Forage Research Update

Compiled and edited by Paul Peterson, University of Minnesota

WISCONSIN - Too Much Ash?: Harvesting Equipment and Practices Could be the Cause

Kevin Shinners, University of Wisconsin

Even though the effects of ash in stored forages on animals aren't fully understood, nutritionists agree that high amounts should be avoided. Ash content is included in most forage test reports. It represents the crop's total mineral content. Some minerals, such as calcium, phosphorus, and potassium, are found naturally in forages. But ash content greater than 9% of DM in harvested legumes or grasses may indicate soil contamination. In silage, too much soil can introduce bacteria that produce spoilage and reduced quality.

Cutting and merging equipment are potential sources of soil contamination in harvested forage. While some growers fear high-speed disks on a mower-conditioner create a vacuum drawing soil into the cut crop, this theory is doubtful. Soil under a standing forage crop is usually too wet to be drawn into the crop stream. Also, the vacuum effect is likely too weak to pull soil from the surface at the ground speeds these machines travel.

Wisconsin data showed no difference in ash content of alfalfa cut with sickle and disk mower-conditioners (Figure 1). However, Utah data told a different story. The field in Utah was infested with burrowing gophers, and the disk cutterbar was aggressive in blasting through their mounds. Thus, the ash level was noticeably higher with both machines, but especially with the disk mower.

Disk cutterbars have the advantage of cutting through everything, including soil if the cutting height is too low. If test reports show an elevated ash level, consider raising the cutting height.

Raking and merging equipment can be another culprit. In one trial, wheel rakes with ground-driven wheels produced greater ash levels than other harvesting machinery including a rotary rake, a merger, and a chopper.

Other potential sources of soil contamination include: lodged crops exposed to heavy rains, muddy conditions near a bunk or bag silo during filling or unloading, and sand-laden manure spread on fields between cuttings.

Recognizing and managing potential sources of soil contamination will pay dividends in reduced ash content in harvested forages.