Much of the wheat is turning or has already turned. Hot weather and drought conditions continue to increase and spread north, with 81% of Colorado experiencing drought as of June 16th. High winds and hail caused significant crop damage during last week’s storm, especially in Washington and Logan counties.

**Stripe rust**

Low incidence and severity of stripe rust was reported at ARDEC, Roggen, Burlington and Yuma. While the current weather conditions are hard on wheat, they are even harder on stripe rust. The high temperatures and lack of moisture inhibit the growth and stop the spread of this pathogen. Most of the stripe rust observed appeared to be forming teliospores, indicating a transition in the life cycle from the urediniospore stage (infectious to wheat - left) to the teliospore stage (not infectious to wheat - center). We also observed some symptoms consistent with stripe rust infection without sporulation (right). In this case the urediniospores do not develop, preventing the spread of this pathogen to more wheat. The incidence of stripe rust observed at ARDEC was found on a wheat variety that is known to have some resistance, further indicating a shift in the population affecting our area. We will discuss this more in our season summary.

**Dryland root rot/common root rot**

We have numerous reports of white wheat heads across eastern Colorado, with very high incidence in the Orchard area. This condition can be caused by environmental conditions such as hail, high winds or freeze damage. White heads are also a symptom of dryland foot rot and
common root rot that are caused by several soil fungi sometimes forming a complex causing more severe disease symptoms. We are awaiting diagnostic confirmation but likely weather and fungal pathogens are both contributing to the occurrence of white heads. Symptoms are consistent with dryland root rot, that has also been reported in NW Kansas by Jeanne Falk Jones, KSU Agronomist. The stress caused by drought and high temperatures favor the development of these diseases. Symptoms include white heads with pour grain fill and brown to pinkish discoloration at the base of the stem. Leaf spots may also be observed. The fungi survive in the soil and on wheat residue as well as other grass species. These pathogens are most prevalent in continuous wheat or wheat-fallow systems and no-till operations.

**Stagonospora/Septoria leaf blotch**

Stagonospora leaf blotch symptoms have been observed on wheat in Sedgwick county. Those leaves same leaves also had Septoria conidia present following a few days in a humid chamber. Stagonospora and Septoria are distinct fungi, but often occur together and present similar leaf symptoms. These leaf blotch fungal diseases are characterized by oval or irregular shaped brown lesions sometimes surrounded by a yellow halo. As the lesions mature, centers often turn light brown as small black spots (pycnidia) develop. One distinguishing feature between these pathogens is that Septoria forms larger pycnidia than Stagonospora at lesion maturity. Stagonospora is known to 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. Both of these fungi can survive in crop residue and soil for long periods and can be spread by wind. You may be able to observe black spots on the wheat stubble following harvest which is a good indicator of need for control measures. Management strategies include control of wheat residue, non-host rotation, planting treated seed and foliar fungicide application.

**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. 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.

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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, Prowers and Larimer 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. We have identified greenbug and bird-cherry oat aphids in our fields this season (insect ID by Jacob Pitt, AgBio graduate student). 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.