10 Hay Farming Basics:

Producing a quality hay product

A Special Report

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Contents

Are you ready to produce a quality hay crop? There's a variety of considerations that go into the decision – price of hay, cost of producing the hay and the management and time that will go into raising and maintaining the crop.

This paper will walk producers through determining a price and a market (or keeping hay for personal use), as well as factors to consider when re-seeding or selecting a new hay variety.

Once a stand is fully established, producers must be aware of management heading into winter months, and appropriately timed cuttings once warmer weather arrives.

Finally, the paper will examine benefits of hay testing, and what it can offer to either your customers or your own livestock.

Ultimately, you'll be ready to produce a quality hay crop with these 10 hay farming basics.

1. Set price based on production costs and local market

When it comes to marketing your hay, if that's your plan, there are a few general guidelines to keep in mind when selling to producers of dairy cattle, horses, beef cattle and other species.

The dairy market: wants large round bales; demands a test; looks for 20% crude protein, 30% acid detergent fiber and 40% neutral detergent fiber; and measures feed performance by milk production. Dairy producers prefer alfalfa.

The horse market wants small square bales, doesn't necessarily ask for a test, and buys on sensory perception. Those who buy hay for their horses have no way to measure feed performance in their high-value animals. They like hay that smells fresh and looks green. That hay absolutely, positively must be clean. No mold, dust, weeds, foreign matter or blister beetles.

The beef market wants large round bales, measures performance on pounds gained and has varying quality needs. You can throw just about anything out at them.

Most of the hay grown for the beef market is grown by producers for themselves. If that's your plan, be sure to keep track of the numbers.

Other markets include — but certainly aren't limited to — sheep, mulch, goats, llamas, emu, zoos, nurseries, feed stores, rabbits, gerbils, medical research and, most recently, energy.

Regardless of the market, growers need to know the cost of producing the hay and the current prices in their market area so they can set a price that moves the hay and brings a profit.

Current prices can be found by looking at USDA hay prices on the Web, asking neighbors and Extension agents, or even checking the sales ads. That will give you an idea of what your hay will bring in the market. Only you know what it's worth. Once that price is set, collect the money on delivery.

Quality Hay – Not Just Quantity – Is In High Demand
Rain-delayed haymaking leads to poor-quality feed for livestock next winter. Supplemental feed will be needed to make balanced rations. A hay test makes the first step in learning how much supplement will be needed.

However, the regrowth has a chance to make higher-quality feed. Unfortunately, cool-season grasses go into summer slump, growing little in July and August. Regrowth may not come until fall rains return. Applying nitrogen fertilizer in mid- to late August can boost yield and quality of fall growth.

Rather than making fall hay, try stockpiling fall grass growth for strip grazing. Stockpiled pastures can be grazed well into winter.

Producers who won't cut hay in the spring, and instead want to delay cutting hay until fall, believe the forage will gain nutrients from regrowth. Don't do that. Over time, mature standing grass leaves rot and dry rather than gain quality.

There's an extra hazard in that over-mature hay. Ergot alkaloids may be contained in the seed heads. That further lowers quality. Start with a clean field to allow better-quality forage to grow

For best quality, hay should be harvested in May before plants set seed. When seed heads fill, sugars and proteins move from leaves into the seeds. High fiber remains instead of nutrients needed for high-quality hay. Testing hay in the spring to pinpoint actual hay nutrition will aid in making balanced rations for winter feeding.

2. Carefully select alfalfa when choosing varieties

Many ag producers carefully select corn hybrids and soybean varieties, but choose alfalfa varieties based on price, marketer, etc., rather than performance. Yet, the differences among alfalfa varieties are at least as great as those of corn and soybeans.

When considering alfalfa seed choices, what should you look for? Good insect, disease and weed control are givens. But don't forget about other factors that can affect yield potential, such as soil type, soil fertility, cutting schedule and your overall management system.

The bottom line is to go for quality. Make decisions based on yield and quality data, using comparable varieties to compare to in terms of relative forage quality or RFQ, fiber digestibility, crude protein levels, etc.

Most varieties have very high resistance to anthracnose, bacterial wilt, fusarium, phytophthora, and verticillium (disease resistance score near 30).

But in the Midwest, resistance to aphanomyces is needed. Race 2 resistance is recommended because it includes resistance to Race 1 and some others.

Potato leafhopper resistance isn't used as often as it would be beneficial. In some areas, this trait can eliminate the need to spray or reduce sprayings.

Though selecting a variety with needed resistance to certain pests might be costlier, you're going to have these alfalfa stands for multiple years and multiple cuttings. Seed cost is something growers weigh with many crops, but with alfalfa, considering the price of cash hay, it's not a contest to purchase the higher-quality product.

Keep in mind it costs about as much to grow a low-yielding variety as a high-yielding variety. Land cost, taxes, machinery cost, fertilizer, and herbicide costs are all about the same.

Harvesting costs also are about the same, regardless of yield. It takes only about 15% more energy to harvest 2 tons per acre than 1 ton per acre, and labor is about the same, if paying hired labor a flat hourly fee.

With hay at $100 per ton, this alone would more than pay for the total seed cost of the most expensive variety, and the yield spread widens in subsequent years. Each year after the original seeding, tests have shown that top-yielding varieties can average more than 2.3 tons per acre more than the lower-yielding alfalfa varieties.

Selecting the best variety, regardless of the seed cost, can pay for itself every year of the stand.

If you need more guidance on variety selection, contact an extension representative or trained agronomist. You might also try the National Alfalfa & Forage Alliance's "Alfalfa Variety Ratings - Winter Survival, Fall Dormancy & Pest Resistant Ratings for Alfalfa Varieties." The NAFA publication provides a detailed list of alfalfa varieties and their corresponding ratings for dormancy, winter survival, bacterial wilt, aphanomyces, leafhopper, and a host of other pests, as well as grazing tolerance, salt tolerance, and standability. The data helps give growers the information they need to make informed decisions about the varieties which will perform best in a given environment.

3. What to do for spring forage seeding

In wet springs, many farmers have problems getting spring-seeded forages established. Some of the resulting stands of alfalfa, for example, aren't very good.

If ground is worked wet, it will create a cloddy seedbed, resulting in poor seed-to-soil contact. Seedling diseases may also take a toll due to cool, wet weather – and stands can be disappointing.

As a rule of thumb, forage seedings can be made in the spring as soon as a suitable seedbed can be prepared. Spring seedings made after mid-May may not be as successful, due to rapid drying of surface soils. As much as you have to pay for seed and the cost of getting it into the ground, you should try to do the job the right way. Consider the following recommendations:

Site preparation. If you are seeding a pasture, clear the brush, fill in gullies and take soil samples. Apply lime or fertilize according to needs shown by soil testing. For most efficient lime use, it's best to have needed lime applied and incorporated six months to a year before planting.

Seedbed preparation. Destroy sod by shallow plowing or disking, followed by necessary secondary seedbed preparation. Seedbed firmness is very important. Using a cultipacker or roller on tilled seedbeds before planting is recommended. An alternative is to use a nonselective herbicide to kill the old sod. Incorporate fertilizer before seedbed preparation, or surface top-dress it on killed sod.

Species and variety selection. Select species based on the desired use, persistence and tolerance to site conditions. See selection recommendations provided earlier in this paper for considerations.

Seeding. Seed in one of the following ways on a well-prepared seedbed:

•Use a grassland drill with depth-control and press wheels, or a cultipacker-roller type seeder for small-seeded forage legumes and grasses. Plant ¼ to ¾ inch deep.

•Use a grain drill with small-seeded forage boxes as a broadcast seeder for small-seeded legumes and grasses to prevent small forage seed from being planted too deeply. Cultipack or roll after seeding.

•Broadcast seed onto a firm, tilled seedbed and cultipack or roll for shallow seed coverage and seed-to-soil contact.

If planting into a killed sod or untilled crop residue field, use a no-till drill, control seeding depth within a ½ inch, and adjust press wheels for good seed-to-soil contact.

4. Be careful on slopes - Consider erosion protection

On sloping sites, consider erosion protection. Where there is a risk for erosion on tilled seedbeds, 1 to 2 bushels of oats per acre or a reduced seeding rate of another spring cereal grain may be seeded with forage mixtures as a companion crop or cover crop. The cereal grain will serve first as soil erosion protection, but will increasingly become competition for the newly planted forages. The sooner the cereal competition can be removed, the quicker the new forage seeding will establish.

Cereal companion crops may be grazed, cut for silage or hay, or harvested later as grain and straw with associated longer completion. Particularly in dry springs, removing companion crops as early as possible can save moisture for the new forage.

For weed control and for companion crop competition control, graze new seedings rotationally or mow (clip) sequentially, during the first few months of the establishment to limit unneeded competition for light, moisture and plant nutrients. The developing seedlings will establish more quickly. Also, avoid any cutting or grazing of new seedings after early September to improve winter hardening.

For some mixtures or pure stands, selective preplant or postemergence herbicides may be used in place of a companion crop. This option may only be appropriate on sites where erosion is not a risk. Seek help from your ag professionals when selecting and using herbicide for weed management in new forage seedings. Be sure to read and follow labels when using any ag chemical. Also, take into account any harvest or grazing withdrawal periods needed. You can apply fertilizer in later years according to soil test recommendations.

Remove grazing livestock and limit grazing for the last four to six weeks of the growing season to allow plants to adequately harden for winter. Use management practices that retain adequate plant cover if cutting or grazing after fall dormancy.

5. Winter survival comes next: Manage fall hay for winter injury

We all want alfalfa to survive winter, and recognize that enough winter-hardiness is needed. However, the greatest loss to most alfalfa growers isn't stand kill, but stand injury.

Alfalfa starts shoots in the fall for spring growth. If these shoots are killed over winter, then the plant must start over making new shoots in the spring. Consequently, first-cutting yield is reduced due to the later start.

A cold spell during a period of no snow cover can really injure alfalfa. And as the super-hot days of summer finally give way to cooler temperatures in the fall, alfalfa growers in are encouraged to consider winter injury risk when considering late fall cutting. That can be risky when bumping up against winter.

Growers really need to assess the risk vs. the gain when it comes to fall cutting of alfalfa. While it may be tempting to take a final cutting late in fall, you could be ultimately risking winter stand injury.

6. Fall management guidelines when considering fall cutting

Varieties grown in the Midwest with fall dormancy 4 ratings tend to yield more than fall dormancy 3. Now, fall dormancy 5 is available.

Generally, the higher the fall dormancy, the quicker the varieties start growing in spring and after each cutting. This can result in higher yields and more late-fall yield.

The challenge with a fall dormancy 5 variety is, since shoots come back faster, the hay/haylage must get off the field more quickly to avoid driving over the new shoots and reducing the next cutting yield.

To increase their potential for winter survival, alfalfa plants should get five to six weeks of growth to accumulate root carbohydrates and proteins before going dormant for the winter.

A killing freeze can vary greatly in the Southwest; it's generally not until mid-November on the Rolling Plains, but earlier on the High Plains, compared with September to Oct. 15 in Northern states. Nevertheless, freezes don't always wait until mid-November in Southern states — the first freeze can swing earlier or later.

It is important to look at your probable window for a first freeze and manage your fall harvest of alfalfa to give the plants the best chance for a strong winter survival.

When considering fall cutting, follow these management tips:

• **Select winter-tolerant varieties**. Work with your agronomist to determine what varieties have strong winter survival and persistence ratings, and are best for your region and field.

• **Know your field and your soil**. Soil fertility management is vitally important for maintaining productive alfalfa stands. Potassium (potash) is especially important for developing plants that have good winter survival.

• **Assess need for feed**. Growers should weigh the need for additional hay against the risk for winter damage. If forage is absolutely needed, prolong cutting until after hard frost so stored energy is not lost with alfalfa regrowth.

7. Set the schedule for hay quality

When to make the first cutting of alfalfa and mixed alfalfa/grass hay sets the stage for the rest of the year.

Hay producers must answer a couple of questions when deciding the timing of the first spring cutting. What's the hay harvesting schedule you desire? What are your objectives for the harvested hay crop or forage stand?

Harvest schedule decisions tend to be guided by what's most important. Your objectives may include harvested yield, nutritive quality of the forage, or vigor and persistence of the perennial stand.

Reaching a high level of all three objectives is unlikely with a single chosen harvest schedule. Growers can generally meet two of the three, but not all three. So, there are usually some compromises when harvesting.

What Quality Do You Want?
Do you want high-quality hay at an acceptable yield level?

In general, more frequent harvests produce forage of higher nutritive quality at an acceptable yield level, but at a sacrifice in stand vigor or longevity. Conversely, less frequent harvests will produce acceptable yields and a greater degree of stand persistence and plant vigor, but the forage will have a lower nutritive value.

Maximum dry-matter yield of alfalfa and most forages is often obtained by harvesting the first cutting of the season at nearly full bloom and harvesting subsequent cuttings at 40- to 45-day intervals until late August or early September, referred to as a "3 summer-cut system." This system produces forage relatively lower in nutritive quality.

Such forage is suitable for livestock on maintenance rations, or slower-weight-gain livestock enterprises, and can be used in low-performance feeding programs. To add additional harvested yield, growers who use a 3 summer-cut system will often harvest a fourth cutting in mid-to-late October.

Going For Higher-Value Hay
High-performance livestock feeding programs require higher nutritive value forage. The optimal compromise for higher forage quality and dry-matter yield of alfalfa is to harvest the first cutting at late-bud to first-flower stage and make subsequent cuttings at 32- to 35-day intervals until late August or early September, often referred to as a "4 summer-cut system."

Growers who are using a 4 summer-cut system will sometimes harvest a fifth cutting in late fall, also typically high nutritive quality forage. This latter 4 summer-cut system has led to a greater stand reduction and shortened stand longevity than those managed under a 3 summer-cut system.

The negative impact on stand vigor and longevity are usually made worse when a late-autumn cut is added to either the 4 summer-cut system as a fifth cutting, or to a 3 summer-cut system as a fourth cutting.

Alfalfa and alfalfa-dominant mixed legume/grass stands mature more quickly and lose nutritive quality faster during the first growth cycle of the spring than during summer growth cycles. Growers desiring high-quality alfalfa hay at first cutting must manage the first seasonal cutting more closely to meet their particular forage quality goals.

To complicate this management of forages even more, each spring growing season is a little different and may be a week or more different from one year to the next in the rate of crop development. Growers managing for high quality are encouraged to use one of the "heads up" methods for predicting the quality of a standing crop in the field.

8. Knowing your RFV and deciding when to cut

There are several ways to decide when to cut, if you know what relative feed value, or RFV, you need. You could go by the calendar and plan to cut at the same time you cut last year but with year-to-year variations in seasons, that's really not a good system.

Another way is to look at the stage of development of the alfalfa. You need to understand how alfalfa grows. The first developmental stage is the vegetative stage when no buds have appeared. Forage quality at this stage is often too high for most livestock.

Next is the early- through late-bud stage. In early bud, you can't see the bud yet, but you can feel it in the stem tips. In late bud, there's a large, visible bud, just before open bloom. Then comes bloom stage, followed by the seed pod stage when nutritional value of the plant is decreasing rapidly with each day of harvest delay.

For high-performance animals, the first cutting should be made from early-to-mid bud. For beef cows, late bud through midbloom is fine, and for dry, open ewes, the full bloom stage is acceptable.

In the upper Midwest, alfalfa bud stages generally occur around mid-May when producers would typically make a first cutting for dairy cattle. But keep in mind spring may be a few days ahead or behind normal all across the U.S.

Once a first cutting of alfalfa is made, bud stages on the regrowth generally occur again about every 30 days after cutting, allowing four bud stage, dairy quality cuttings per season. Your most critical decision then is when to make that first cutting.

Using either scissors clipping or the Predictive Equations for Alfalfa Quality method, another calculation must be made for anticipated harvest and storage losses that will occur. Generally, 10% to 15% harvest and storage losses are expected. So for each biweekly sample, about 10 to 20 RFV or RFQ units should be deducted from that of the standing crop.

How About Forage Grasses?

Forage grasses develop similarly to pure alfalfa stands. As forage grasses mature, yield at cutting increases and plant vigor and persistence improves, but feeding value declines. For most forage grasses, the first growth of spring also has a seed stem that both adds yield and reduces feeding value faster with advancing maturity.

The cutting decision for "all grass" and grass-dominant mixed hay should be based on feed quality needs. Grass is considered higher in fiber than alfalfa, so alfalfa and alfalfa-dominant hay mixtures of less than 20% of the stand or hay composition is generally recommended for lactating dairy cattle.

For other classes of livestock, harvesting at seed head emergence or soon after is the most common harvest "target." Waiting to harvest forage grasses that have matured into the seed formation stages generally does not add significantly to the yield, and produces lower and lower feeding value hay.

9. Why you should know how cool-season grass grows

It's important to understand how grasses grow so you can better manage them.

New Seedings
The ryegrasses and festoliums will come up first and dominate early in the season. In July you should expect to see some of the longer-term perennial grasses growing and contributing to the stand. We usually only think of soil pH with regard to legumes, but it is important to recognize that, while all grasses will survive at low soil pH, some will yield significantly more if the soil pH is above 6.0.

Second, it is important to recognize that most cool-season grasses do not head out in the seeding year. They require vernalization, exposure to a period of cold, to flower and produce seeds. Therefore, grasses should be cut or grazed by height in the seeding year.

The general recommendation is to cut when the associated legume is flowering, or to graze or cut when the grass reaches 12 to 15 inches height. This is especially crucial if seeding a cover crop (such as oats or ryegrass) with a longer-lived species so the cover crop does not shade out the slower-establishing grass (e.g. tall fescue, orchardgrass, etc). The main consideration with grazing is to ensure the plant has a sufficient root system so the grazing animals do not pull the plants out of the ground.

Regrowth In Stands
Grasses have three types of growing points:

Apical meristem is the growing point in the crown at the tip of the stem that produces a head. It stays at or below ground level early, producing a cluster of leaves; then the stem extends, pushing up the head. If the head is grazed off or clipped, this meristem quits growing.

Intercalary meristem is the growing point at the base of the leaf and the leaf sheath. All cell production and growth for the leaves and sheaths occur here, not anywhere else along the length. This is why grazed or mowed plants show leaves continuing to grow.

Axillary buds at plant nodes produce regrowth triggered by grass maturity or removal of growing points in timothy and smooth bromegrass. If the head of these species is removed, new shoots may develop from stem nodes. The effect is triggered by environment and genetics in orchardgrass, tall fescue and ryegrass.

Because most cool-season grasses require vernalization for heading (except timothy and ryegrass), they only produce seed heads on first growth in the spring and only leaves on regrowth. Two exceptions are smooth bromegrass and reed canarygrass, which produce stems (but no seed heads) during regrowth. Orchardgrass, ryegrass and tall fescue store energy in basal stems; therefore, cut at 4 inches for rapid regrowth.

A basic rule of grass growth is that growth takes priority over storage for carbohydrates. If grazing animals remove most of the available leaf area every few days, the plant allocates nearly all growth energy to new leaf growth, the root system diminishes, and less energy is stored. Frequent leaf removal without adequate time for the plant to restore its vigor is the physiological basis of overgrazing. Overgrazed pastures produce far below their potential, maintaining only a low stand density and poor vigor. Most grasses store some energy for regrowth in stem bases, so grasses need to be taller (3 to 4 inches) than legumes.

Some grasses are slow to recover because they only produce buds for regrowth after they have been cut or grazed (such as bromegrass and timothy). Other species produce buds sooner in the growth cycle and therefore recover faster for haying or grazing (such as orchardgrass and tall fescue).

Some grasses have basal leaves that remain after mowing or grazing, which help the grass grow back faster (such as bluegrass and ryegrass). Orchardgrass, reed canarygrass, tall fescue and smooth bromegrass will have some leaf area remaining if cut or grazed at 4 inches or higher, but not if cut shorter.

Adequate N
Last, it is important to note that grasses need nitrogen fertilization continuously throughout the season. Grass takes up available N on a growth cycle and leaves little for the next. Nitrogen deficiency is most visible in pastures where the tall green ring around a manure pile indicates how tall the rest of the pasture could be if it had received the same N.

Many experts recommend about 50 pounds of N per acre applied three times during the year (early spring, mid-June and early August). A single application of 150 pounds will provide too much N early and will result in N deficiency and reduced growth in the fall.

10. Hay is worth testing to improve feedings

An inexpensive hay test can offer the best guidance as to how much supplemental feed is required for a beef cattle herd, and at the same time, save ranchers money.

Under 50 Bucks
A hay test can cost $50 or less, many ranchers may be feeding more hay or supplement than they have to, or the wrong type of supplement. A hay test will reduce the likelihood of both situations.

Getting a hay test may seem like one of those things that experts talk about but no one really does. But that would be an inaccurate statement – people do it. More people should get take hay samples and get hay tests. It should be to those growing and feeding hay and forage like soil testing is to crop farmers.

Once you realize how easy forage sampling is, hopefully you will take the time and invest the small amount of funds needed to get valuable hay test results.

Step one
Most county Extension offices have a hay probe in their inventory. They will loan it out to whoever wants to use it.. The probe consists of a long metal tube, a plunger, a cutting tip and some sort of attachment for a drill. Using a drill allows you to get hay test cores faster and with less exertion. Use the old-fashioned brace and bit for the hay test sample if the power drill stops or you don't have one. Most kits come with a brace and bit. It may require using a different attachment

Step two
Probe the end of the bale. To get a more accurate sample, drill into the end of each bale. If you go into the side, you will likely only get into one flake of hay.

Step three
Empty contents of the core into a plastic bag or clean container. While this may seem intuitive, actually the first reaction is to stuff the plunger down the end where the drill attaches. Instead, you must plunge from the cutting tip end, since it is the smallest end, to force ground hay out.

Step four
Take several hay cores per lot of bales. Sample more than one bale. You will need 4 to 6 hay test cores from the lot of hay to have a pint – which should be plenty to send to the lab for testing. Choose representative bales of the lot.

Step five
Sample each lot separately. They can vary in type and weight and also nutrient value. You can guess that they differ, but you don't know for sure unless you test each lot.

Step six
Resist the temptation to grab-sample. Some previous testing has indicated that grab-samples aren't as accurate. You don't get as many areas of the lot represented. Labs may also charge more to process a grab-sample.

Generally, a hay test can provide information on both crude protein content and forage digestibility, if requested.

Producers with higher-quality hay may want to look at lower-priced energy supplements and reducing hay availability as a means of conserving forage, reducing cost and maintaining body condition score.

In sharp contrast, producers with lower-quality hay will need to pay attention to providing a supplement with adequate levels of both energy and protein. In either case, a producer can make a much better decision with information on hay nutritive value.

The average hay yield in Ohio for decades has been about 3 tons per acre per year. That's 13 and 50 pounds of P and K, respectively, multiplied times the 3 tons. That equals a removal of 39 pounds of phosphorus and 150 pounds of potassium per acre from the average Ohio hay field.

Since corn grain only removes about 0.27 pounds of potassium per bushel harvested, it would take a yield of more than 555 bushels of corn to remove the same amount of potash that an average Ohio hay harvest removes.

Rotate Alfalfa
Don't plant alfalfa immediately after older-established alfalfa. Autotoxic compounds are released by old alfalfa plants that inhibit growth and productivity of new alfalfa seedlings. It is best to rotate to another crop for a year or more before going back to alfalfa; however, thickening up seedings within 12 to 15 months of the original planting date is considered to be a low-risk practice because autotoxic concerns are greatest with older alfalfa fields.

Use The Looks Of Hay As Guide; But Looks Can Be Deceiving
Those who can really benefit from forage testing are dairy producers who need high-protein hay to feed to producing cows, plus anyone who may be buying a forage from someone they don't know. Maybe you are paying a low price per bale and don't think you need it tested, but it may be cheap because it's of low quality.

If it was cut early, protein content in grass hay could be as high as 13%. If it was cut later, it could be 9%. That's a difference worth knowing about.

You can use a probe that attaches to a drill to pull cores from hay samples. Some Extension offices have probes for loan. Typically, pull several cores from different bales in the lot to be tested, or from several big round bales. Then mixe the forage material, place a representative sample from each lot in a bag, and send it to a commercial lab. Typical cost per sample is $12 to $15.

Be Sure To Test Bad Hay, Too

As the summer draws to a close, farmers often find they have made some good hay and some not-so-good hay, because of rain delay, less legume than expected or other reasons. They often don't test the lesser-quality hay and simply feed it to heifers or other animals. This can be a big mistake.

Knowing what is in the hay can make the difference between getting the expected animal performance or not. Often individuals do not test hay, assume certain needs, and buy and feed supplements without knowing if the supplements are really needed.

First look at the crude protein. Animal needs range from about 7% for mid-gestation, mature dry cows to about 13% for beef cows nursing calves, and higher for milking dairy cows.

Acid detergent fiber, or ADF, is the old test to estimate energy. Now most forage-testing labs can analyze for digestible fiber, or NDFD, to better estimate energy of the forage.

Neutral detergent fiber, or NDF, is an estimate of total fiber. The normal range is from 40% on early-bloom legume hay to 72% on late-cut grass hay. Cattle, sheep, horses and other ruminants need fiber.

It is also worthwhile to look at the forage's mineral content. Phosphorus is often low in forage. Levels approaching 0.25% P on a dry-matter basis are at the critical level.

One can see that individual hays would need differing supplements depending on the type of animal being fed. Some hays could be more cost effectively fed to certain animals. The only way to know what is needed or to most effectively use the hay is to test the forage and determine its contents.

In Conclusion: Managing hay for highest yields

Alfalfa growers with existing stands have two primary things to think about when evaluating their forage needs and alfalfa stands in the fall:

• How healthy is the stand? This, in part, determines the likelihood of it surviving the winter.
• Do I need to take another cutting after Sept. 1 to have enough forage for my operation?

Determining Health

Overall health of the stand can be determined by the number of plants per square foot. Select five random, yet representative, locations for each field and count the number of healthy growing plants. Then average your findings for each field.

Uncontrollable Factors

Many factors impact the overall health of the alfalfa stand, affecting its ability to survive the winter. Some factors aren't controllable:

• lack of extended periods of cool temperatures and/or extended wet conditions in the fall, which prohibit "hardening" of the plant
• lack of snow cover to insulate plants in the winter (Soil temperatures below 15 degrees F can injure or kill plants.)
• midwinter thaws that cause plants to break dormancy
• ice sheets that can smother plants

Controllable Factors
The controllable factors that promote the survivability of the stand are:

• selecting varieties that have good to excellent winterhardiness and good to excellent disease-resistance ratings
• making sure soil fertility, especially potassium, is sufficient
• keeping soil pH at 6.6 to 7.2
• not taking a cutting from Sept. 1 through Oct. 15 from any stand you plan to keep in production the following year

Final Cut
Hay producers must first decide the use of their patch – is it for sale or for personal use? Then, the economics come into play. What will be the most cost effective use of machinery and resources? Is it worth setting up and managing a hay field?

If it is, growers must use careful decision-making, variety selection and management to ensure health of the crop, and ultimately, value for customers or your own animals.

When it comes to growing a forage or hay crop, follow these basics – and come out on top!