# CEREAL RUST BULLETIN

Report No : 1
Date: May 9, 1978

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

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

The winter was colder than normal in most of the southern cereal-growing regions with below average precipitation. Small grain maturity throughout the southeastern states and the southern Great Plains is 7-14 days later than normal. Apparently harvest will start in the first half of June from north central Texas into Kansas.

Wheat in north central Texas is generally in poor condition with the better wheat in the Vernon-Wichita Falls and Dallas-Sherman areas. A dry winter and early spring has resulted in an increased usage of wheat as pasture. In Texas, from a trace to 33% of the fields are being grazed out depending on the area, while in Kansas and Oklahoma indications are that only a few fields are being used for pasture. Recent rains in north-central Texas came too late to save the majority of the crop fields.

Wheat stem rust.-- Stem rust overwintered in the Baton Rouge, Louisiana nursery. The nursery was planted in early October, and the cold winter temperatures evidently did not eliminate the disease. Although similar plots were located throughout the south, this is the only location where we currently know that stem rust overwintered in the U.S. On April 21, the first stem rust collections of 1978 were made in the McNair 701 trap plots in the Uvalde and Beeville, Texas nurseries (Erickson). Stem rust occurred naturally in the Yaqui Valley of Sonora, Mexico, and isolates were identified as races 17-HDB, 17-HNL and 151-QFB. None of these races are thought to pose a threat to the U.S. wheat crop. Last fall severe stem rust existed in the El Bajio area north of Mexico City in nurseries and seed increase fields. The principal race identified from collections made in this area was 151-QSH; however, many other unusual races were also found. Race QSH is more hazardous than the previously mentioned races.

Wheat leaf rust.-- Leaf rust is widespread but variable in severity (trace to 80%) throughout the southeast states. In general, there was more leaf rust in this area than in 1977. At Baton Rouge and Alexandria, Louisiana, and at Quincy and Jay, Florida, leaf rust was severe on McNair 701, which has LR 9 (Transfer) resistance. In Texas, leaf rust is generally light in commercial fields. Most of the population is avirulent on LR 9 but virulent on LR 24. The variety Sturdy is also resistant. A few pustules of leaf rust have been observed in Oklahoma and Kansas, but this is much less leaf rust than normal for this time of year.

Wheat stripe rust.-- Wheat stripe rust was observed in mid-April in southern Texas (Johnson), where Coker 68-15 is the most susceptible of the cultivars observed. Stripe rust was reported to be severe on some lines in the Davis, California nursery (Brownell).

Oat stem rust.-- Oat stem rust was first observed this year in the United States on March 23, 1978, in nurseries in San Patricio and Bee Counties of Texas. These early collections were race 31. In late March, traces of oat stem rust (one pustule per 15 cm of row) were observed in a commercial field east of San Antonio, in Gonzales County, Texas. In early April more severe infections were found in a commercial field in Lavaca County, and in a nursery in Lee County, Texas. By early May, stem rust had spread northward into the central Texas counties of McCulloch and Coryell. The only other stem rust observed in the southeastern U.S. was in a nursery at Baton Rouge, Louisiana. At this time last year stem rust was more severe but had progressed no further northward. Last September, stem rust was common but light on oats in the Mexico City and El Bajio areas of Mexico. Race 31 was most commonly found; however, races 61, 1, and 18 were also present.

Oat crown rust. -- For the second consecutive year, crown rust was light in the southern states. The cold weather and resistant varieties could account for the light crown rust. Traces of crown rust were observed in nurseries at Fairhope, Alabama; Quincy, Florida; and Temple, Texas, by May 1. A month earlier, crown rust was heavy in centers at the Beeville and Tynan, Texas nurseries. The latter evidently has not spread much, as no crown rust was observed in north central Texas last week on either commercial or wild oats.

Barley stem and leaf rusts. -- The only stem rust on barley was in the nursery in the Yaqui Valley of Mexico in mid-March. Leaf rust was heavy on some lines in a forage plot at Temple, Texas in mid-March, but with the clipping in April, leaf rust was seemingly eliminated, as it failed to spread to other parts of the nursery. Leaf rust was observed in a few barley lines in the southeastern U.S. barley plots.

Other diseases. --

Wheat: Powdery mildew was light during the early spring. It has become more obvious in areas of the south. Glume blotch was present in the fields and nurseries of the southeastern states, but it should cause little loss. Dryland foot rot is light and scattered in north-central Texas.

Oats: Septoria foliage blight was light in the southeastern states, and a few local scattered areas of oat red leaf were also observed. Red leaf was widespread in southern Texas in late March, but losses were generally light.

# CEREAL RUST BULLETIN

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

Report No. 2
Date: May 31, 1973
Issued By:
SCIENCE AND EDUCATION ADMINISTRATION
FEDERAL RESEARCH
U. S. DEPARTMENT OF AGRICULTURE
(In cooperation with the Minnesota Agricultural Experiment Station)

Small grain harvest is underway in south and south-central Texas about 15 days later than normal. Winter wheat is in fair to poor condition in Oklahoma with the best wheat in the north-central section of the state. Periods of inadequate moisture in Oklahoma have resulted in an estimated 10% of the wheat being used for grazing or hay. Little wheat will be harvested until mid-June in Oklahoma with the exception of a small area around Duncan. Wheat growth stage varied from early to mid-dough in southern Oklahoma to full berry in the north, a lag of two weeks from normal. Wheat in central Kansas is in fair condition, but in the south-central and north-central areas wheat is in good to excellent condition. Growth stage varied from full berry in the south to heading and 1/4 berry in the north. Winterkill in winter wheat was reported in the northern Great Plains. Spring sown cereals are near normal in growth stage and soil moisture is generally good.

Wheat stem rust.--Stem rust increased rapidly in trap plots in south and central Texas in the past three weeks. For the first time since 1969, stem rust was observed in the Mesa, Arizona Plant Introduction Nursery (Kilpatrick). Stem rust has only been reported there five times in the past 37 years. There is no indication that any stem rust occurred in commercial fields in Arizona. A few isolated pustules of stem rust were found in south-central Kansas and north-central Oklahoma. Preliminary results of the race survey are as follows:

| Location | No. of Collections | Wheat stem rust CRL races (no. of isolates) |
|---|---|---|
| Obregon, Mexico | 29 | 151-QFB(69), 151-QCB(1)<br>17-HDB(5), 17-HNL(7) |
| Beeville, Texas | 1 | 17-HJC(2), 17-HDB(1) |

Wheat leaf rust.--Leaf rust is generally light across Oklahoma, with the highest severities occurring in the north-central region where moisture conditions are better. Rust severities are moderate in south Kansas and in the north vary from a trace to 5 percent on the lower leaves. Currently in the northern part of the state only a trace of rust exists on the flag leaves, however, it should rapidly increase with last week's rains. Traces of leaf rust were observed on winter wheat as far north as southern South Dakota (Jons). In the Rosemount, Minnesota winter wheat nursery, leaf rust overwintered on wheat that was snow covered during a critical cold period. Leaf rust was reported to be severe on late entries in the Plant Introduction Nursery in Arizona (Kilpatrick) Leaf rust also was reported in California and Washington (Line).

Wheat stripe rust.--Stripe rust is heavy on susceptible varieties in California, however, commercial fields were relatively unaffected due to resistant varieties. Stripe rust is heavy in the Willamette Valley of Oregon where the commercial varieties Yamhill and Hyslop were rusted. Stripe rust is also relatively severe near Mt. Vernon, Washington. In the western areas of Oregon and Washington, fall rains, volunteer wheat, virulent races and a cool wet spring have favored stripe rust. In the Palouse area stripe rust is starting to increase but currently there is no indication that the disease will be of unusual severity.

Stripe rust was severe on late entries in the Plant Introduction Nursery in Arizona (Kilpatrick).

Oat stem rust.--Stem rust is present in central Texas nurseries and fields. However, it is not as severe or widespread as in 1977. Races identified from collections received prior to April 25 are as follows:

| Location | No. of Collections | Oat stem rust races (number of isolates) |
|---|---|---|
| Beeville, TX | 2 | 31(6) |
| Giddings, TX | 4 | 31(2), 61(4), 1(3), 2(3) |
| Nixson, TX | 1 | 31(3) |
| Tynan, TX | 12 | 31(28), 61(8) |

Races from a wild oats collection made in Obregon, Mexico, were identified as 31 and 61.

Oat crown rust.--At St. Paul, Minnesota, the aecia development on the buckthorn hedge is the lightest in many years. Traces of crown rust exist into northern Oklahoma.

Barley stem rust.--Stem rust was found in the Mesa, Arizona, Plant Introduction Nursery (Kilpatrick). Five isolates of the QFB race and 1 isolate of RKQ were identified from the two collections made in Obregon, Mexico.

Barley leaf rust.--No additional reports of barley leaf rust have been made since the last report.

Other diseases.--During a recent survey trip to Kansas and Oklahoma soil-borne mosaic was severe in central Kansas, and scattered in southern Kansas. Wheat streak mosaic is generally light but a few severly infected fields were observed in an area south and west of Great Bend, Kansas. Powdery mildew, speckled leaf blotch, tan spot, Cephalosporium stripe and barley yellow dwarf were observed, but were only important in an occasional field.

# CEREAL RUST BULLETIN

Report No : 3
Date: June 13, 1978

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

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

The harvest of small grains is in full swing in Texas and just starting in Oklahoma and Kansas. Generally the harvest is at least 7 to 10 days later than average. The Kansas wheat crop is in good to excellent condition with all but the extreme northwest turning color. Weather conditions have been favorable for good growth of the spring planted cereals in the upper Midwest and spring seeded small grains are near normal in maturity.

Wheat stem rust.--Wheat stem rust development and wheat maturity are currently behind last year throughout the southern half of the U.S. Traces of stem rust are common in commercial fields throughout Oklahoma and eastern Kansas, and although some increase of inoculum is expected, the crop is too mature for losses to occur. Rains in late May and June resulted in the development of some late tillers that could rust severely if they are not destroyed. A few late maturing fields in Nebraska may be vulnerable to rust. Although no stem rust has been found in commercial spring wheat fields, rust is spreading rapidly in nurseries inoculated a month ago at St. Paul. Preliminary data from the race survey are as follows:

| | | No. of isolates of each race | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11 | 15 | | 17 | | 29 | 56 | 113 | | 151 |
| Area | No. of collections | RCR | TNM | TLM | HDL | HDB | HJC | MBC | RTQ | RPQ | QCB |
| LA | 2 | 1 | | | | | | 2 | | | 3 |
| So. TX | 10 | | 5 | 1 | 3 | 1 | 2 | | 3 | 5 | 10 |

Wheat leaf rust.--Leaf rust is widespread across Kansas and increasing rapidly, however, plant maturity is too advanced for significant losses to occur. Traces of leaf rust were first found on spring planted trap plots of Baart wheat on June 7 at Rosemount and on June 9 at Waseca and Lamberton, Minnesota. These infections correlate with uredospores trapped in the rains of May 26-29. A trace to 60 percent severity of rust was observed on the lower leaves of winter wheat in plots at Rosemount and Waseca, Minnesota on June 9. This wheat was in the flowering stage. Trace amounts of leaf rust are present on winter wheat in southwestern North Dakota (Jons).

Oat stem rust.--Fewer oat stem rust collections were submitted from Texas and Oklahoma this year than last year by this date. Collections received from Arkansas County, Arkansas (Jones) and Tillman County, Oklahoma (Walters and Goodfellow) define the known northern limit of stem rust. The two fields inspected in Tillman County were in the mid-dough stage on May 28 and had a 5 percent rust severity on 50 percent of the tillers. This disease level in an area where the disease is generally much lighter may indicate an area of over-wintering of the rust. On June 9 stem rust was found in a plot at Hutchinson, Kansas (Eversmeyer). Preliminary data from the race survey are as follows:

| | | No. of isolates of each race | | | | |
|---|---|---|---|---|---|---|
| Area | No. of collections | 1 | 2 | 7 | 31 | 61 |
| So. TX | 55 | 1 | | 5 | 121 | 38 |
| No. TX | 6 | 4 | 5 | | 3 | 6 |

Oat crown rust.--Abundant pycnia and aecia developed on the buckthorn hedge at St. Paul after a 3 inch rain on May 27. Occasional uredia are appearing on the oat borders tracing back to the few aecial infections observed prior to May 26. Aecial development was noted on naturally infected buckthorn in Trempealeau County, Wisconsin (Krueger).

Barley stem and leaf rust.--We have not observed or had any further reports on these diseases in the past two weeks.

Rye stem rust.--No additional reports or observations on this disease were made in the past two weeks.

Rye leaf rust.--Traces of rye leaf rust are common in winter rye fields in Minnesota where this rust has increased rapidly in the past two weeks. Rye leaf rust is becoming common on leaf sheath tissue in a plot at Rosemount, Minnesota.

Barberry rust.--The first aecial collections of 1978 were made in Dane County, Wisconsin (Line, Krueger, Leggett) on May 29. Collections were also made in Goodhue (Schulz) and Fillmore (Laudon) Counties of Minnesota. The first reported aecial collection from Berberis candensis was made on June 6 in Monroe County, West Virginia (Bostic). This is approximately 2 weeks later than normal for this area.

Orchard grass stem rust.--A rusted specimen was collected in Lauderdale County, Tennessee on June 6 (Stafford). The source of this rust is unknown but the severity of the disease would indicate very early infection, i.e. either overwintering or possibly a spread from barberry aecia. The latter seems unlikely due to the late appearance of barberry aecia in 1978.

# CEREAL RUST BULLETIN

Report No : 4
Date: June 27, 1978

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

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

The winter wheat harvest is lagging behind 1977's early pace and is 4-5 days behind average. Because of the weather delays in southern Kansas and northern Oklahoma, harvest could occur simultaneously in those areas as well as northern areas. In some wheat fields the heads looked ripe due to the hot, dry winds of the previous week but the kernels were still in the dough stage. The general condition of the spring sown small grains is mostly good and 2 to 3 days behind average maturity.

Wheat stem rust.--Traces of stem rust were observed on susceptible varieties in plots throughout northern Kansas and in a central Missouri plot (Foudin). Traces of stem rust are common in commercial fields throughout central Kansas, but no losses will occur since the crop is mature. Stem rust was found in an uninoculated nursery at Rosemount, Minnesota, on June 21. This probably relates to uredospores trapped in rain water in southern Minnesota on June 2. Pustule age and weather conditions indicate that this infection most likely occurred then. Ideal weather conditions for spore germination has occurred in the last six days so infection can be expected to increase rapidly in this nursery. Rust severities in the inoculated winter wheat nursery at St. Paul are as high as 40%. Preliminary results of the race survey are as follows:

| | | No. of isolates of each race | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11 | 15 | | | 17 | | 29 | 56 | 113 | | 151 | | | | |
| Area | No. of collections | RCR | TNM | TLM | TDM | HDL | HDB | HJC | MBC | RTQ | RPQ | QCB | QFB | QSH | | |
| Arizona | 3 | | 7 | | 2 | | | | | | | | | | | |
| Louisiana | 2 | 1 | | | | | | | 2 | | | 3 | | | | |
| North Texas | 5 | | | | | | | | | | | | 3 | 9 | | |
| South Texas | 10 | | 5 | 1 | | 3 | 1 | 2 | | 3 | 5 | 10 | | | | |

Wheat leaf rust.--Traces of leaf rust were observed June 19 in the Fargo, North Dakota, winter wheat nursery. The primary pustules had been sporulating one week with secondary infections beginning to appear (Miller, Statler). In northern Kansas leaf rust severities reached 60% on the remaining green leaves. However, it was too late to cause any significant crop damage. Leaf rust has reached 60% severities in southern Nebraska plots. In the spring wheat trap plots leaf rust severities ranged from trace to 5%. Light amounts are present in commercial fields in Minnesota, South Dakota, Iowa and Missouri.

Oat stem rust.--Oat stem rust was found in trace amounts in southern Nebraska and northern Kansas. Stem rust is not as widespread this year as last year, when on the same date it was found in southern Minnesota, eastern South Dakota, and Iowa. Preliminary data from the race survey are as follows:

| | | No. of isolates of each race | | | | |
|---|---|---|---|---|---|---|
| Area | No. of collections | 1 | 2 | 7 | 31 | 61 |
| Louisiana | 1 | | | | 3 | |
| North Texas | 11 | 3 | 13 | | 4 | 9 |
| South Texas | 90 | 1 | | 5 | 206 | 56 |

Oat crown rust.--Traces of crown rust were found in commercial fields in Iowa, Missouri, Nebraska, South Dakota, Minnesota, and Wisconsin. In South Dakota oat varietal trials severities ranged from trace to 10%. Heavy spreads from aecia on buckthorns were reported in Iowa, Minnesota, and Wisconsin.

Barley stem and leaf rust.--No barley rust was reported in the last two weeks. A barley stem rust collection made in May in Arizona was identified as race TNM.

Rye leaf rust.--Light leaf rust was reported in commercial fields in Minnesota and Wisconsin. A trap plot of spring rye had moderate levels of rust on June 22 (Stromberg).

Rye stem rust.--A stem rust collection was made from a few plants scattered in a field in Reno County, Kansas (Porterfield).

Barberry rust.--Aecial collections were received in the past two weeks from: Greenbrier and Monroe Counties, West Virginia (Bostic); Dane (Line, Leggett), and Brown Counties, Wisconsin (Kruger); and Fillmore County, Minnesota (Schlick, Schulz). All of the leaves of two barberry bushes in Dane County, Wisconsin, were covered with rust in varying degrees of development.

Other diseases.--In Minnesota and South Dakota fields, 5% loose smut severities were observed. Trace to 3% loose smut severities were found in Minnesota and South Dakota barley fields.

# CEREAL RUST BULLETIN

Report No : 5
Date: July 11, 1978

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

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

The 1978 small grain harvest is progressing but is still behind normal in areas of Kansas due to wet weather. The winter wheat harvest has started in northern Nebraska and southern South Dakota. Adequate soil moisture plus warm temperatures have provided conditions for normal small grain development in the upper Great Plains.

Wheat stem rust.--Trace to light stem rust severities were found in plots of susceptible spring wheat varieties as far north as Crookston, Minnesota, by June 29. Stem rust collections were made in commercial winter wheat fields in Peoria County (Jordan), Illinois, Dane County (Smith), Wisconsin and eastern South Dakota. Traces of stem rust are present on Bounty 309 in eastern South Dakota. Preliminary data from the race survey are as follows:

| | | No. of isolates of each race | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. of | 11 | 15 | | | 17 | | 29 | 56 | | 113 | | 151 | | | | | | | |
| Area | collect. | RCR | TNM | TLM | TDM | HDL | HDB | HJC | MBC | MCC | RTQ | RPQ | QCB | QCM | QFB | QSH | | | | |
| AZ | 3 | | 7 | | 2 | | | | | | | | | | | | | | | |
| KS | 17 | | 21 | | 6 | | | | | 1 | 3 | | | | 4 | 3 | | | | |
| LA | 6 | 1 | | | | | | | 5 | | | | 5 | 1 | 1 | | | | | |
| OK | 8 | | 6 | 1 | 4 | | | | 1 | | | | | | 2 | 1 | | | | |
| N TX | 6 | | | | | | | | 1 | | | | | | 3 | 9 | | | | |
| S TX | 10 | | 5 | 1 | | 3 | 1 | 2 | | | 3 | 5 | 10 | | | | | | | |

Wheat leaf rust.--Leaf rust is general throughout the wheat growing areas. Susceptible varieties of spring wheats are moderately rusted as far north as St. Paul, Minnesota. The winter wheat varieties throughout eastern Washington, eastern Oregon, and adjacent areas of Idaho are severely rusted. Losses as high as 30% are projected in some fields. McDermid and Hyslop are moderately rusted with a race first identified in 1976. Some of the Pacific Northwest spring wheats will be severely damaged because of the unusual favorable environmental conditions for rust development in the last two weeks. Severities of 100% are expected within 7-10 days, with losses as high as 30%. With the increasing use of irrigation and stripe rust resistant cultivars, leaf rust is becoming a more serious problem in the Pacific Northwest (Line).

Wheat stripe rust.--Stripe rust is present throughout Washington, Oregon, southern Idaho, and northern Utah at higher levels than usual. In fields of Yamhill in western Washington and western Oregon, losses will be close to 30%. Stripe rust will cause some damage on those varieties that have resistance at higher temperatures in the adult stage. For example, in western Oregon damage will occur on the variety Hyslop. In eastern Washington and Oregon, the variety Paha will be severely damaged. In some fields 30% losses are expected, but in the dry areas damage will be less (Line).

Oat stem rust.--Traces of oat stem rust were observed in commercial fields across southern Wisconsin, central Iowa, western Minnesota and eastern South Dakota. On the same date last year the rust had spread throughout the same area but the rust severities were higher. There was a greater variation

in the oat crop maturity last year and heavy losses occurred in late maturing oats. This year crop maturity is more uniform (e.g. milk in South Dakota) and although stem rust will increase, final severities will be lower than in 1977. Preliminary data from the race survey are as follows:

| Area | No. of collections | No. of isolates of each race | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 7 | 31 | 61 |
| Arkansas | 1 | | | | 1 | |
| Kansas | 1 | | | | 1 | 2 |
| Louisiana | 1 | | | | 3 | |
| Oklahoma | 2 | | | | 1 | 5 |
| South Carolina | 2 | | | | 6 | |
| North Texas | 29 | 4 | 15 | | 27 | 37 |
| South Texas | 90 | 1 | | 5 | 206 | 56 |

Oat crown rust.--Crown rust is present throughout the central states in moderate to heavy amounts. Severities ranged from 10 to 60% in eastern South Dakota. Warm temperatures and abundant moisture have created conditions favorable for crown rust development and losses will occur. Crown rust is the most severe in years from heavy early inoculum in the buckthorn nursery at St. Paul, Minnesota.

Barley stem and leaf rust.--Traces of stem rust were observed on the susceptible variety Hypana in trap plots across the southern one-half of Minnesota. Barley leaf rust severities varied from trace to 10% in nursery plots and in commercial fields in the north-central states. Cold winters in the past two years have reduced overwintering rust on winter barley in the southern Great Plains. This was accompanied by a dry season in the northern Great Plains in 1975 and 1976, as well as a very early season in 1977. The low incidence of leaf rust of barley may be due in part to these environmental factors.

Rye stem and leaf rust.--Traces of stem rust on rye were found in Dakota, Goodhue and Houston Counties (Schulz), Minnesota, as well as in Hamlin (Jons), Deuel and Codington Counties (Goodfellow), South Dakota. Trace to 20% leaf rust severities were observed in Minnesota commercial fields. Leaf rust severities of 40-60% are common in trap plots of spring ryes in southern Minnesota.

Other rusts.--Stem rust collections were made from orchard grass and wild barley in Houston County (Schulz), Minnesota. A quackgrass stem rust collection was made 30 yards from a barberry bush in Fillmore County (Schlick), Minnesota.

Other diseases.--The rains of the past two weeks have created ideal conditions for increases of bacterial disease on small grains. A greater than normal amount of speckled leaf blotch and tan spot are also present in local areas in the spring wheat area.

# CEREAL RUST BULLETIN

Report No: 6
July 25, 1978

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

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

The small grain crop situation in the Upper Great Plains is in good to excellent condition. Soil moisture in most of the areas is adequate to excessive. Overall crop development is near normal with a wide range in grain maturity in some areas because of spring seeding delays due to rain. The winter wheat, early oats, and barley harvests are beginning in Minnesota and the Dakotas.

Wheat stem rust.--Traces of stem rust were observed throughout the spring wheat growing area as far north as the Canadian border. No significant losses are expected in the commercial wheats because of the resistant varieties that are grown. In the trap plots of susceptible varieties, severities ranged from 5 to 60% at the Minnesota experiment stations. Preliminary data from the race survey are as follows:

| | | No. of isolates of each race | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. of | 11 | 15 | | | 17 | | 29 | 56 | 113 | | | 151 | | | |
| Area | Collect. | RCR | TNM | TLM | TDM | HDL | HDB | HJC | MBC | RTQ | RKQ | RPQ | QCB | QFB | QSH | |
| AZ | 3 | | 7 | | 2 | | | | | | | | | | | |
| KS | 35 | | 54 | | 10 | | | | 1 | 3 | 2 | | | 6 | 12 | |
| LA | 6 | 2 | | | | | | | 5 | | | | 5 | 1 | | |
| MN | 1 | | | | 3 | | | | | | | | | | | |
| MO | 1 | | 2 | | | | | | | 1 | | | | | | |
| NE | 5 | | 12 | | 3 | | | | | | | | | | | |
| OK | 9 | | 9 | 1 | 4 | | | | 1 | | | | | 2 | 1 | |
| N TX | 10 | | 6 | | 4 | | | | 1 | | | | | 5 | 9 | |
| S TX | 10 | | 5 | 1 | | 3 | 1 | 2 | | 3 | | 5 | 10 | | | |

Wheat leaf rust.--Leaf rust is widely distributed throughout the spring wheat area but no losses are expected on the commonly grown varieties. Rust is moderate to heavy on susceptible checks in the nurseries.

Oat stem rust.--Oat stem rust severities range from trace to 20% throughout the oat-growing commercial fields of the north central United States. Losses may occur in some of the late planted fields in North Dakota and northwest Minnesota but will be much less than 1977. Most of the commercial oat varieties are susceptible to oat stem rust and in 1978 environmental conditions were adequate for epidemic development. However, the initially infected area was smaller in size, later in development, and reduced in intensity from 1977. Stem rust was common on wild oats in South Dakota and southern Minnesota but present only in trace amounts northward. Preliminary data from the race survey are as follows:

| Area | No. of collections | No. of isolates of each race | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 7 | 31 | 61 |
| Arkansas | 1 | | | | 1 | |
| Kansas | 4 | | | | 6 | 6 |
| Louisana | 1 | | | | 3 | |
| Nebraska | 1 | | | | 3 | |
| Oklahoma | 3 | | | | 4 | 5 |
| North Texas | 37 | 4 | 17 | | 48 | 37 |
| South Texas | 90 | 1 | | 5 | 206 | 56 |

Oat crown rust.--Crown rust is present throughout the U.S. oat growing areas at higher levels than in recent years. Light losses could occur in northern South Dakota and southern North Dakota, mainly in late planted fields. The disease will increase northward but most of the crop should mature without significant damage.

Barley stem and leaf rusts.--Stem rust on barley was observed throughout western Minnesota and eastern South and North Dakota in trace amounts. Barley stem and leaf rust on susceptible commercial varieties in a nursery at Rosemount, Minnesota, ranged from trace to 5%. Traces of stem rust were found on wild barley in North Dakota and southern Minnesota, severities in eastern South Dakota are moderate.

Rye stem and leaf rust.--Light and scattered stem rust was observed on rye in the late dough stage in Minnesota. The leaves are senesced.

Other diseases.--In southern Minnesota, bacterial leaf blight has become severe and is defoliating wheat but due to the advance growth stage losses should be light. Scab is severe in some nurseries and is reported to be severe in a few commercial fields in eastern North Dakota and Minnesota.

# CEREAL RUST BULLETIN

Report No.: 7
August 8, 1978

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

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

The small grain harvest is progressing rapidly in the northern Great Plain states. Scattered fields of winter wheat and barley have been harvested as far north as the Canadian border. Yields and quality have varied greatly with some disease and insect damage, but in general, crop conditions are good.

Wheat stem rust. --Stem rust severities ranged from none to 5% in commercial wheat fields of the northern Great Plains. In the same area on susceptible varieties in winter and spring wheat nurseries, stem rust severities ranged from trace to 80%. In 1978, trap plots of a stem rust susceptible winter wheat variety were planted throughout the south, and overwintering of stem rust was found only at Baton Rouge, Louisana. This year, like in 1976, little stem rust was observed in the southeastern states. This probably was due to little overwintering inoculum and dry conditions in the early spring that limited stem rust development. In Texas, stem rust was the lightest in years because of a cold winter, followed by a dry spring. Traces of stem rust were common in commercial fields throughout Oklahoma and Kansas, and 40% severities were observed on susceptible cultivars in Kansas and Nebraska plots. For the first time since 1969, stem rust was observed in plots near Mesa, Arizona.

Preliminary results of the wheat stem rust race survey are shown in Table 1. Race 15-TNM has been the most commonly identified race (48%) this year, compared to 53% in 1977, and 72% in 1976. Race 15-TDM (13%-1978), (10%-1976), has replaced QSH (11%-1977), (3%-1976), as the second most commonly identified race. The rank and frequency of races could shift as more collections from spring wheat are identified. No new races with adequate virulence to be hazardous to small grains have been detected in 1978.

Table 1.--Preliminary data of the 1978 wheat stem rust race survey (8/7/78).

| | | % of isolates of the most common races | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State | No. of Collect. | 11 | 15 | | | 17 | | 29 | 56 | 113 | | | 151 | | |
| | | RCR | TNM | TLM | TDM | HDL | HDB | HJC | MBC | RTQ | RKQ | RPQ | QCB | QFB | QSH |
| Arizona | 3 | | 78 | | 22 | | | | | | | | | | |
| Kansas | 36 | | 62 | | 11 | | | | 1 | 3 | 2 | | | 7 | 13 |
| Louisana | 6 | 16 | | | | | | | 38 | | | | 38 | 8 | |
| Minnesota | 1 | | | | 100 | | | | | | | | | | |
| Missouri | 1 | | 67 | | | | | | | 33 | | | | | |
| Nebraska | 5 | | 80 | | 20 | | | | | | | | | | |
| Oklahoma | 11 | | 33 | 4 | 26 | | | | 4 | | | 7 | | 7 | 19 |
| No. Texas | 17 | | 48 | | 15 | | | | 2 | | | | | 13 | 22 |
| So. Texas | 10 | | 17 | 3 | | 10 | 3 | 7 | | 10 | | 17 | 33 | | |
| To date-- | | | | | | | | | | | | | | | |
| 1978 | 90 | 1 | 48 | 1 | 13 | 1 | * | 1 | 3 | 3 | 1 | 3 | 7 | 6 | 11 |
| Tot.-1977 | 445 | 1 | 53 | 1 | 7 | * | | | | 3 | 3 | 1 | 5 | 6 | 17 |
| Tot.-1976 | 671 | * | 72 | 3 | 10 | * | * | | * | 1 | 1 | | 3 | 3 | 3 |

* Less than 0.6%.

Wheat leaf rust. --Leaf rust was widespread, but variable in severity throughout the winter wheat growing region. In general, there was about the same amount of leaf rust as in 1977. Losses were light. Leaf rust was widely distributed throughout the spring wheat area; however, due to the widespread use of resistant cultivars, losses will be only a trace.

Oat stem rust. --Stem rust was found in most of the commercial oat fields of the northern Great Plains. Severities ranged from trace to 40%, and losses will occur in some of the late planted fields in the Dakotas and western Minnesota. The environmental conditions were not as favorable as in 1978, and the initial inoculum arrived approximately one week later. Losses will be less than 1977. Some oat farmers have reported a reduction in yield and quality of harvested seed. This is due to hot weather in early July as well as to crown and stem rust, Septoria, leaf blight, etc., during a critical stage of plant development.

Race 31 is the most prevalent race identified in 1978, Table 2. The majority of the identified collections are from Texas; most of the collections from the Dakotas, Iowa, Minnesota, and Wisconsin, were received within the past 3 weeks and still are in the process of race identification. In 1978, races 77 and 78 were not found in Texas as they were in 1976 and 1977.

Table 2.--Preliminary data of the 1978 oat stem rust race survey (8/7/78).

| Area | No. of collections | % of isolates of each race | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 7 | 31 | 61 |
| Arkansas | 1 | | | | 100 | |
| Iowa | 5 | | | | 100 | |
| Kansas | 4 | | | | 50 | 50 |
| Louisana | 1 | | | | 100 | |
| Minnesota | 9 | | | | 75 | 25 |
| Missouri | 2 | | | | 100 | |
| Oklahoma | 3 | | | | 44 | 56 |
| South Carolina | 1 | | | | 100 | |
| South Dakota | 2 | | | | 100 | |
| North Texas | 37 | 4 | 16 | | 46 | 34 |
| South Texas | 90 | * | | 2 | 76 | 21 |
| Wisconsin | 1 | | | | 100 | |
| To date--1978 | 156 | 1 | 4 | 1 | 70 | 24 |
| Total--1977 | 756 | | 1 | | 95 | 3 |
| Total--1976 | 386 | | 2 | | 66 | 28 |

*Less than 0.6%

Oat crown rust. --In 1978, oat crown rust was more severe than in recent years throughout the northern U. S. oat-growing areas. In western Minnesota and eastern North Dakota commercial fields, 80% severities were reported and in some of these fields, 5-10% losses will occur. In many fields, the oat stem sheath is black due to telia development of oat crown rust.

Barley stem rust. --Traces of stem rust were found in commercial barley fields throughout the northern Great Plains. In plots, severities ranged from trace to 10%. Stem rust was more abundant than in the past two years, but only minor losses occurred.

Barley leaf rust. --Barley leaf rust severities generally were a trace in commercial fields resulting in little loss.

Rye stem and leaf rust. --Traces of these diseases were found nationwide, but losses will be light and local.

Other stem rust collections. --Hordeum jubatum, bearded wild barley, and Avenae fatua, wild oats, are rusted throughout northeast South Dakota, western Minnesota, and North Dakota.

Other diseases. --Many diseases have caused problems throughout the northern grain-growing area. The frequent rains in some areas created ideal conditions this year for greater than normal levels of bacterial leaf blight, scab, tan spot, and Septoria. Unusual outbreaks of Hessian fly in the Aberdeen, South Dakota area, and wheat streak mosaic in northwestern North Dakota should also be major topics for winter discussion sessions.

This is the last report for 1978.