Using Drought Stressed Corn as Forage

Rachael Boyle
Phillips-Rooks District Extension Agent
Agriculture and Natural Resources

Drought stress is usually the major limitation to forage yields. When drought has compromised tonnage of corn grain, silage producers may retain part of its feeding value. Although grazing the plants is an alternative, mechanical harvesting maximizes the tonnage obtained. Preserving drought-stressed corn plants as hay is usually not recommended because plants retain moisture and are difficult to dry. Preserving high moisture corn plants as baleage (50-60 percent moisture) can also offer difficulties as stalks can puncture the plastic wrap with air infiltration of the forage mass. Aeration will lead to heating (and even spontaneous combustion), mold growth and mycotoxin production, and reduced palatability and overall feeding value of the stored forage. Because of these considerations, if producers are going to go through the trouble and expense of harvesting corn plants it is worth doing so as silage by following traditional best management practices.

Producers can use silage for forage, and crop farmers can use drought-stressed silage to recover some of the cost of producing the crop. Drought-stressed corn can be valuable, but there can be problems related to its use. Because drought-stressed corn has the potential to accumulate nitrates, nitrate toxicity of animals is possible. Because nitrate tends to accumulate in the lower portion of the stalks of drought-stressed corn, raising the cutter bar to leave 1 foot of the stalk in the field is recommended. In addition, nitrogen oxide gas may build up during fermentation of drought-stressed silage and thus producers must take precautions when ensiling and when removing the silage from the silo for feeding. For these same reasons, the use of non-protein nitrogen (NPN) on drought-stressed silage is not recommended. Additionally, drought-stressed corn usually is harvested in the immature state; check that all pesticides applied to the crop are cleared for silage.

Harvesting drought-damaged and/or immature corn as silage is not greatly different from making silage from more mature corn. These include avoiding delays in filing the silo, packing well, and using a protective cover to minimize air infiltration and nutrient losses. Proper moisture is very important for adequate fermentation. The nutritive value of silage from immature corn will depend on the stage of maturity. If the corn has little or no grain, the nutritive value will be reduced somewhat; however, silage from corn that has had some ear and kernel development can have similar energy content as that produced under normal conditions.

To ensure proper fermentation in horizontal silos, the moisture content should be between 63 and 68% whereas for upright silos, moisture should be between 60 and 65%. Silage that is too wet will likely have excessive seepage and an off odor that will potentially reduce palatability and feed intake. On the other hand, if plants are too dry (moisture content below 60%), water can be added to bring moisture content to a more desirable level. Harvesting silage that is too dry can create problems. Dry silage can be difficult to pack properly, and it can lead to heating and mold development.

Due to many factors that can influence the quality of drought-stressed corn silage, a laboratory analysis is recommended to determine the nutritive value of the corn silage.

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