Put Profits Back Into Bale and Cow

by Steve Cubbage

The equation is simple — high quality forage = superior animal performance.

On paper the equation may look simple enough, but creating high quality forage in the real world means clearing several management hurdles. It is the last hurdle— harvesting — where many producers trip up when it comes to achieving maximum quality forage.

“As more and more cattle producers move toward raising and feeding legumes such as alfalfa, it is important for them to realize that the profit they may realize from their cow herd may depend on their forage harvesting management skills,” says Mike Collins, forage researcher at the University of Kentucky. "Many producers may still consider it to be just another day in the hay field, but the fact of the matter is that putting up superior quality alfalfa hay is an art and a science.”

Timing is everything

At the end of a harvest season, some producers may be a little shocked to find out that they may have left nearly 25 percent of their total alfalfa production laying on the ground.

The amount of tonnage lost through the harvesting process can subtract production of alfalfa by 15 to 25 percent. That translates into an average loss of $150 to $200 per acre that never gets out of the field.

"You may be able to grow 8 tons of alfalfa per acre, but you actually may only bring in 6 tons," says Collins."By fine-tuning your harvesting process you should be able to bring more hay to the barn and in turn have a greater amount of quality forage to feed to your herd."

Collins says harvest management is the most overlooked aspect of raising quality forage.

"Producers will do all the right things like planting superior varieties, spraying for weeds and insects and fertilizing a stand just to gain a 5 to 10 percent increase in production,” he says."But many don't blink an eye as they see the masses of leaves left behind at harvest which will take away any increase in production that might have been gained."

The phrase "timing is everything" really holds true in the alfalfa business. Knowing when to cut, when to rake and when to bale are the keys to putting up the maximum amount of quality alfalfa hay during a growing season.

Collins recommends cutting alfalfa at the mid-bud to early bloom stage. by cutting this early it should allow producers to take as many as five to six cutting from a field during a season without damaging the life of the stand. The Kentucky agronomist says cutting early does two important things for the producer: it actually will increase the total tonnage over the long-haul and it will greatly improve the quality of the alfalfa hay fed to your herd.

What many producers fail to see is that quantity and quality are actually very intertwined, says Collins. One example is a producer who delays harvest by one to two weeks to get past a rainy spell. He thinks he will lose quality by having his alfalfa rained on-which is true — there is a 5 percent digestibility loss for every inch of rain that falls on cut alfalfa. However, for each day delayed in cutting past the mid-bud to early bloom stage he will lose.5 percent in digestibility. The real kicker by delaying harvest is the fact that the producer has put off any regrowth and possibly chopped the number of seasonal cuttings.

The bottom line as far as Collins is concerned is to cut hay when it is ready instead of always waiting until you think there will be five days of sunny weather with low humidity.

"From our agronomic studies, the producer is still better off cutting at the proper time instead of trying to outguess Mother Nature,” says Collins.

Trimming mechanical losses

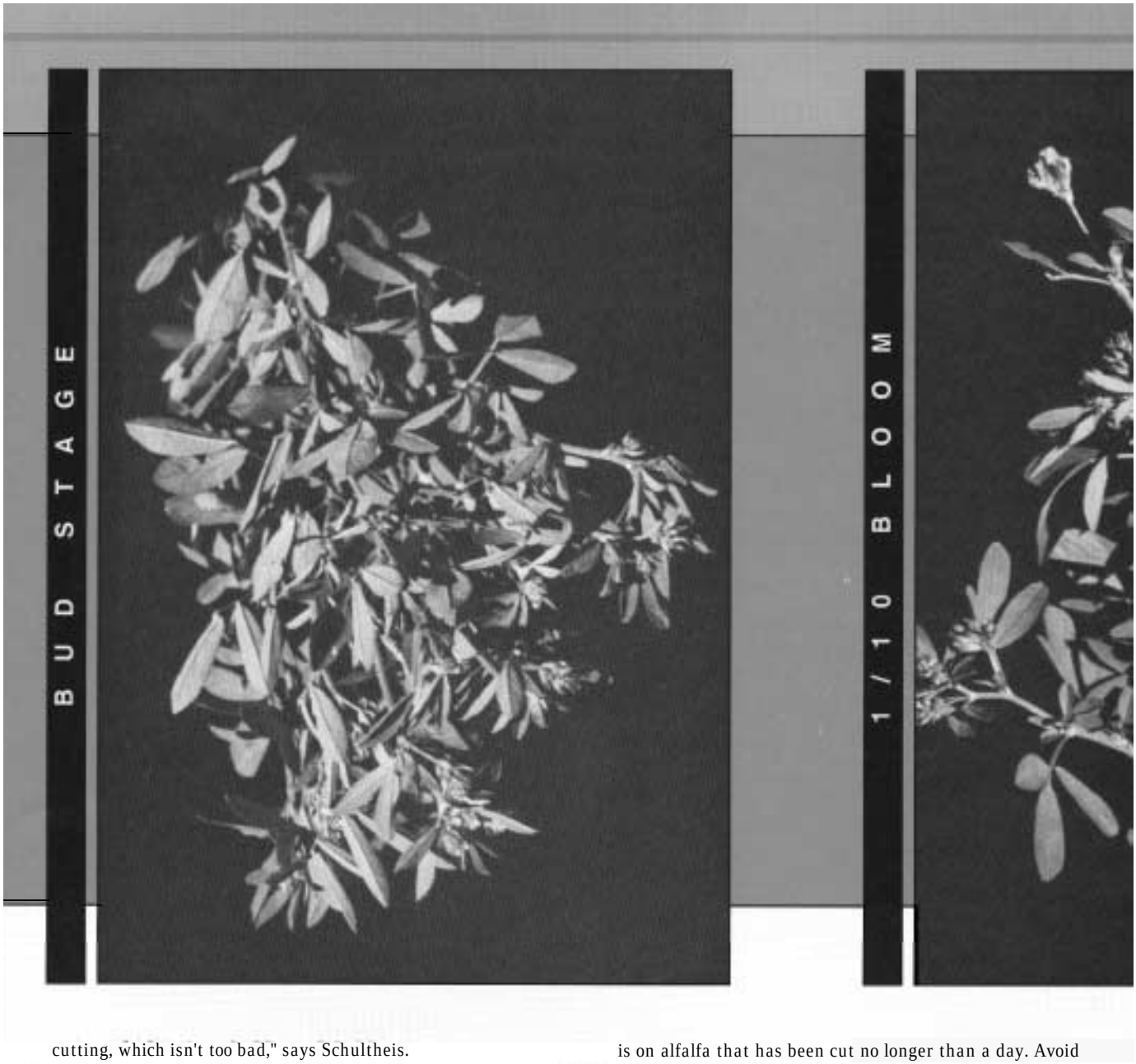
Mechanical losses constitute a primary reason for putting less hay in a bale. Because of the fragile physical makeup of legumes as compared to grasses, it is very important that all your hay machinery is adjusted to preserve the greatest amount of the crop possible, says Bob Schultheis, University of Missouri agricultural engineer.

Nearly all the harvesting losses in alfalfa is leafloss. In fact, more than 90 percent of your losses comes from dropped leaves. That figure is especially hard to take considering the main protein content is in the plant leaves. The protein in leaves may run 30 to 35 percent; the stem usually will run 12 to 13 percent.

Keeping leaves on begins with the swather or mower-condition. Conditionerr rollers should be properly set where the stems of the alfalfa are crushed but the leaves are left intact. Also, the key to efficient curing is to make sure you spread the cut swath as wide as possible. This increases the surface area stat can be directly contacted by sunlight— and sunlight is the key to curing hay. By cutting the curing time, you cut your chances of possible rain damage.

Schultheis warns not to use a flail shredder type of conditionaer for sutting alfalfa.

"By correctly adjusting your conditioner, you should limit dry matter losses to around 2 to 3 percent at the time of



cutting, which isn't too bad," says Schultheis.

After the mower conditioner has done its job it is particularly important that a producer know the moisture levels of the cut crop. Moisture levels will help guide you through the rest of the harvesting process.

One of the handiest tools is a handheld, digital electronic moisture probe which can be inserted into a swath or windrow for a reading. It is important to take several readings from various locations in a field and to come up with an average moisture level.

"Ten to 20 readings is needed for a good average," says Collins who monitors moisture content with a Delmhorst digital meter. He says that a good digital meter will cost between $300 and $400, but emphasizes that such a tool will more than pay for itself a single season if used properly.

Schultheis cautions against the overuse of tedding machines to speed drying time. "Tedders definitely have a place, especially when fresh cut alfalfa gets a rain on it. However, if alfalfa is too dry when it is tedded, leaf loss can be substantial. It is then nothing more than a deleafing maching."

"Tedding works best just after cutting or when a heavy dew is on alfalfa that has been cut no longer than a day. Avoid tedding in the afternoon or when the top of a swath is brittle and dry."

Raking alfalfa into a windrow is where most producers will lose a majority of the leaves on a crop. To limit losses, it is preferred that raking take place before plant moisture readings drop below 40 percent. Bake below 40 percent and you could be looking at losses of 6 to 10 percent.

Moisture levels at time of baling should be in the neighborhood of 20 percent to limit further leaf loss and to allow for respiration and good storage characteristics.

University studies show square balers tend to limit losses better than their big round bale counterparts. "Because of the continuous rotation needed to make a big round bale, losses are likely to be more severe," Schultheis says. "The more alfalfa moves, the more leaves are going to be lost. And that's why you still see a majority of alfalfa put up in square bales. Even the larger square bales are much superior to the large round bales."

DUANE DAILEY PHOTOS

Hay additives and preservatives

Because of extended curing time required for legumes such as alfalfa there is a growing interest in products which can speed up the harvesting process.

"If weather conditions warrant baling early or even baling hay that has been rained on, it would be worth your time to consider applying a hay additive," says Collins.

As a rule of thumb, when alfalfa hay is baled above 20 percent moisture steps should be taken to prevent the microbial growth that is responsible for heat damage and dustiness. Materials shown to be effective in the preservation of moist hay include sodium diacetate, propionic acid, ammonium propionate, urea, anhydrous ammonia and others.

Research has shown that products applied in liquid form tend to work better than dry products. Also, applying the product as it goes into the baler seems to work the best in University of Kentucky field studies. The cost of using such products typically runs $10 to $20 per ton.

"If you see yourself utilizing these products, I would recommend using the additives which have proven themselves over the years," says Collins. "That's why I prefer propionic acid, because it works and it is relatively inexpensive."

A buffered propionic acid is now available to producers. Buffered products are organic acids adjusted to near a pH of 6. Because of their higher pH, these materials are much less volatile and much less corrosive than their older unbuffered counterparts.

"Hay additives definitely have a place, but it is important not to abuse them and to use them correctly or they will not work. Hay should never be baled above 35 percent moisture with or without a preservative. And if you do bale alfalfa hay above 30 percent by adding a preservative, you had better plan on doubling your application rate of the product," says Collins.

It must be pointed out to producers, however, that field-dried hay which has been allowed to cure naturally will always be better quality forage than hay in which a preservative has been used. Treated hay will tend to have less of a natural green color and be dustier.

For more information on preservatives and hay additives, contact Mike Collins at the University of Kentucky, agronomy department, Lexington, KY 40546-0091; (606) 257-3358. For more information on harvest management, contact your local university Extension specialist.

AJ