ADVANCED AG SYSTEMS'S

Crop Soil News

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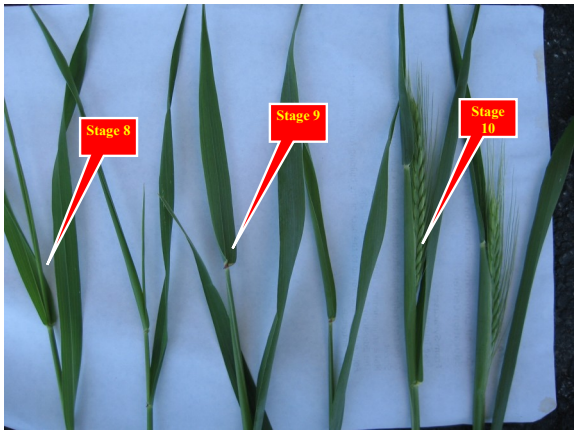
"It is the crops that feed the cows that make the milk which creates the money."

Advanced Ag Systems
Research, Education, Consulting

Winter Forage: Harvesting for High Milk Production

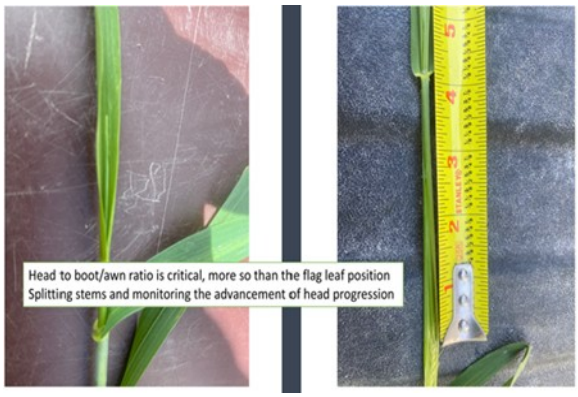
Harvest: **DO *NOT* HARVEST AT BOOT STAGE**. This is about a week late and significantly decreases the digestibility and milk produced. It was OK in the 1980's when 60 lbs. of milk/cow/day was considered good. Today, 90 lbs./cow/day is considered normal, and the digestibility of the forage is critical both for supporting the healthier, *more profitable, high forage diets* and the amount of milk the cows are producing today. This earlier, on-time harvest will slightly decrease yield, but will significantly increase the amount of milk from every pound of forage fed.

The picture on the right must be committed to memory. You want to harvest at the flag leaf stage (stage 9) for optimum quality at high yield. Stage 10 (boot stage) is too late. Stage 8 does not have a higher quality than stage 9, and had a substantial yield penalty from harvesting too soon. If temperatures are normal to warm, then you need to push to harvest at stage 9-flag leaf stage. Conversely, if it is at stage 8, you have a sunny day, and a week of rain forecasted, get it cut so you have quality forage not piles of indigestible fiber.



The optimum stage of winter forage harvest is stage 9, where the last leaf (flag leaf) has unfolded, but the head has not emerged yet. Preliminary data indicate that if temperatures are cool to cold, the forage quality (milk producing ability) could hold into early head. Traditional boot stage (10) is to late for top production from high forage diets

Further work by John Winchell of Alltech has fine-tuned this prediction. As you can see in the photo at lower right, when the head is 4 inches down (flag leave may be coming out or out in cool, perfect growing conditions; awns may be just peeking out) you have three to four days to crunch time. If the head is only 1.5-2 inches down, then you need to move **NOW.** Even a one-day delay will decrease the 12-hour digestibility. The 30-hour digestibility starts to drop at a slower rate, and then it crashes down as the head emerges (boot stage). You are better to be early than late to produce forage for the high group. Milk is made from digestible forage, not piles of poorly digestible fiber.



I have lots of acreage. Are you going to come out to help me harvest? No, that would probably set you back even further! If you have a lot of acres, it is still doable. The first planted will be ahead of all. A week earlier planting in the fall gains 3 days earlier harvest in the spring. South-facing, well-drained soils will be ready sooner than north-facing, poorer-drained fields. You can open the harvest window further by planting an early maturing variety first and a later maturing variety later.

A key step in harvesting very high-quality winter forage, as many farms are doing successfully, is to use the **wide swath same-day haylage** techniques. Four or five cuttings of alfalfa will give 3.5 to 4.5 tons of dry matter over a season. Properly planted on time, fertilized sufficiently, winter forage, especially triticale, will give the **same yield** in **ONE** cutting at stage 9 (flag leaf). One Tennessee trial yielded 6 tons of dry matter at stage 9 (flag leaf). Mowing this directly to a windrow and letting it sit for 3 – 4 days will very efficiently windrow compost remove nearly all the digestible energy. Adding insult to injury, the complete sugar loss means that Clostridia will tear apart the protein molecule and produce rotten forage of high butyric. Not something to feed cows to make profitable milk.

Yellow shield on the left catches mowed forage and drops it in a non-drying lump. Raising the shield on the right allows the forage to flow through unimpeded and fall in a loose porous uniform swath.

You are using the very **efficient and proven PHOTOSYNTHETIC DRYING** to reduce forage moisture. This is where the leaves are kept in the sun, so photosynthesis simultaneously dries the crop and increases the digestible components of the forage. With a wide swath, same-day haylage, we have dried the above yields to over 30% dry matter in just a few hours. There are no shortcuts, and skipping steps will assure you have a forage wetter than you would like. First step is to remove all shields so the **mower leaves a swath a *minimum* of 85% of the original cutter bar width.** Leaving the flexible lawyer shields hanging down on the back will assure your swath is a line of large lumps that do not dry (photos at right). Raising or removing these (unit on right in photo) will allow the forage to feed out uniformly and in a very porous swath with maximum sun exposure. Ironically, the gold standard is a side bar sickle that cuts and drops the swath in the same width, resulting in leaves on the top and the stems on the bottom. Nearly the same can be accomplished by disk mowers, especially those with flat knives. The more twist to the knife, the more milk-robbing ash in the forage, and the more the paired drums produce an inefficiently dried windrow instead of a swath.

Non drying lumps formed every 24 inches when the back shield was left down

CONDITIONING IS COUNTERPRODUCTIVE AND SLOWS DRYING when using photosynthesis. The leaves use moisture to produce sugars. They draw more moisture from the stems, which draws air into the bottom of the stem, drying it first. Conditioning is like kinking a copper pipe; it stops water flow to the leaves and reduces the drying rate. Tine conditioners are a horror show, removing the nutritional leaves. Mowing to a windrow does the same as the leaves are in the shade, and respiration removes digestible components and turns them into CO2 and water.

As we mentioned above, there are 3.5 to over 4 tons of dry matter in a swath. Even wide swath and no deflectors, it is a pile to get dry. In about 2 hours, the top is too dry to photosynthesize while the lower layers are still as wet as when first mowed. Running a tedder to bring up the lower layers on top will restart the pho-

tosynthetic drying. You need to adjust the loose nut at the steering wheel of the tractor. Driving too fast will make perfect, non-drying lumps. When you first ted, get off the tractor to see if you are helping or just making lumps. There are tedders that have differently designed teeth that do a superior job of putting the bottom layers on top in the sun. Mergers also need to be run at operating speed. Running to fast adds ash and beats the crop for higher loss.

Finally, chopping the same day. If temperatures are dropping to the low 40's or even better to the 30's, respiration will essentially stop, and you can preserve those milk-producing sugars until the next morning. Thus, you can leave it overnight with little or no quality loss. If it is warmer than that, same-day haylage (not holding it overnight) can make a huge decrease in the energy reaching the mouth of the cow. Depending on the weather, it can be 35% dry matter or 25% dry matter in one day. The first step is to chop at a minimum of ¾ inch, with 1 inch preferred. This will have a major impact on reducing or eliminating leachate (not for tower silos). A homolactic inoculant is also critical to use the sugar produced by photosynthetic drying to rapidly drop the pH to below 4, stopping or eliminating spoilage organisms.

Tedders need to be operated at the design speed. Faster field speed will create non drying lumps.

Sincerely,

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