THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Hardin County Extension News Release

For Further Information Contact:
Mark Badertscher
Agriculture and Natural Resources Extension Educator
Phone – 419-767-6037
E-Mail – badertscher.4@osu.edu
For Immediate Release – April 6, 2022

Forage Legume Stand Evaluation

Hardin County – With the onset of recent warm temperatures, forage stands are beginning to green up. Wet soil conditions and widely fluctuating temperatures have presented tough conditions for forage stands this winter. This is especially true of taprooted legumes like alfalfa and red clover. Many forage stands suffered significant fall armyworm feeding damage late last summer and into the fall, so those stands should be carefully evaluated this spring as they greenup. It is time to start walking forage stands to assess their condition so decisions and adjustments for the 2022 growing season can be planned if necessary.

Forage stand evaluation can be performed when 3 to 4 inches of new shoot growth is present. Select random sites throughout the field and count the plants in a one-foot square area. Check at least 4 to 5 random sites in each 20- to 25-acre area. Random sampling will give the best unbiased overall evaluation of the field.

Plant heaving is always a concern in northeast Ohio and wherever heavy clay soils are present with poor drainage. Crops such as alfalfa and red clover are particularly susceptible to heaving damage. The likelihood of heaving is greater in wet, saturated clay soils with high shrink/swell potential that were exposed to rapid freeze/thaw cycles. Plants can be physically lifted (heaved) out of the soil, exposing the plant crowns to low temperatures and/or physical injury from wheel traffic at harvest time. In severe cases, the plant can be heaved several inches or more out of the soil, breaking the taproot and killing the plant.

While plant counts are useful, crown and root tissue should be evaluated for an indication of how the plant will hold up to stresses in the coming growing season. Dig up 5 to 6 plants in each random field location you sample and split the crowns and roots lengthwise. A healthy plant will have a creamy white color with little to no discoloration in the crown and taproot. These

healthy plants will also have numerous shoots that are evenly distributed around the crown of the plant.

Damaged plants often have fewer stems, and those stems often are more numerous on one side of the crown (i.e. shoot growth is not symmetrical). Splitting roots and crowns will reveal darker tissue than the creamy white color of healthy plants. The color tends towards a tan color. There also may be obvious areas of root and crown rot that are dark brown to black in color. Streaks of brown might be seen running down the length of the taproot. Generally, these plants green up in the spring of the year and might appear productive, but because of their compromised root system, they may not survive the entire production year, especially if we have a hot, dry year, or periods of excessive wetness followed by dry spells.

In general, yield potential is significantly reduced if more than 30% of the split roots have brown streaks running down the root and/or black areas of root/crown rot that cover greater than 30 to 50% of the root diameter. The grower may want to consider alternative forage options such as terminating the stand after a first cutting and planting to silage corn or possibly to a warm season annual forage crop such as sudangrass or sorghum x sudangrass (BMR varieties are preferred for dairy cattle). Interseeding with other forage species may also be considered to thicken the stand, just don't try to interseed alfalfa seed into an existing alfalfa stand because of autotoxicity.

If the alfalfa stand looks tough, it might be a blessing in disguise. Yield declines as the stand ages, especially in years 4 and 5 of an alfalfa stand. Consider also that a terminated forage legume stand can supply all the nitrogen needs for first year corn (or sorghum grasses) and will even supply a significant amount of nitrogen to second-year corn after alfalfa is terminated. This too should be considered when deciding whether to keep an old forage legume stand that might not be so productive this year, especially considering the current high price of fertilizers. Perhaps the old alfalfa stand will serve you better as a nitrogen supplier and yield booster for your corn (corn after alfalfa usually yields more than corn after soybeans), with the opportunity to perhaps plant a new alfalfa stand where you would have planted the corn.

Numerous studies have demonstrated that alfalfa nitrogen credits can supply all the nitrogen needs of first year corn, including first year no-till corn following alfalfa. If it makes you sleep better, apply a little starter or sidedress nitrogen (30 lbs/acre or less) to "prime the pump" in anticipation of the organic nitrogen release from the forage legume stand. But most studies show no response to any fertilizer nitrogen on first year corn after alfalfa. In addition, second year corn after alfalfa also has a substantial nitrogen credit from the alfalfa. What's more, corn will yield more following alfalfa than soybeans. Yes, your grandfather was smarter than you

might think with that corn – alfalfa (or red clover) rotation he always used. There are many more benefits to that rotation than there is space to outline in this article.

For more details on winter injury evaluation in forages, please refer to the Corn, Soybean, Wheat, and Forages Field Guide, available at https://extensionpubs.osu.edu/corn-soybean-wheat-and-forages-field-guide/.

Although winter temperatures, snow cover, and soil wetness are primary driving factors affecting tall forage legume winter survival, there are several management factors that can affect the degree of winter injury suffered by forage stands.

Those factors include the following: Varieties with good winter hardiness and disease resistance generally survive longer. In regard to soil fertility, adequate soil potassium is associated with enhanced tolerance to winter injury. Tiling and improving drainage helps prevent ice-sheeting and heaving and slows development of crown and root diseases. Harvest by frequent cutting is associated with a higher risk of winter injury, particularly if the last fall cut was made in late September to mid-October. As you walk your forage stands, be sure to check for the presence of winter annual weeds. You will want to act early this spring if winter annuals are abundant.

Grass hay and pasture stands should also be walked early to assess their spring vigor and growth as the stands green up. This is especially true where armyworm feeding was severe last fall. Taking the time to do a stand evaluation and further assess forage plant health and the extent of winter injury will allow the grower to have a better idea of the yield potential of the stand. This will help inform whether the stand can continue another year or would be better suited as a rotational crop this year.

Article written by Mark Sulc-OSU Extension, Forage Specialist and edited by Mark Badertscher-OSU Extension, Hardin County.