Stem rust, also called black rust, is caused by the fungus *Puccinia graminis*. Although stem rust is found in Louisiana wheat fields nearly every year, significant damage occurs only to a few isolated late-maturing fields. The early maturing winter wheat varieties grown in Louisiana usually escape serious losses caused by stem rust.

In wheat-growing areas north and west of Louisiana, epidemics of stem rust have destroyed large portions of the wheat crop. Stem rust typically develops late in Louisiana and is not a significant yield-reducing disease of wheat in the state, but spores blown northward are an important source of inoculum in other areas.

As the name implies, stem rust can be found on the stem (Figure 1) but is not confined to it. The disease also can be found on leaves (Figure 2), sheaths, glumes, awns, peduncles and even the kernels.

The infection first appears on wheat as reddish-brown elongated pustules that produce urediospores (Figure 3). The pustules of stem rust usually are larger than those of leaf rust. Also, the epidermis of the leaves and stems is ruptured and pushed back around the pustule (Figure 4). This rupture aids in excessive water loss from the plant.
Early infections from windborne urediospores usually is light, and pustules are scattered, but as infection progresses, they coalesce. The urediospores are the repeating spores that easily can be transported by the wind and continue to reinfect wheat. As the wheat plant matures, the pustules begin to produce the black spores known as teliospores.

On the alternate host (barberry), infection occurs from germinating teliospores from wheat, and the disease appears first on the upper surface of the barberry leaf as an orange pustule. Later, yellow-orange hornlike projections develop on the lower surface of the leaf. Spores produced from the barberry are blown into nearby wheat fields where the uredial stage redevelops.

Since the barberry is involved in the complete life cycle of the fungus, destruction of the barberry is one method of control. Elimination of the barberry reduces the chance of new physiological races being developed. In areas where stem rust is widespread, growers should rely heavily on resistant wheat varieties as a control measure. Fungicides may be used to control stem rust, when economically feasible. Feasibility is determined by evaluating field potential, crop value, varietal susceptibility, earliness of disease and long-range forecast for wet weather.

For specific fungicide recommendations, contact your local LSU AgCenter Extension Service agent.