CEREAL RUST BULLETIN

Final 2004 Report
August 18, 2004

Issued by:

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- Stem rust was light and widespread throughout the northern Great Plains on susceptible cultivars of wheat and barley.
- Wheat leaf rust was widespread and severe throughout the Great Plains.
- Wheat stripe rust was less severe than last year throughout the U.S.
- Oat stem and crown rust severities were generally light this year.

Wheat stem rust. The first reports of wheat stem rust were in late April, when trace levels of infection were found in plots at Giddings in central Texas and at Quincy in the Florida panhandle. The next report of wheat stem rust was in early June, when trace to 5% severities were reported on experimental wheat lines in a nursery in northeastern Kansas. In early June, traces of wheat stem rust were found in an experimental line in a nursery in northeastern Missouri.

In late June, severe stem rust was observed in plots of the susceptible cultivar RedChief at Lincoln Nebraska. These infections developed from spores that were deposited with rain showers from areas farther to the south. In late June, traces of stem rust were found in a field of triticales in southeastern Minnesota, which is the same area where barberry bushes are growing. Stem rust found on triticales could be either rye or wheat stem rust.

In the first week of July, trace levels of stem rust infections were found on the susceptible spring wheat Baart in southern Minnesota. By mid-July, 20-60% severities were observed on Baart in central Minnesota and central South Dakota plots. All of the current spring wheat cultivars are resistant to the current race population. In susceptible winter wheat plots in an east central Minnesota nursery, trace to 60% severities were found at the soft dough growth stage. In mid-July, traces of wheat stem rust were found on winter wheat in west central Wisconsin. In late July, trace to 20% severities were observed on the susceptible spring wheat Baart in central North Dakota and north central Minnesota.

From April to June, there were few reports of wheat stem rust being found in the southern and central plains. However, in July stem rust was present on susceptible cultivars in many locations from western Wisconsin to central North Dakota. Therefore, the stem rust that developed throughout the north must have originated from the few inoculum sources in the southern plains.

Race QFCS, a predominant race found in the Great Plains the past few years, was identified from collections made on an experimental wheat line in a nursery in northeastern Kansas.

Wheat Leaf Rust. **Southern Plains** - In late January, traces of leaf rust were found in central Texas plots. The most severe rust was on the cultivar TAM 110. Cool temperatures during early February slowed leaf rust development. By late February, 40% leaf rust severities were observed in central Texas plots. Severity levels were lower in southern Texas because of the drier conditions. In the second week of March, 60% leaf rust severities were reported on susceptible cultivars in southern Texas (east of San Antonio). Leaf rust was more scattered and severe throughout Texas than in 2003.

By early March, leaf rust was present in Oklahoma but at lower severity levels compared to last fall. In 2004, cold temperatures during mid-January to mid-February were not conducive for over wintering of rust in Oklahoma.

In late March in southern and central Texas, leaf rust infections were at low severity levels in most commercial wheat fields (Fig. 1) and at high severity levels on susceptible cultivars in nursery plots. Leaf rust severities up to 80% were found on lower leaves of cultivars in nurseries, and trace-20% severity levels were on lower leaves in fields. Rainfall in mid to late March contributed to the increase in leaf rust development in the southern Great Plains.

In mid-April, leaf rust was found from Texas to Kansas. In most of southern and central Texas, rain and dew periods were ideal for the infection process to occur. In a central Texas nursery on the susceptible cultivar Jagger, the leaves were completely dead due to heavy rust infections.

In late April in central Texas, moderate to high severities of rust infection were on susceptible cultivars, while in northern Texas wheat at the late flower to early dough growth stages had light to moderate leaf rust infection. In central Texas fields, 40% severities were observed in fields that had been sprayed with fungicide (Fig. 1). By early May, leaf rust was increasing throughout Oklahoma, but drier than normal conditions in mid-May significantly slowed rust development. As in previous years, Jagger wheat was heavily rusted and some yield reduction occurred. Leaf rust in the southern Great Plains was more severe than last year, but dry conditions in some areas slowed rust development.

Central Plains – In early April, traces of leaf rust were found in several fields in south central Kansas. In early May, leaf rust was present in most of Kansas at trace severities except in south central Kansas where 10% severities were reported on lower leaves in some fields. By the third week in May, leaf rust was starting to increase on flag leaves in south central Kansas.

During the last week in May, leaf rust was severe in plots and fields of susceptible cultivars from north central Kansas to west central Missouri (Fig 1). At the late berry stage in south central Kansas, 60% severities were on flag leaves of Jagger while in northeast Kansas, 20% severities were on flag leaves of Jagger. In central Kansas varietal plots, rust severities ranged from trace to 80%. In southern Kansas, losses due to leaf rust were severe in Jagger, while other leaf rust susceptible cultivars had lower yield losses. Rainfall in late May, in Kansas and Nebraska allowed leaf rust to increase which provided inoculum for the northern wheat growing area.

In late May, leaf rust severities ranged from 5 to 20% in west central Missouri fields.

In mid June, leaf rust was severe in southeast and south central Nebraska (Fig. 1). Rust severities on flag leaves were 60-80% in fields and experimental plots. Yield losses due to leaf rust were expected since most of the crop was at the early soft dough stage. Abundant rainfall in eastern and southern Nebraska provided good moisture conditions for leaf rust infections. In

western Nebraska where it was much dryer, only trace levels of leaf rust infections were observed.

Northern Plains – In early June, trace amounts of leaf rust were found on winter wheat lines in plots at Brookings in east central South Dakota.

In early June, traces of leaf rust were found in winter wheat plots in east central Minnesota. Traces of leaf rust infections were also found in spring wheat in the Red River Valley in early June. In mid-June, leaf rust was increasing in winter wheat in southeastern South Dakota and southern Minnesota, with severities of 20-40% on lower leaves and 10-20% on flag leaves. The spring wheat crop had trace to 5% levels of infections on lower leaves. In mid-June in an east central South Dakota rust nursery, high levels of leaf rust were observed on the susceptible spring wheat varieties Thatcher, Baart and Morocco. During the second week in June, traces of leaf rust were found in fields in southeast and north central North Dakota. Rains and moderate temperatures, provided good conditions for the increase and spread of leaf rust in the north central region.

In early July in east central Minnesota plots, susceptible winter wheat cultivars such as Jagger had 80% rust severities, but the resistant cultivars had only trace levels of infections on the flag leaves. The leaf rust did not over winter in the Minnesota plots, but probably originated from inoculum sources in Oklahoma and Kansas.

In early July, susceptible spring wheat cultivars in southern Minnesota plots had 20% rust severities, with most infections on the lower leaves. Traces of leaf rust were observed in many of the spring wheat fields in southern Minnesota (Fig. 1). In the first week of July, leaf rust severities were up to 80% on susceptible spring wheat cultivars such as Ingot in southern and west central Minnesota varietal plots. The spring wheat Oxen, which is commonly grown in southern Minnesota, had leaf rust severities of 30-60%; the cultivar Alsen had leaf rust severities of 5-10% in southern and west central Minnesota.

In mid-July, 10-40% leaf rust severities were observed on flag leaves of spring wheat cultivars in fields from northwestern South Dakota to northeastern Wisconsin.

In late July, trace-60% leaf rust severities were in spring wheat varietal plots in central and eastern North Dakota. In fields in southeastern and central North Dakota, severity levels of 20% were on the commonly grown wheat cultivars. Many wheat fields were sprayed with fungicide to prevent losses due to rust and scab. In the northern tier of counties in North Dakota leaf rust was at reduced levels because the crop maturity was later than normal.

This year leaf rust was severe and concentrated in the upper Midwest. Rust inoculum arrived from the south in late May and early June with rain showers while temperature and moisture conditions were good for infection and spread of leaf rust. The spring wheat cultivars currently grown have less effective resistance to leaf rust than those that were popular 10-15 years ago. Losses to wheat leaf rust occurred in the most susceptible cultivar that had not been sprayed with fungicide.

Southeast - In mid-January, leaf rust was reported in southwest Louisiana. By early March, leaf rust was at significant severity levels in south/west central Louisiana. Rust was widespread and severities of 30% were in nursery plots and fields. Some cultivars had heavy rust severities on older leaves (fall infection), but low severities on the upper leaves.

In mid-February, low severities of leaf rust were in fields and plots in southwest Alabama in Baldwin County. In late February weather conditions were ideal for further rust development in the southeastern U.S.

In late March, leaf rust was present in fields and plots in the southern soft red winter wheat area from Georgia to Arkansas. Some of the fields infected with rust were sprayed for rust control.

In mid-April, from central Louisiana, through Alabama to Georgia, low levels of leaf rust infection were observed in research plots and fields. On a few susceptible cultivars 40% severities were reported in south central Louisiana nurseries. In early May, 80% leaf rust severities were in plots from central Texas to the Florida Panhandle.

By mid-April, leaf rust was increasing in areas of Arkansas that had sufficient moisture. In late April, light to moderate leaf rust was in Arkansas fields and plots. In early May in northwestern Arkansas, 50% rust severities were in nursery plots. In mid-May, leaf rust was prevalent throughout Arkansas, but rust infections developed later than normal and did not cause much yield loss.

Mideast - In late May, 20-25% leaf rust severities were found on susceptible cultivars at the late milk stage in southwest Indiana wheat plots. This was the most leaf rust seen in a number of years in this area. In early June, 20% severities were found in plots in west central Indiana while traces were found in fields.

In early June, leaf rust developed late in central Ohio and 20% severities on flag leaves were observed on susceptible varieties, which may have resulted in losses. During the second week in June, trace to 10% severities was found in plots in northwest Ohio, northern Indiana and south central Wisconsin. Only light losses were expected in this area.

East – In late May, hot, dry weather hastened the maturity of small grains in the Carolinas and Virginia. Powdery mildew was widespread on wheat and in some fields appeared to be at damaging levels. Leaf rust on winter wheat was either non-existent or very light in commercial fields. In nursery plots in eastern North Carolina, leaf rust was severe only on fully susceptible cultivars.

In eastern Virginia, the wheat crop matured 10 days earlier than normal because of the hot temperatures in May, which halted the leaf rust development. In early June in western Virginia, the crop matured at a normal pace and more leaf rust was found there. Varieties with Lr26, e.g. USG 3209 and Sisson, had considerable leaf rust. In early June, moderate to light levels of leaf rust infection were observed in winter wheat plots in central Maryland.

In early July, wheat leaf rust was widespread, but not severe throughout western/central New York.

California - Wheat leaf rust was late to develop and was only found on a few cultivars. The wheat crop matured early and leaf rust did not affect the yield.

Pacific Northwest - In late May, trace amounts of leaf rust were observed in wheat plots and fields in northwest Washington. In early June, severe leaf rust was reported in the Willamette Valley in northwest Oregon.

In late June, foci of 20% leaf rust severity were found in soft white winter wheat plots in northeastern Oregon at Pendleton. Leaf rust development was light in the Pacific Northwest this year.

Canada - In mid-June, traces levels of leaf rust were found in winter wheat plots south of Winnipeg, Manitoba, Canada.

From leaf rust collections made in the southern plains, the following races were identified: KBDG, KDBJ, KDDJ, MBDS, MCDS, MBRK, MLDS, TBBJ, TBDS, TDBJ, TLGJ and TNGJ. Races KBDG, MBDS, MCDS, MLDS, TBDS (with *Lr17* virulence) were collected from Jagger; TLGJ (with *Lr9* virulence) was collected from CK9766; TNRJ (with *Lr41* virulence) was collected from Thunderbolt; TBBJ was collected from TAM 110; and KDDJ (with *Lr17* and *Lr24* virulence) was collected from Jagalene.

Wheat stripe rust. Southern Plains – In late February, severe wheat stripe rust was found in plots southwest of Houston, Texas. By the second week in March, the stripe rust development in these plots had stopped. In mid-March, there were reports of stripe rust in fields west of Brazos and Williamson counties in central Texas.

In late March, wheat stripe rust infections were at low levels in fields in southern and central Texas (Fig 2). Stripe rust severities ranged from trace levels to 20% in plots and fields. Although rainfall in late March provided high moisture conditions, warmer day and night temperatures restricted stripe rust development. In mid-April, stripe rust was light in southern and central Texas.

In late April, stripe rust was light to moderate in north central Texas and southern Oklahoma plots and fields (Fig. 2). In north central Texas, 60% severities were observed on susceptible varieties. Some fields in this area had been sprayed for rust and mildew control. In early May, stripe rust was found across northern Oklahoma. Rust was present in significant amounts, but dry and windy conditions impeded the further development of stripe rust on susceptible varieties. Hot spots of rust development were found in central and southwestern Oklahoma, but not at levels that caused significant yield losses.

This year stripe rust was found in fewer locations and the weather conditions were not as conducive for rust development as last year in Texas and Oklahoma. Another possibility is that stripe rust over wintering was reduced compared to previous years. Stripe rust infections in the southern U.S. were less severe and extensive than last year and provided less inoculum for the northern wheat growing area.

Central Plains - In mid-May, light stripe rust was on flag leaves in a central Kansas field. In late May, light stripe rust (trace–10% severity) was on flag leaves in southeast and south central Kansas fields. Stripe rust was much lighter than last year in this area.

In late May, light wheat stripe rust was found on flag leaves in north central Kansas (Fig 2). The warm and dry conditions in May reduced further development of stripe rust in Kansas.

In mid-June, stripe rust was not observed in fields or plots in Nebraska, possibly due to the heavy leaf rust infections.

Northern Plains – In early June, stripe rust was in winter wheat plots in east central South Dakota.

In mid-June**,** trace levels of stripe rust were in winter wheat fields in south central South Dakota, and in fields of spring and winter wheat in eastern South Dakota (Fig. 2). In winter wheat plots at Brookings, most lines had trace levels of stripe rust infection, however a few plots had very high levels of infection on flag and lower leaves. By the third week in June, trace levels of stripe rust were in spring wheat plots in St. Paul Minnesota.

In 2003, in early June, traces of stripe rust were found in winter wheat plots at the Rosemount Experiment Station in east central Minnesota, but this year stripe rust infections were not found until mid-June at this location.

In early July, stripe rust severity levels of 60% were present in west central Minnesota spring wheat fields and plots (Fig. 2). The cultivars Trooper and Walworth were the most susceptible with stripe rust infections up to 50%. Most of the commonly grown spring wheats have moderate resistance to stripe rust. The very cool temperatures with sufficient moisture levels were conducive for stripe rust development in the north central region.

In mid-July, hot temperatures arrested development of stripe rust on spring wheat in the northern Great Plains. In late July, 5% severities were in a spring wheat field in north central Minnesota where nighttime temperatures had been more conducive for rust infection.

Louisiana, Arkansas and Missouri – In late February, low levels of stripe rust infections were in southern and east central Louisiana fields. By early April, rust had increased and these fields were sprayed for rust control. By mid-April in northeast Louisiana, stripe rust was severe in soft red winter wheat varietal plots. Some fields were sprayed to reduce losses due to rust. Significant amounts of stripe rust have occurred in five of the last seven years in Louisiana.

In late March, stripe rust was in fields throughout southeast Arkansas and fungicide application was recommended. In mid-April in southwest Arkansas wheat plots, little stripe rust was on the most commonly grown varieties. In late April, stripe rust was found in eastern and northern Arkansas, but in light amounts. By early May, in northern Arkansas, 100% stripe rust severities were on some cultivars. In mid-May, stripe rust development had ceased in the state of Arkansas because the high temperatures at night were not conducive for stripe rust increase.

In late May, 5-10% stripe rust severities were observed in soft red winter wheat fields in west central Missouri. Stripe rust severity was less than last year in this area and the crop was 7-10 days earlier than normal. Traces of stripe rust were observed in plots and fields in northeastern Missouri in early June.

Mideast - In early May, stripe rust was light in wheat fields in southwestern Illinois.

Traces of stripe rust were in west central Indiana plots in early June.

During the second week in June, stripe rust foci of 10% severity were located in winter wheat plots and fields in northern Indiana and south central Wisconsin. Most of the infections developed from spores deposited with rain in the previous 10-14 days.

During the second week in June, trace levels of stripe rust were in plots in central, northeast and northwest Ohio.

In early July**, 20**% severities were in fields of soft red winter wheat in northeastern Wisconsin.

California – Stripe rust on wheat was first detected on February 12 in the UC Regional Wheat Nursery in the Sacramento/San Joaquin Delta nursery in California. Rust was scattered throughout the nursery in light amounts (less than 1% incidence), but pustules on infected plants were sporulating profusely. Infected leaves had up to 30% severity. By early March, wheat stripe rust had increased to 50% severity and 20% incidence in the nursery at Sacramento/San Joaquin Delta. The crop was in late jointing stage. In early March, light levels of wheat stripe rust were found in nurseries in Madera county and Davis, California.

In Mexico, wheat stripe rust in southern Sonora state was not as severe as in previous years. However, this year northern Sonora and the neighboring state of Baja California had more rainfall. This area (Mexicali valley) is close to a U.S. wheat growing area where stripe rust could have an economic impact.

In mid-April, wheat stripe rust was severe in susceptible varieties in nurseries in the Central Valley and Sacramento Valley of California. In the same area stripe rust was at low to moderate severities on durum varieties. Stripe rust infection foci were observed in fields in the Sacramento Valley.

In mid-July, 40% stripe rust severities were in spring wheat plots at the early dough growth stage in northeastern California at Tulelake. Stripe rust foci also were detected in plots of wheat at 90% severity, and 30% incidence in a nursery at MacDoel in north central California.

In California, yield losses from stripe rust will be considerably less than last season and will amount to about 5% because of the wide-use of resistant varieties and the late development of heavy rust infections. One concern this year is that new races of rust have developed that are virulent to the resistance that was effective last season and much of the current season. These races may survive in the stripe rust population and appear in higher frequency next season.

Pacific Northwest – In early March, severity levels of 30% were in winter wheat fields and plots in northwestern Washington. Stripe rust was uniformly distributed in commercial fields. Stripe rust severity and distribution patterns were typical for this area. In late March stripe rust was not found on the eastern side of the Rocky Mountains in Washington.

During the last week of April, stripe rust was starting to increase in experimental plots in northeast Oregon and southeast Washington. Near Connell, Washington, severity levels of 20% were in fields planted with 'Hatton', a hard red winter wheat. This year, the appearance of stripe rust was much later than last year, due to the dry weather last fall that reduced fall infection and a cold winter that reduced winter survival. The stripe rust infections were on the top leaves, indicating infections occurred mostly after the winter season. The rust infected winter wheat produced rust spores that infected spring wheat crops in central and eastern Washington and northern Idaho.

By late May, wheat stripe rust was observed on susceptible spring and winter wheat cultivars growing in fields and plots in central and eastern Washington and northern Idaho.

In late June, wheat stripe rust was developing very rapidly in fields of susceptible winter and spring wheat cultivars in eastern Washington. Many of these cultivars have high temperature adult plant resistance, which reduced rust losses. Some fields had incidence levels of 60% stripe rust and severity levels of 20%. Fungicides were applied on susceptible wheat fields. Plots of

susceptible lines had 80% severities near Pullman, Washington. This year yield losses to stripe rust occurred in the Pacific Northwest, but were less than last year.

Oat stem rust. In mid-March, low levels of stem rust infections were on oat in central Texas plots. During late March traces of stem rust were on wild oat (*Avena fatua*) in central Texas.

In mid-April, stem rust was increasing in southern and central Texas nurseries. By the last week in April, severe oat stem rust was in a few plots while traces were in central Texas fields.

In early April, traces of oat stem rust were in plots at Baton Rouge, Louisiana. By mid-April, stem rust was severe in oat demonstration strip plots in southwest Louisiana.

In early July, traces of oat stem rust were in plots in northern Indiana.

During mid-July, trace to 20% severities of oat stem rust were in fields and plots throughout southern Minnesota and central South Dakota. In late July, trace to 20% oat stem rust severities were in plots in west central Minnesota and east central North Dakota. Most current oat cultivars are not highly resistant to stem rust. This year less oat stem rust was reported in the northern oat growing area because the summer was cooler than normal which was not conducive for oat stem rust increase.

From collections made in south Texas in late March, races NA-27, -29 and -67 were identified. These races were also identified in Texas and much of the U.S. in 2003.

Oat crown rust. In late January, crown rust was increasing in fields and plots in South Texas. A field in Lavaca County had 70-80% crown rust severities and rust had killed many of the leaves. Rust was severe in irrigated fields of the cultivar TAMO 397 which is the main cultivar in south Texas. By late February, seed production fields of TAMO 397 were heavily infected with crown rust. In early March, 30% crown rust severities were in plots at College Station, in central Texas, and the heaviest oat crown rust at Beeville was in TAMO 397 at 90% severity.

In late March, oat crown rust infections were at trace to 80% severity in plots and fields in southern and central Texas. Crown rust was so severe in a field in southern Texas that the crown rust killed the plants before heading. By mid-April, severe oat crown rust was found across central and southern Texas.

In late April, 60-80% severities were in central Texas fields while severities ranged from traces to 40% in plots in north central Texas. This was the most severe crown rust seen in Texas in the last 20 years.

In late May, light crown rust was in spring oat plots in central Kansas plots at Hutchinson. In early June, 20% crown rust severities were in spring oat plots in northeastern Missouri.

In mid-June, trace levels of oat crown rust were in fields and plots in southern Minnesota, and southeastern South Dakota. By the last week in June, lower leaves of oat in east central Minnesota plots and fields had trace to 20% severities of crown rust. In the second week in July, trace to 80% oat crown rust severities were in fields and plots throughout west central Wisconsin to central South Dakota. In late July, trace to 60% crown rust severities were in varietal oat plots from west central Minnesota to central North Dakota. Much of the primary inoculum originated from buckthorn, the alternate crown rust host that is common throughout the Upper Midwest.

In mid-January, light oat crown rust was in southern Louisiana plots. By late March, crown rust was increasing in Baton Rouge, Louisiana plots. In mid-April, crown rust was severe in oat demonstration strip plots in southwest Louisiana. In early May, 40-60% severities were in oat plots in Alabama and the Florida Panhandle. These southeastern locations provided inoculum for the northern oat growing areas.

Crown rust was very light in the Carolinas and Virginia in late May.

Buckthorn. In the third week of April, buds on buckthorn, the alternate host for oat crown rust, were just beginning to break in the buckthorn nursery at St. Paul, Minnesota. This was later than normal for most years.

Light to moderate pycnial and aecial infections were observed on emerging buckthorn leaves in the nursery at St. Paul, Minnesota on May 11**.** By the fourth week in May, aecial development was heavy on buckthorn. Despite the slow leaf emergence of the buckthorn, due to the prolonged cool temperatures in April, the aecial development was more severe than normal. In mid-May, crown rust aecial infections were severe in the buckthorn nursery. Uredinial infections were observed on oat spreader rows in the nursery on May 30. In late June, moderate crown rust infection was observed on the upper leaves of oat in spreader rows close to the buckthorn nursery.

Throughout the upper Midwest aecial infections have been severe on buckthorn in most locations.

Barley stem rust. The first reports of barley stem rust this year were trace severities in two-rowed cultivars in a plot and fields in southern Minnesota in mid-July. In late July, traces of stem rust were found in plots of two-rowed barleys in west central Minnesota.

The only report this year of stem rust on wild barley (*Hordeum jubatum*) was in southern Minnesota in mid-July. Last year there were few reports of stem rust found on wild barley, but in previous years stem rust was easily found in the northern Great Plains wild barley population.

Barley leaf rust. In early April, traces of barley leaf rust were found in southern Texas plots at Castroville.

In mid-June, barley leaf rust was on susceptible spring barleys in east central South Dakota and east central Minnesota. In early July, traces of barley leaf rust were on lower leaves in spring barley plots in southern Minnesota. In late July, trace to 20% severities were on spring barleys in plots from central North Dakota to west central Minnesota.

In mid-May, barley leaf rust was in a nursery in northeastern Virgina at Warsaw. Rust infections were found on the lowest leaves suggesting the rust over wintered in this nursery.

In California, barley leaf rust was late to develop and was only found on a few cultivars. The barley crop matured early and therefore leaf rust did not affect the yield.

Barley crown rust. In mid-June, low levels of barley crown rust infections were in plots growing near the buckthorn in the St. Paul, Minnesota nursery**.**

By late June, susceptible barley cultivars in the buckthorn nursery at St. Paul, Minnesota had trace to 10% crown rust severities.

Rye leaf rust. In early April, 60% leaf rust severities were on rye in central Texas plots. During the last week in April, severe rye leaf rust was found in fields in the Florida Panhandle. In late May, light leaf rust was on rye in a field in east central Kansas. In early June, traces of leaf rust were in a rye field in southeastern Indiana.

In early June, traces of leaf rust were on lower leaves of winter rye in east central Minnesota plots. By late June, 60% severities of leaf rust were on upper leaves of winter rye and trace severities in spring rye in east central Minnesota plots. By mid-July, 40% leaf rust severities were on the upper leaves of spring rye in plots in southern and west central Minnesota.

Stem rust on barberry. In mid-May, aecial collections were made from heavily infected barberry (*Berberis vulgaris*) bushes (alternate host for stem rust) in southeastern Minnesota**.**

In late May, aecial collections were made from heavily infected barberry (*Berberis vulgaris*) bushes growing in south central Wisconsin.

Stem rust on other grass hosts. In the third week in July, 5-40% stem rust severities were on quackgrass (*Elytrigia repens*) and redtop (*Agrostis alba*) in southeastern Minnesota.

This is the last issue of the Cereal Rust Bulletin for the 2003-2004 growing season. I would like to thank all of those who helped with the bulletin this year, especially Mark Hughes who coordinates its distribution through the CDL website (http://www.cdl.umn.edu) and Jim Kolmer for his editorial comments (jkolmer@umn.edu). All rust situation reports were greatly appreciated. All messages from our cereal rust survey mail list are placed on our web page and used in the preparation of the Cereal Rust Bulletins.

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Fig. 1. Leaf rust severities in wheat fields in 2004.

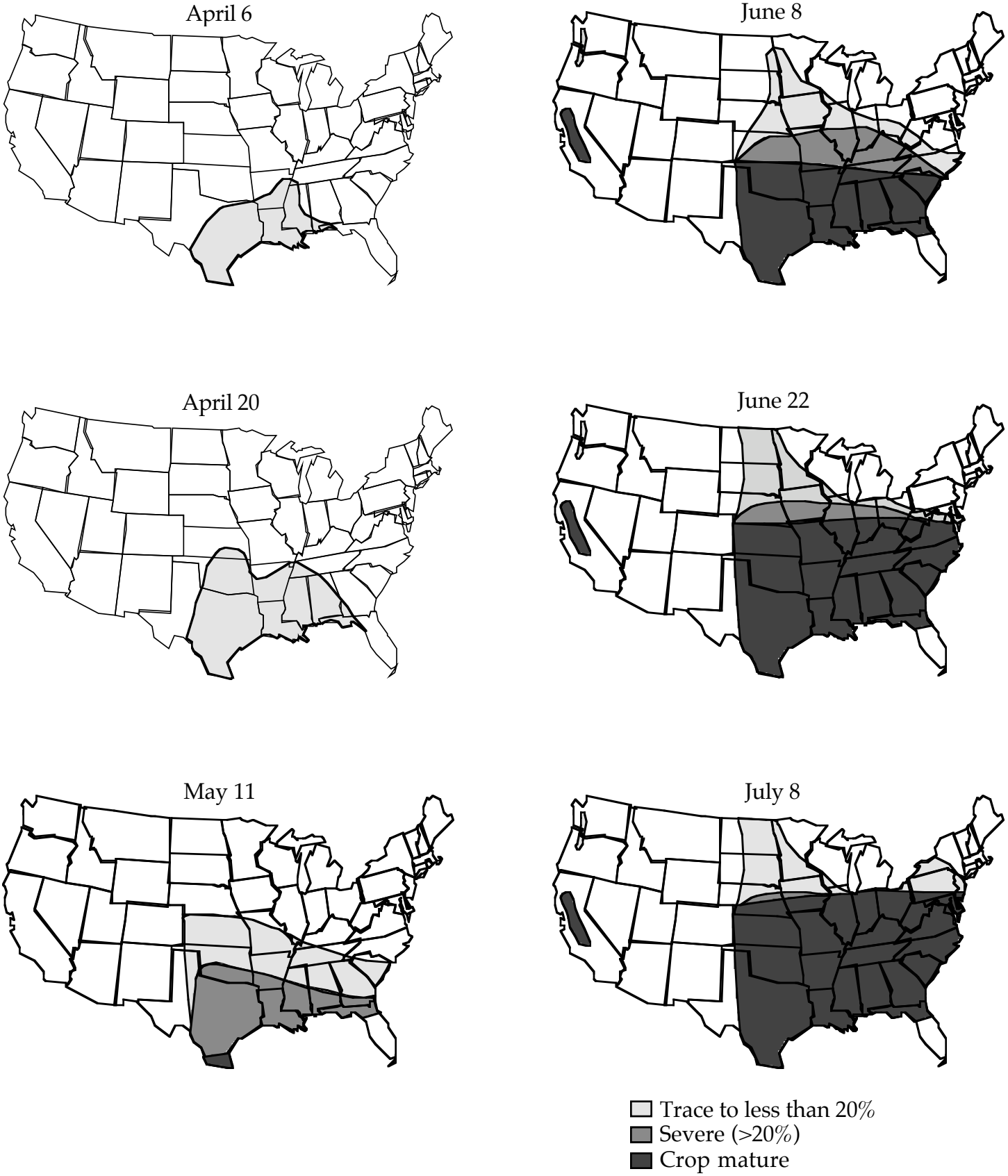

Fig. 2. Stripe rust severities in wheat fields in 2004.