

## Wheat Hollow Stem Identification and Grazing Pull-Off When to Remove Livestock in the Texas High Plains if Grain Yield is Desired

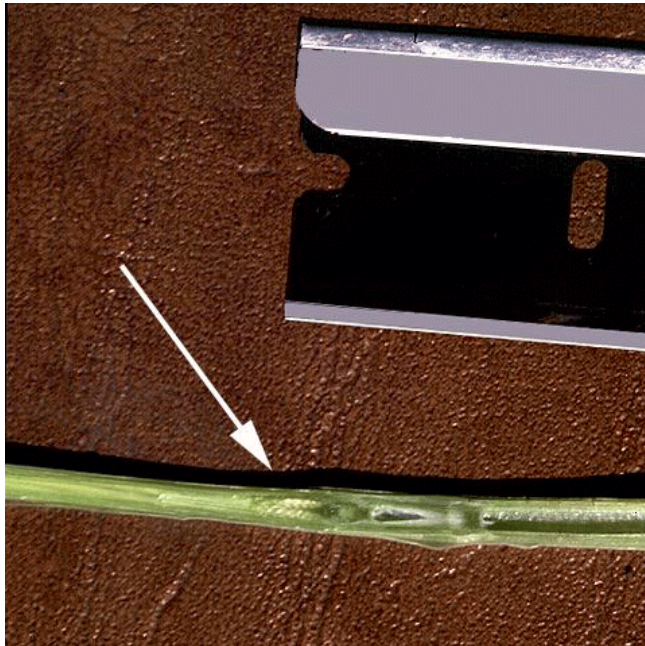
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Grazing wheat and other small grains after the appearance of a hollow stem will reduce grain yield. In the Texas High Plains this is especially an issue since over half of the wheat acreage is grazed to some degree each year. With wheat grain prices higher than in the past several years, there is more incentive among producers to pursue higher grain yields rather than prolonging grazing or even grazing out all acres. If you are grazing now and are planning on grain harvest, how do you anticipate and look for the appearance of the hollow stem of wheat? When should you look? We'll answer these questions with the help of the picture below and guidelines from "Growth Stages of Wheat: Identification and Understanding Improve Crop Management," by Texas Cooperative Extension specialist Travis Miller, available at <http://soil-testing.tamu.edu/publications/808984-miller.pdf>

As wheat growth progresses from late winter into spring, at some point it will switch from a vegetative to a reproductive state. The visible sign that the wheat has entered the reproductive phase of its life cycle is the appearance of a hollow stem at the base of the stem. The hollow stem is visible a few days prior to jointing (visible node on tiller). Jointing does not occur at the same time every year. It is influenced by



variety, planting date (especially for late planted wheat, which will joint somewhat later), and warm or cold weather. These factors can move jointing forward 7-14 days in some years, and delay it by a similar amount in others. To optimize grain yield potential, it is best to physically examine the wheat rather than relying on a calendar date to decide when to terminate grazing. In many years in the Amarillo area jointing for numerous wheat varieties "averages" about March 10, but about a week earlier near Lubbock, and potentially even earlier further south. This means the hollow stem stage can be observed 3 to 5 days prior to that time. In studies conducted at the Texas Agricultural Experiment Station near Bushland, TX, irrigated wheat yields were reduced 0.28 bushels for every day wheat was grazed during the month of February. When wheat was grazed the first two weeks of March wheat yield was reduced 0.94 bushels per day. In general, when the leaf sheaths become strongly



erect (see left) new tiller development has ceased and soon the growing point, which is below the soil surface, begins to develop an embryo head. At this stage head size, or number of spikelets, is determined. This is an ideal growth stage to spring topdress nitrogen fertilizer as later applications will not affect potential seed per head. Once the embryo head has developed, the first internode will begin to elongate pushing the head up through the leaf sheaths. This first internode will be hollow, and that is what you look for. This will be visible before you can actually feel the first node (joint, located just above the first internode).

Prior to this stage the nodes are all formed but tightly packed together and hard to see. The first node (joint) is swollen and appears above the soil surface. Above this node is the head, or spike (see fuzzy area at tip of arrow in picture), which is eventually exerted from the boot. The true stem is now forming (to right in the picture). In the picture a second short internode about 1/4" long has begun to develop—there is a single node to the right, and all remaining nodes are stacked tightly together to the right just below the immature head. Use a sharp knife or razor blade to split stems and determine the presence of a hollow stem. Cut the largest tillers off at the ground, split the stalk, and look for the hollow stem. If it is present, cattle should be removed to prevent grain yield loss. If possible, check for the hollow stem in a portion of the field that is not being grazed, such as outside a fenced area. In some varieties, it may be easier to see the immature head and stacked nodes rather than the presence of the hollow stem. If you can see the head and stacked nodes above the soil surface then you know the hollow stem stage has been reached.

Often growers may be late by a few days in removing livestock as they wait for obvious nodes and hollow stems to appear. It is a grower's decision as to which is more important, a couple of extra days of grazing vs. reduced grain yield potential. Checking fields every 2 to 3 days after the middle of February is advised, especially if temperatures are warming nicely and growth is progressing.

For further information on management of wheat and other crops, as well as insects, irrigation, etc., in the Texas High Plains, visit the websites of the regional Texas A&M Research & Extension Centers in Lubbock, <http://lubbock.tamu.edu>, or Amarillo, <http://amarillo.tamu.edu>, or at the Texas A&M Soil & Crop Science site at <http://soilcrop.tamu.edu>.