



ADVANCED AG SYSTEMS'

Crop Soil News

<http://www.advancedagsys.com/>

January 2024

**"It is the crops
that feed the
cows that make
the milk
which creates
the money."**

Advanced Ag Systems
Research, Education, Consulting

How much milk does your dirt support?

The title is simply looking at the amount of ash in your forage. Forage has minerals such as calcium, magnesium, potassium, and others that compose a portion of the ash measurement. Unfortunately, it also has a sometimes-significant amount of plain dirt mixed in during harvest. It is original dirt on the plant (raindrop splash, flooding), but mostly dirt incorporated from mower knives cutting to close and digging in the soil; dirt incorporated by tilted knife updraft, and dirt incorporated by tedders, rakes, and improperly run mergers.



Cows don't milk well on dirt. Haylage ash levels will run between 9 and 13% ash. Does this have an impact? We ran the question by nutritionist Dr. Sniffin using 9 to 11% ash range. Setting the rations the same, he changed the ash level. In his calculations, we lost 1.9 pounds of milk/cow/day when the ash level increased 2%. The impact is from a direct decrease in digestible material. A second factor is the biased numbers entered into the ration in the first place. The apparent NDF concentration will go up, shortening the animal on effective NDF with metabolic consequences. All this before we consider the impact of the endotoxins brought in with the soil.

With milk running over \$21/cwt, the 2% ash level change on 100 cows is a direct loss of \$12,170. On 500 cows it is \$60,848. For 1000 cows it is \$121,695. We are talking real money and loss. Ash is a hole in your pocket with the money running out.

Where does ash come from? Our first thought is the farms that suffered flooding. Vermont had lots of experience with this when Hurricane Irene slammed them. They tried making silage with buffered propionic preservatives, various inoculants, and just ensiling. One of the workers in the area said the silage went in and came out smelling like sewage.



Flooding brings in huge amounts of silt on the forage. It does not come off during harvest and can devastate a herd's production and kill cows.

The cows crashed and some died. Flooded haylage needs to be chopped down on the field and new growth is allowed to emerge. There is no way of saving it. Corn silage is more deceptive. It can look fine from the road, but the bottom 1/4, 1/2, 3/4, may have been flooded. Each leaf axis has a pocket of dirt that will not be removed by rain. If the chopper can't cut above the flood line, then mow it back on the ground. Farmers who thought they could get away with it paid an enormous price in lost production and lost animals. A farmer I know did combine some of the grain with the fan set for full blast to remove what may have gotten in the ear. Even then they had to deal with endotoxins and feed a high rate of binder.

Flooding is the 500-pound gorilla in the room. What about the sneaky rats that are doing much more damage year after year? Ash may look minor on the forage test but it is a huge money drain. For hay crops, the problem starts at the mower. Most are set to close to the ground to get more yield and more of the down material. Down material has little or no nutritious leaves and is usually covered in mold. Every field irregularity means more dirt in the forage.

Farmers are impressed with a clean mowing job. The engineers and salespeople deliver this. The mower is designed with knives angled downward and often combined with coned drive drums that create a vertical vortex that sucks everything up and incorporates it in the forage. Roll and tine conditioners ensure it is mixed in the windrow. Adding to this the dealers set the machine to mow very close to the ground (photo at right), so the new owner is impressed with the machine. Cutting height set low to the ground will cut more material, at a price of more ash. One farmer who bought a new machine simply dropped the pin in and started mowing at the original setting. The nutritionist complained that despite using inoculant, there was tremendous mold in the forage. His sample showed a 17% ash level. Every ton of as-fed had over 120 lbs. of dirt. They lost 10 pounds of milk/cow/day. With the milk price at the time, on 100 cows the loss was over \$54,900. He paid for the machine twice, once by writing the check, and once in lost milk sales.

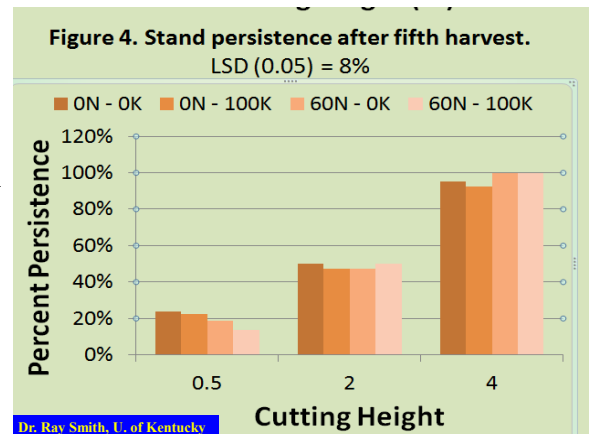


Raising the cutter bar will reduce alfalfa yield by 300 pounds for every inch. What is lost is the lower portion of the stems with no leaves that have digestibility about equal to the bushes at the edge of the field. In addition to improving forage quality, raising the cutter height leaves the new shoots on the alfalfa for rapid regrowth response after the forage is removed (photo at right). This rapidly increases the next yield and reduces the potential for weeds. If you missed your harvest window and the quality peak has gone by, you can also recover some of that by mowing higher. The forage you harvest will be the higher quality equal to the harvest window you missed.



Raising the cutter bar is critical for survival and a high yield of cool-season grasses. Grasses regrow using the existing leaf tissue, not from root reserves like legumes. Cutting grass close leaves no regrowth and the stand quickly dies out. Multiple studies (see graph at right) found a 4-inch cutting height is critical to both survival and total yield. If you pull out after harvest and the field is not still green, you screwed up future yield and replaced it with weeds. For mixed grass/legume stands, the more grass the more critical for the cutting height to be correct.

Switching the knives on a disk mower from tilted to flat will reduce the "vacuum" effect of sucking everything off of the

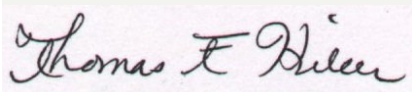


ground. Lodged material left behind has very poor feed value so leave it there. Mowing without conditioners, that our wide swath same day haylage research found were not necessary and counterproductive for rapidly drying haylage, will allow any soil to drop out the bottom of the swath and not make it to the silo.

The higher stubble gets the forage off the ground, which in a wide swath, same day haylage, speeds the drying of all the material which preserves more digestible material for the cow. It allows for tedders, rakes, and mergers to move the forage without rooting in the ground mixing more ash in the crop. Finally, research has found that mergers, run properly, will move the wide swaths to a windrow without adding more soil and possibly even reducing what the mower put in.

Look at your haylage samples. Every point of extra ash is a cost that is directly in lost milk and indirectly by poor fermentation.

Sincerely,



Thomas Kilcer,
Certified Crop Advisor

2150 Cherry Street
Rutledge, TN 37861

Tel: 518-421-2132

tfk1@cornell.edu

**The Helping
Hand
to Better
Agriculture**

