virulence. A bias exists here as some of the collections were made from cultivars known to possess Lr9. Leaf rust is severe in western Kansas and Nebraska and will cause losses in late maturing fields. Leaf rust is increasing in winter wheat fields in east central Minnesota and rust could become severe in susceptible spring wheats. The most commonly grown cultivars are leaf rust resistant. Traces of leaf rust are present on winter wheat plots at Casseltown, North Dakota (6/2, Statler) and Crookston, Minnesota (Stromberg).

Wheat stripe rust--Infection centers of stripe rust were found in a York, Nebraska varietal nursery on May 25 (Diehl). Severities as high as 90% were reported on some cultivars in plots in this area. Stripe rust will continue increasing on susceptible cultivars in the Central Plains until the temperatures increase and remain hot for a week or so. Stripe rust is severe in the Pacific Northwest and will cause considerable damage in some areas on susceptible cultivars. Stripe rust was found in southern Idaho on June 1 (Forster).

Oat stem rust--Stem rust became severe on late oat lines in nurseries in central Texas. Oat stem rust was found in an oat nursery in south central Kansas on May 29. This is 10 days earlier than the 10 year (1971-1980) average date for southern Kansas. A buildup of this early rust could provide inoculum for rust infection and losses in late planted fields in the northern oat growing area of the U.S. Races identified from collections received prior to May 1 are as follows:

Location	No. of Collections	Oat stem rust NA races (No. of isolates)	
Alabama	2	NA 16(1)	NA 31(5)
Georgia	1		NA 31(3)
Louisiana	4	NA 16(1)	NA 31(9)
Mississippi	2	NA 16(3)	NA 31(3)
Texas	11	NA 16(3)	NA 31(28)

Oat crown rust--Crown rust in general is scattered and light in oat-growing areas of Iowa and South Dakota. In Wisconsin and Minnesota buckthorn bushes, the alternate host for the disease, are heavily infected with rust. Initial uredia were observed on oats in Wisconsin on May 29 in Dane County and the first week in June in Waukesha County.

Barberry rust--Aecial collections were made in Olmsted and Fillimore Counties, Minnesota, on May 26 (Laudon and Schulz).

CEREAL RUST BULLETIN

Report No: 5
June 23, 1981

From:
CEREAL RUST LABORATORY
U. S. DEPARTMENT OF AGRICULTURE
UNIVERSITY OF MINNESOTA, ST. PAUL 55108

Issued By:
SCIENCE AND EDUCATION ADMINISTRATION
AGRICULTURAL RESEARCH
U. S. DEPARTMENT OF AGRICULTURE
(In cooperation with the Minnesota Agricultural Experiment Station)

The winter wheat harvest has progressed into central and northern Kansas but has been delayed by the advent of rains. However, the rains have improved the crop prospects in most of the small grain growing area of the U.S. Much of the crop in the central and northern Great Plains remains one week ahead of normal.

Wheat stem rust--In the past two weeks, traces of stem rust were found on susceptible wheat cultivars throughout northern Kansas and southern Nebraska. In Minnesota, the first wheat stem rust was found June 17 in a Rosemount, Minnesota winter wheat trap plot. This is one day earlier than the 10-year average date for the appearance of stem rust in southern Minnesota. Rain samples from Minnesota since late May have contained stem rust uredospores. Stem rust was found in Virginia in a nursery on June 16 (Roane). Races identified from winter wheat collections received prior to May 15 are as follows:

		Number of isolates of each race						
		11	15	17		113	151	
Location	No. of collec.	RCR	TNM	HDL	HNL	RTQ	QFB	QSH
Southern Texas	3				4		3	
Central Texas	12		5	3			26	
Alabama	5	4					9	1
Florida	7	13					6	
Georgia	3						9	
Louisiana	15	7				1	32	1

The first race 15-TNM identified from 1981 collections was from central Texas on the rust susceptible cultivar McNair 701. None of these races are virulent on the principal commercial spring or durum cultivars.

Wheat leaf rust--UN races 2 and 3 were identified from some of the initial collections made on winter wheat in central Texas. Throughout Minnesota and southern North Dakota leaf rust is increasing in the spring wheats (10% severity) and could cause some losses in susceptible cultivars. Leaf rust is severe on winter wheats in Nebraska and South Dakota and will cause losses in late maturing fields. Leaf rust is becoming severe in the Pacific Northwest and will cause some losses. Most cultivars grown in the area are susceptible to leaf rust (Line).

Wheat stripe rust--Stripe rust is scattered throughout the winter wheats in southern Nebraska, Illinois and Missouri. The hot dry weather will stop further pustule development in the susceptible cultivars of the Central Plains. In the Pacific Northwest stripe rust is present in epidemic levels in Washington, Oregon, Idaho, and northwestern Montana. Severe losses will occur in fields of Paha cultivars, and some losses will occur in fields of NuGains. Daws and Stephens are lightly rusted but should escape a yield loss (Line).

Oat stem rust--Traces of oat stem rust were found scattered in northwest Kansas and northeast Nebraska oat fields. Oat stem rust was found in an irrigated oat field in southeastern South Dakota on June 11 (4 weeks earlier than the 40-year average). In 1977, this area provided inoculum for an oat stem rust epidemic in the northern oat-growing area of the U.S. With favorable climatic conditions stem rust will increase in this area. Stem rust was reported at Ames, Iowa (6/18 Michel and Mundt). Races identified from collections received prior to May 10 are as follows:

Location	Number of collections	Number of isolates of each race		
		NA-5	NA-16	NA-27[1/]
Alabama	2		1	5
Georgia	1			3
Louisiana	4		1	9
Mississippi	2		3	3
Texas (oats)	68		21	169
Texas (wild oats)	14	3	2	26

1/ Note: This race was incorrectly identified as NA-31 in Cereal Rust Bulletin No. 4, thanks to those who called it to our attention.

Race NA-5 was found for the first time in 1981 on Avena fatua (wild oats) in central Texas, while in 1980 20% of the Texas oat stem rust race population was race NA-5.

Oat crown rust--Crown rust in general is light and scattered throughout the northern oat-growing area of the U.S. A general increase in severity is expected in the next week.

Barley leaf rust--Leaf rust is more common in Nebraska and Minnesota than in 1980. Leaf rust was reported in Virginia (Roane), Delaware (Helbig), and Washington (Line).

Rye leaf rust--Rye leaf rust was found on rye growing in South Dakota, Minnesota, and Maryland (Fieselmann) in the last two weeks. No leaf rust was observed on rye in any of the southern states earlier in the year.

Barberry rust--Aecial collections were made on barberry in an east-central Minnesota county on June 5. The aecial development is heavier than usual in this area of Minnesota (Laudon, Schulz, Schlick). The early 1981 Minnesota collections were identified as Puccinia graminis f. sp. secalis. Races RKQ and GFC were identified from a West Virginia aecial collection.

CEREAL RUST BULLETIN

Report No: 6
July 7, 1981

From:
CEREAL RUST LABORATORY
U. S. DEPARTMENT OF AGRICULTURE
UNIVERSITY OF MINNESOTA, ST. PAUL 55108

Issued By:
SCIENCE AND EDUCATION ADMINISTRATION
AGRICULTURAL RESEARCH
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(In cooperation with the Minnesota Agricultural Experiment Station)

The winter wheat harvest has progressed into southern Nebraska. Much of the area hit hardest by the May freeze has been harvested and early reports show 80% losses in some northwest Kansas counties. The small grain crop in the northern Great Plains is in good condition and maturing at a fast rate.

Wheat stem rust--Traces of wheat stem rust were found on winter wheats in Ionia County, Michigan (Clayton), Rook County, Wisconsin (Norgren), Brookings County, South Dakota and Cass County, North Dakota (Miller). In the Cass County plot, the stem rust severities ranged from a trace to 10% at the one-half berry growth stage. This initial occurrence of stem rust is 4 days earlier than the 10-year average for eastern North Dakota. In southwestern Minnesota and eastern South Dakota traces of stem rust were observed on susceptible spring wheat cultivars. Races identified from winter wheat collections received prior to June 4 are as follows:

		Number of isolates of each race							
		11	15	17		29	113	151	
Location	No. of collec.	RCR	TNM	HDL	HNL	HJC	RTQ	QFB	QSH
Southern Texas	4				4	1		3	
Central Texas	17		5	3				41	
Alabama	5	4						9	1
Florida	7	13						6	
Georgia	3							9	
Kansas	1		2	1					
Louisiana	15	7					1	32	1
Mississippi	1							3	
Missouri	1							3	
Oklahoma	5		8	3					4

Wheat leaf rust--Leaf rust is severe on winter wheats in Minnesota and North Dakota and will cause some losses in late maturing fields. Throughout much of the spring wheat growing area leaf rust is increasing rapidly and losses will occur in the most severely infected fields. However, the principal hard red spring wheat and durum wheat cultivars are resistant to leaf rust. Virulence for Lr24 was identified from a collection made in early May in a central Texas field. None of the previous 1981 collections were virulent on Lr24. In the Pacific northwest leaf rust is severe on most of the winter wheats and is increasing rapidly on the spring wheats (Line).

Wheat stripe rust--Stripe rust was found June 26 in a Rosemount, Minnesota winter wheat varietal plot. Since then it has spread into many other winter wheats in this nursery. On June 29, traces of stripe rust were found in a west-central Minnesota spring wheat field (Shane). This is the first occurrence of stripe rust in Minnesota since 1958. In the Pacific Northwest stripe rust is present in epidemic levels and on many of the cultivars is developing on the wheat heads (Line).

Oat stem rust--Traces of oat stem rust were found scattered throughout fields in northern Iowa (Simons), eastern South Dakota and southern Minnesota (Schulz) in the past two weeks. With favorable climatic conditions stem rust will increase in this area but should cause little if any yield loss except in late planted fields. Races identified from collections received prior to June 3 are as follows:

Location	Number of collections	Number of isolates of each race			
		NA-5	NA-6	NA-16	NA-27
Alabama	2			1	5
Georgia	1				3
Kansas	1				3
Louisiana	4			1	9
Mississippi	2			3	3
Southern Texas	61			13	152
Central Texas	116	13	1	22	275

Oat crown rust--In the past two weeks crown rust severities have increased rapidly in the upper midwest. In some Minnesota and North Dakota oat plots severities as high as 50% were reported. With continued favorable environmental conditions rust will become severe in many of the susceptible cultivars.

Barley leaf rust--Leaf rust is severe in some of the Minnesota barley varietal plots. In southern Minnesota traces of rust were found in commercial fields.

Rye leaf rust--Traces of rye leaf rust exist throughout the eastern Dakotas and Minnesota.

Barberry rust--Aecial collections were submitted from Ontario, Canada (Seaman). Races RKQ and QFB were identified from a West Virginia aecial collection.

Quackgrass rust--A stem rust collection was made from Agropyron repens growing in a field 20 feet from barberry bushes in Fillmore County, Minnesota (Laudon).

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Report No: 7
July 21, 1981

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U. S. DEPARTMENT OF AGRICULTURE
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Small grain harvesting has advanced northward into North Dakota and Minnesota. Combining in the major small grain producing states is ahead of schedule. Spring wheat maturity is ahead of average, and due to timely rains and warm temperatures during the past two weeks much of the crop is in good condition. Hot winds two weeks ago resulted in some damage to cereals on light soils in Minnesota.

Wheat stem rust--Wheat stem rust was found widespread in eastern North Dakota and western Minnesota in trap plots of the susceptible spring wheat 'Baart'. In general the infection was light but the rust will increase with favorable climatic conditions. The commercial spring wheats and durums grown in this area are resistant to the commonly found stem rust races. In the past two weeks stem rust was reported for the first time this year in northwest Oregon (Fitch), east central Illinois (Jedlinski) and eastern Washington (Line). Stem rust has been reported in the Pacific Northwest in only five out of the last 11 years. We received our first wheat stem rust collection from Oregon since 1962. Races identified from winter wheat collections received prior to June 23 are as follows:

		Number of isolates of each race								
		11	15	17		29	56	113	151	
Location	No. of collec.	RCR	TNM	HDL	HNL	HJC	MBC	RTQ	QFB	QSH
Southern Texas	6				4	1			3	
Central Texas	17		5	3					41	
Alabama	5	4							9	1
Florida	7	13							6	
Georgia	3								9	
Kansas	6		7	2					3	
Louisiana	15	7						1	32	1
Minnesota	2		6							
Mississippi	1								3	
Missouri	1								3	
Nebraska	3		6						3	
Oklahoma	5		8	3						4
Virginia	1						3			

Race MBC was identified for the first time in 1981 from Virginia.

Wheat leaf rust--Leaf rust is severe and widely scattered on susceptible cultivars growing in Minnesota and North Dakota nursery plots. However, most of the principal hard red spring wheat and durum wheat cultivars are resistant to leaf rust. This year the resistance of the commercial cultivars is better than usual, which probably indicates the presence of a more avirulent race than in the recent past. Preliminary data show that UN races 2 (45%) and 17 (35%) are the two most commonly identified races in the Great Plains wheat growing area. In 1980, UN 17 comprised 57% and UN 2 (6%) of the races identified in the Great Plains.

Wheat stripe rust--Stripe rust was found at Erie in eastern North Dakota in plots of commercial durum cultivars and at Fargo in trap plots of spring wheat on July 89 (Miller). This is the first stripe rust found in North Dakota since 1958. At Erie, single pustules were found and at Fargo the rust was present in two old infection centers. In the past two weeks the development of stripe rust pustules in winter wheat at Rosemount, Minnesota has ceased due to hot weather.

Oat stem rust--Throughout the north central oat growing area stem rust can be found in almost every oat field. The disease is further north than normal for this time of the year. The ten year averages of stem rust appearance for the southern area of South Dakota, Minnesota, and North Dakota are 7/3, 6/25, and 7/16, respectively. The dates for 1981 were 6/11, 6/25, and 7/1, respectively. Severities as high as 40% were observed in Dodge County, Minnesota on 7/14 at early dough stage (Laudon). Generally, the rust severities are light but with continued favorable climatic conditions for spore production and infection rust will become more severe and losses will occur in some fields. Stem rust was found easily on wild oats, (Avena fatua) in the eastern Dakotas and western Minnesota area the past two weeks. Races identified from collections received prior to June 14 are as follows:

Location	Number of collections	Number of isolates of each race			
		NA-5	NA-6	NA-16	NA-27
Alabama	2			1	5
Georgia	1				3
Kansas	4				10
Louisiana	4			1	9
Mississippi	2			3	3
Nebraska	1				3
South Dakota	1				2
Southern Texas	61			13	152
Central Texas	139	13	1	19	374
Northern Texas	15	1		3	35

Oat crown rust--Crown rust is present throughout the oat fields in the northern oat growing area. However, the hot windy weather dried the leaves in most fields. The disease is not expected to be a problem except for some late planted fields.

Barley leaf rust--Barley leaf rust is more widespread this year than it has been for many years. Leaf rust is severe in several Minnesota nurseries; however, it is light to moderately severe in most commercial fields and generally limited to the lower half of the plant.

Barley stem rust--In the past two weeks stem rust collections were made from barley in Goodhue, (Laudon) and Stevens Counties, Minnesota. In southeastern Minnesota stem rust collections were made from wild barley, (Hordeum jubatum). This rust could be either Puccinia graminis f. sp. tritici or secalis. Identification of forma specialis is underway.

Rye leaf rust--Leaf rust collections were made in Maryland (Fieselmann), Virginia (Bostic), and in the Cereal Rust Laboratory small grain rust detection plots with a 10 percent severity reading at all locations. In Minnesota, leaf rust of rye has increased rapidly like wheat leaf rust and much faster than oat crown rust.

Rye stem rust--Rye stem rust collections were made in Fillmore County, Minnesota (Schulz, Schlick) and Montgomery County, Virginia (Roane). Severities ranged from traces in Minnesota to 40% in Virginia. This disease is caused by P. graminis f. sp. secalis.

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Small grain fields are being harvested as far north as the U.S.-Canadian border. Rains and cool weather have slowed grain harvest in the northern Great Plains during the past week. In general, the crop is in good condition and the harvest will gain momentum as fields and plants dry.

Wheat stem rust--In 1981, the first wheat stem rust in the United States was found April 6 in the Beeville, Texas nursery in a McNair 701 trap plot. In late April and early May traces of stem rust were found in susceptible trap plots throughout southern and central Texas. Only traces were found in commercial fields and losses were very light. Over-wintering stem rust centers were found in soft red winter wheat varietal plots in the southern-most counties of Louisiana and Alabama. In a few scattered instances traces were found in southeastern commercial wheat fields but the disease spread was retarded by dry weather and advanced crop maturity. The two most commonly identified races were 151-QFB and 11-RCR. Traces of stem rust were found scattered on susceptible winter wheat cultivars in the central and northern Great Plains during 1981 causing only trace losses. Stem rust was widespread and severe in trap plots of susceptible spring wheats throughout Minnesota and North Dakota. However, no stem rust developed on the commonly grown cultivars as they remain resistant to stem rust.

Table 1. Preliminary data of the 1981 wheat stem rust race survey (8/11/81).

		Percent of isolates of each race									
		11	15	17			29	56	113	151	
Location	No. of Collec.	RCR	TNM	HDL	HDQ	HNL	HJC	MBC	RTQ	QFB	QSH
Alabama	5	29								64	7
Florida	7	68								32	
Georgia	3									100	
Kansas	5		56	11						33	
Louisiana	14	18							3	76	3
Michigan	7		6	22					4	67	
Minnesota	9		84			12				4	
Mississippi	1									100	
Missouri	1									100	
Nebraska	5		70							30	
Oklahoma	5		53	20						.	27
S. Texas	8					50	12			38	
C. Texas	17		11		7					82	
Virginia	1							100			
Wisconsin	2					75				25	
1981	90	11	21	4	1	4	*	1	1	53	3
1980 (final)	43	3	43	1			1	3		23	
1979 (final)	105	5	36	3		2	3	2	3	17	10

* Less than 0.6%

Wheat leaf rust--Leaf rust was moderate and scattered over the entire southern U.S. in 1981. Losses were generally light except in a few late maturing fields and some small local areas. In the northern Great Plains leaf rust was severe in the winter wheats resulting in light to moderate losses. Preliminary studies show UN races 2 and 17 were the two most commonly identified races in the Great Plains. In the Pacific Northwest leaf rust was reported severe on many of the winter and spring wheat cultivars.

Wheat stripe rust--Stripe rust was scattered in soft red winter wheat plots across the Great Plains northward into southern Minnesota. This was the first known occurrence of stripe rust in Minnesota since 1958. Stripe rust was found in plots of hard red winter wheats in Kansas and Nebraska and a trace on hard spring, and durum wheats in Minnesota and North Dakota. Evidently the commercial cultivars of the hard red and spring wheats have resistance to the Great Plains race(s). In the Pacific Northwest, the disease was present in epidemic levels and caused severe losses.

Oat stem rust--In 1981, oat stem rust was severe and scattered throughout the state of Texas with losses occurring in severely infected fields. This early and extensive disease increase in Texas provided inoculum for the northern area where rust was found in every field. In some of the late planted fields moderate losses (a few as high as 10%) occurred. However, losses of this magnitude were not common. Even though the initial infections occurred earlier than normal, the 1977 epidemic was not repeated because of the 1-2 week earlier than normal planting date in the northern area nullifying the effect of early disease occurrence.

Table 2. Preliminary data of the 1981 oat stem rust race survey (8/11/81).

Location	Number of collections	Percent of isolates of each race			
		NA-5	NA-6	NA-16	NA-27
Alabama	2			17	83
Georgia	2				100
Illinois	6				100
Iowa	19				100
Kansas	8			5	95
Louisiana	4			10	90
Michigan	1				100
Minnesota	51	1		1	98
Mississippi	2			50	50
Nebraska	1				100
North Dakota	3				100
Oklahoma	6	6			94
South Dakota	2				100
South Texas	59			8	92
Central Texas	137	3	*	4	93
North Texas	18	5		12	83
1981	321	2	*	5	93
1980 (final)	434	9		11	78
1979 (final)	501	1		2	94

* Less than 0.6%.

Oat crown rust--In 1981, oat crown rust was light throughout Texas causing only minimal losses. During June, crown rust increased rapidly in Minnesota and North Dakota oat fields but hot windy weather in early July dried most of the leaves. Losses will be light except for some late planted fields in Minnesota, North Dakota, and Wisconsin where losses will be moderate to heavy. Aecial development was heavy on buckthorns in the upper midwest providing heavy local inoculum sources.

Barley stem rust--Stem rust on barley was light in 1981 throughout the U.S. However, scattered small to moderate size uredia were observed on late maturing plants in North Dakota and minnesota fields and varietal plots. Insufficient collections have been analyzed to determine if this rust is P. graminis f. sp. tritici or secalis. Losses will be only a trace.

Barley leaf rust--In 1981, barley leaf rust was heavy in Texas nurseries. This rust was widespread throughout the central Great Plains and appeared 2 weeks earlier than normal in Minnesota. Leaf rust was severe in the Red River Valley causing light losses except in a few late planted fields where moderate losses occurred.

Rye stem rust--Traces of stem rust were found on rye in nurseries and fields in Minnesota, North Dakota and Virginia. The initial collections were identified as P. graminis f. sp. secalis.

Rye leaf rust--Leaf rust severities throughout most of the U.S. rye growing area were moderate. In general, losses were light and localized.

Barberry rust--In 1981, aecial collections were made in West Virginia, Minnesota, and Ontario, Canada. The aecial development was heavier than normal in these areas. The majority of the aecial collections were identified as Puccinia graminis f. sp. secalis, although Puccinia graminis f. sp. avenae and tritici were also identified.