We scouted in Julesburg, Holyoke, Yuma and Akron areas this week and found that wheat is looking good in northeastern Colorado. Wheat is pollinating in most varieties. Drought conditions remain throughout most of the state with severe drought in the southern part of the state. While this is productive for disrupting the growth and spread of several pathogens, some moisture is still needed to finish out the season in many locations.

**Stripe rust**

We have three reports of stripe rust near Roggen, Burlington and Yuma. This is about the same time that it was reported in Colorado last year. Stripe rust was observed on flag leaves, with low incidence and severity. The stripe rust we observed in Yuma appeared to be forming teliospores, indicating a transition in the life cycle from the urediniospore stage (infectious to wheat) to the teliospore stage (not infectious to wheat). We also observed some symptoms consistent with stripe rust infection without sporulation. In this case the urediniospores do not develop, preventing the spread of this pathogen to more wheat. This is likely due to the high temperatures in eastern Colorado. However, this could change with moisture and cooler temperatures, so continued scouting efforts are important with favorable weather conditions.

The primary management practice for stripe rust is planting of resistant varieties. To see the most current variety ratings see the CSU Variety Characteristics Table at [https://col.st/eNE8h](https://col.st/eNE8h), or search by stripe rust and other characteristics on the Colorado Wheat Variety Database at [http://ramwheatdb.com](http://ramwheatdb.com). Timely foliar fungicide application to affected varieties can be an effective control measure (see KSU Foliar Fungicide Efficacy Ratings at [https://bookstore.ksre.ksu.edu/pubs/EP130.pdf](https://bookstore.ksre.ksu.edu/pubs/EP130.pdf)). There are several considerations when making fungicide decisions such as varietal susceptibility level, severity of infection and timing of application, and wheat market prices. With stripe rust infections, minimal yield losses are observed when the flag leaf is protected so applying fungicide when the flag leaf is fully emerged is critical. The severity of disease will be affected by upcoming weather conditions. Stripe rust is favored by cooler temperatures with substantial dew periods therefore, hot dry weather would likely slow disease progression significantly making fungicide application unnecessary. Additional management strategies for stripe rust include control of volunteer wheat and weedy grasses to prevent overwintering and nutrient management.
**Tan spot**
Tan spot is present on the lower to mid-canopy in most of eastern Colorado. There are a few reports of Tan spot in the upper canopy where this pathogen can cause higher yield losses. Leaf symptoms are small tan oval-shaped lesions surrounded by a yellow halo that form dark centers. Lesions coalesce causing large regions of diseased tissue. Fungal spores survive in crop residue and can be blown by wind. Tan spot is common in our region but typically does not persist into the upper canopy unless under irrigation or continuous wheat. Management includes control of wheat residue, non-host rotation and foliar fungicide application (see KSU Foliar Fungicide Efficacy Ratings). Genetic resistance to tan spot has not been analyzed in our current germplasm.

**Stagonospora leaf blotch**
Stagonospora leaf blotch symptoms have been observed on wheat in Sedgwick county. It was present in moderate to high incidence and severity throughout the field. Some suspected tan spot lesions were also present on these leaves. Stagonospora blotch is a fungal disease characterized by oval or irregular shaped brown lesions sometimes surrounded by a yellow halo. As the lesions mature, centers often turn grey to light brown as tiny pycnidia develop. This is in contrast to tan spot lesions that typically form dark brown centers in oval shaped lesions. Stagonospora can also infect heads either with or without leaf blotch symptoms. These lesions are dark brown ovals on the glumes often towards the upper portion of the glume. This can cause infection of seeds which can transmit this pathogen. The fungi survive in crop residue and soil for long periods and can be spread by wind. Management strategies include control of wheat residue, non-host rotation, planting treated seed and foliar fungicide application (see KSU Foliar Fungicide Efficacy Ratings).

**Wheat curl mite and mite-transmitted viruses**
Symptomatic wheat samples from Logan, Kit Carson, Kiowa and Prowers counties tested positive for **Wheat streak mosaic virus** (WSMV). WCM-transmitted virus symptoms have also been observed in Sedgwick, Phillips, Yuma and Washington counties, diagnostic confirmation is pending. Virus symptoms in these locations are sporadic but severity is increasing with lesions present on flag leaves. Microscopic, wind-blown wheat curl mites (WCMs) transmit WSMV, **Triticum mosaic virus** (TriMV) and **High Plains wheat mosaic virus** (HPWMoV), with WSMV being the most prevalent and damaging. Virus symptoms include small yellow streaks scattered across the leaf and that nearly indistinguishable
among the three viruses. Despite the presence or absence of viruses, WCMs can cause leaf trapping, splaying and stunting of wheat plants. Management for WCM-transmitted viruses includes genetic resistance (see variety ratings at http://ramwheatdb.com), delayed planting, and control of volunteer wheat and weedy grasses.

**Aphid-transmitted viruses**

We have observed various types of aphids with leaf symptoms that are consistent with Barley yellow dwarf virus (BYDV) or Cereal yellow dwarf virus (CYDV). Aphids and/or symptomatic wheat has been observed in Logan, Weld, Sedgwick, Yuma, Kiowa and Prowers counties (diagnostic testing pending). This is a much higher incidence and severity compared to last season. Yellow dwarf virus (YDV) symptoms include yellowing that progresses from margin to midvein and/or reddish to purple leaf tips, as well as stunting. BYVD can be transmitted by 25 different species of aphids but, the most common vectors are English grain aphid, bird-cherry oat aphid, corn leaf aphid and greenbug. Infestations may occur at irregular spots within the field or as a general infestation throughout the field. As they suck plant sap, the aphid injects toxic salivary secretions into the plant cells. The toxin kills the cells and results in a yellow or reddish stippling on the leaves.

A wide range of losses due to YDVs has been reported. Management strategies include late planting, genetic resistance or tolerance, and control of weedy grasses as YDVs can host on a variety of cultivated and wild grasses. Using insecticide treated seed should protect seedlings from fall infection and increased losses. Consider an insecticide application if aphid abundance exceeds the levels indicated below. Glance 'n Go and the Greenbug Calculator (https://www.noble.org/news/publications/ag-news-and-views/2007/november/glance-n-go-a-simple-scouting-method-for-greenbugs/) also can be used to determine the need to treat with an insecticide.

**Small grain aphids per stem which justify chemical control:**

<table>
<thead>
<tr>
<th>Type of aphid</th>
<th>Seedling</th>
<th>Boot to heading</th>
<th>Flowering</th>
<th>Milky ripe</th>
<th>Milk-medium dough</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenbug</td>
<td>5-15</td>
<td>25</td>
<td>&gt;25</td>
<td>&gt;25</td>
<td>&gt;25</td>
</tr>
<tr>
<td>Corn leaf aphid</td>
<td>20</td>
<td>30</td>
<td>&gt;25</td>
<td>&gt;25</td>
<td>&gt;25</td>
</tr>
<tr>
<td>Bird-cherry oat aphid</td>
<td>20</td>
<td>30</td>
<td>5</td>
<td>10</td>
<td>&gt;10</td>
</tr>
<tr>
<td>English grain aphid</td>
<td>30</td>
<td>50</td>
<td>5</td>
<td>10</td>
<td>&gt;10</td>
</tr>
</tbody>
</table>

**Wheat stem sawfly**

It would be remiss not to mention the unusually large numbers of wheat stem sawflies observed in Colorado this season. For information on control efforts and research to address this major pest see Colorado Wheat and CSU wheat stem sawfly response at https://coloradowheat.org/2019/10/csu-colorado-wheat-stem-sawfly-response-video/