Southern Rust Returns to Arkansas

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Southern rust was detected this week (July 6, 2015) near Lonoke, Altheimer, and Tupelo, which are located in Lonoke, Jefferson, and Jackson Counties, respectively. These are the first confirmed reports of southern rust for the 2015 cropping season. Disease severity in these fields ranged from 50 pustules on one leaf to 1% on two to three leaves (Fig. 1). Corn growth stages in these fields ranged from dough to dent. Though disease severity was low, the current weather forecast of scattered showers and warm temperatures will provide good environmental conditions for rust development. Given the favorable conditions, distance spores can spread by wind during rain storms and distribution of these reports across the state, it is very likely rust will be found this week in other fields. This report is a recommendations to scout and assess the benefit of a fungicide to protect yield potential on a case by case basis rather than a justification for wide spread use of corn fungicides across the state. Below are some key points on identification of corn rusts, conditions that favor southern rust development, and considerations for when to use a fungicide to manage southern rust.

Figure 1. Southern rust pustules on upper corn leaf surface.
A key point in disease control is accurate disease identification and southern rust looks very similar to common rust to the untrained eye. Here are a few fundamental on southern rust identification compared to common rust. Southern rust pustules are circular to oval in shape, small (0.2 to 2 mm long) light cinnamon brown to orange in color often encircled by a light-green halo. Typically southern rust sporulates on the upper leaf surface in contrast to common rust that sporulates on both upper and lower leaf surfaces (Fig. 2 & 3). Common rust pustules are elongate, golden brown to cinnamon brown in color. When scouting a field look for common rust in the lower canopy (3 ft. and lower) and southern rust at mid canopy (4 to 5 ft. from ground). Common rust is not a yield-limiting disease and should not be the sole reason to apply a fungicide.
Figure 3. Southern rust pustule on upper and lower corn leaf surfaces. Note the absence of sporulation on the lower leaf surface.

Rust spores are spread from infected corn fields progressively northward during the growing season. Free moisture as dew or light rain is necessary for spores to germinate and infect. Symptoms appear about 3 to 6 days after infection and by 7 to 10 days the pustules rupture to expose mature rust spores. Conditions that favor disease consist of high temperatures (80 to 90+ F), high relative humidity, and heavy dew. Finally, the fungus that causes southern rust will not infect grain sorghum.

Fungicides are effective at suppressing southern rust; however there is no economic threshold for a fungicide application. Factors to consider consist of corn stage of growth, yield potential, threat or observation of southern rust in the area, and prolonged conditions that favor disease development. It is generally accepted that a fungicide application at VT/R1 when southern rust has have been observed with good yield potential may be the most beneficial at suppressing rust development and protecting yield potential; however, additional application may be needed for season long crop protection. Field corn within two weeks (50% starch line) from physiological maturity (i.e. black layer) is very unlikely to benefit from a fungicide application.

Among the fungicides labeled for corn diseases, strobilurin fungicides (FRAC code 11) are more effective before disease development (early detection) whereas triazoles fungicides (FRAC code 3) are effective before and after disease development. A list of fungicides and fungicide efficacy table can be found in the MP 154. Many fungicides are good to excellent for southern rust control so; consider fungicide cost when a fungicide is warranted. A higher volume of water (5 to 7 gal/ac) will improve coverage needed to reach southern rust in the mid-canopy.