STRATEGIES FOR REDUCING STORED FEED REQUIREMENTS

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A basic, desirable goal for virtually any livestock producer is to minimize stored feed requirements. It is less expensive to have livestock harvest forage for themselves by grazing than to harvest it for them; therefore, the greater the extent to which pasture can be used to provide nutrition, the more profitable a livestock operation will generally be. Thus, it is worthwhile to consider all options that might be available for reducing stored feed needs.

Use Cool Season and Warm Season Perennials

In the Upper South, most pasture acreage is comprised of cool season perennials including tall fescue, orchardgrass, Kentucky bluegrass, white clover, and red clover. It is logical that these species should dominate most pasture acreage in this area because they are widely adapted and productive. However, during a hot, dry summer the amount and often the quality of forage they provide are low. Consequently, many livestock producers in this area could benefit greatly from having some acreage dominated by warm season perennial forages.

In recent years there has been increased interest in growing bermudagrass farther north than it has traditionally been grown. A few vegetatively-propagated varieties of bermudagrass that are winterhardy enough to persist in the Upper South have been released, but planting material is not widely available. These include ‘Midland 99’ and ‘Ozarka’, which were developed at the University of Oklahoma, and ‘Quickstand’, which was released by the University of Kentucky.

In addition, a number of seed-propagated bermudagrass varieties or blends have become commercially available that are being marketed widely in many parts of the South. In addition to being easier and less expensive to establish, seed-propagated bermudagrasses often will develop a stand and become productive more quickly than vegetatively-propagated types.

As compared to the Lower South where bermudagrass is widely grown for hay as well as pasture, the main limitations to growing this grass in the Upper South are level of winterhardiness and a shorter growing season. The winterhardiness of varieties currently available (whether vegetatively- or seed-propagated) varies greatly. Obviously, this is an important consideration because selection of the wrong variety may result in a reduced stand or perhaps complete stand loss.
There has also been increased interest in warm season perennial native grasses in recent years. These include switchgrass, indiangrass, eastern gamagrass, big bluestem, and little bluestem. These native grasses are widely adapted, potentially quite productive, and some (especially eastern gamagrass) provide surprisingly good forage quality. However, they are far more difficult to establish than most forage grasses, and are sensitive to close or frequent defoliation.

There is also one warm season perennial legume that can be used to advantage on some farms in much of the South, and that is sericea lespedeza. This species has a number of attributes as a forage crop, but two characteristics are especially unique and valuable. These are that it can be grown on poor land where other forage crops are not well suited, and also that once established it can provide very low cost production. A new variety named ‘AU Grazer’ is quite grazing tolerant, which has increased the feasibility of growing sericea lespedeza in pastures.

**Variety Selection**

In some cases there are significant differences in the distribution of growth provided by different varieties of a given forage species. Two varieties that usually make about the same total seasonal forage yield may differ considerably with regard to the time they make their growth, which potentially offers a producer the opportunity to “fill in gaps” in pasture forage availability. In most cases variety decisions should not be based solely on distribution of growth, but it is a trait worth considering when two or more varieties that are otherwise about equally acceptable are being considered.

**Use Annuals to Complement Perennials**

In general, annual forages are more expensive to grow than perennials, but many annuals provide forage of excellent quality and the timing of their growth may complement that of perennial species, thus allowing them to be of great value in providing grazing for livestock over an extended period of time. Warm season annual grasses such as sudangrass, sorghum-sudangrass hybrids, and pearl millet offer the advantage of making a substantial amount of growth in a relatively short period of time, though grazing management of these species can be challenging.

Another warm season annual grass that is vigorous and widely adapted but sometimes overlooked as a forage crop is crabgrass. The forage yield of crabgrass is usually less than that of the summer annual forages mentioned in the previous paragraph, but forage quality (and therefore animal performance resulting from grazing this species) is quite good as compared to other warm season species. In situations in which some soil disturbance can be provided sometime during the year, it is not difficult to get crabgrass to reseed and to provide relatively inexpensive volunteer stands year after year.
A warm season annual legume worthy of mention in this discussion is annual (either striate or Korean) lespedeza. Annual lespedeza is a relatively low yielder, but it makes good quality forage growth that is available in pastures at the time during summer when the quantity and quality of growth of tall fescue is at its lowest point. Thus, annual lespedeza can greatly enhance a tall fescue pasture, especially when grown with endophyte-infected ‘Kentucky 31’ fescue on low input upland sites where clovers are not a good choice of companion species for fescue.

Cool season annuals (especially annual ryegrass and small grains such as rye and wheat) also have something to offer in many forage programs. These species can either be planted on a prepared seedbed in early autumn, thus providing forage growth in autumn as well as spring, or they can be overseeded on the dormant sods of warm season species. When overseeded on warm season sods they produce little grazing in autumn, but can provide high quality spring grazing.

Overseeding winter annuals helps mitigate the problem of the short growing season of bermudagrass in the Upper South (which was mentioned earlier in this paper). Winter annuals also make more growth during cold weather than cool season perennial grasses, and thus can provide at least a few additional grazing days on many livestock farms in the Upper South dominated by such species.

Stockpile Forage

“Stockpiling” is the technique of allowing forage to accumulate and then subsequently grazing it during times when pasture plants are not growing. Forage of any type can be stockpiled, but with many forage crops the forage quality of stockpiled growth declines rather quickly. This is particularly true for warm season species such as bermudagrass. Any ungrazed forage of warm season species that is present when growth ceases in autumn should be utilized rapidly before its quality deteriorates excessively.

The forage crop that is by far the best suited for stockpiling is tall fescue. If tall fescue is fertilized in early autumn (normally with 50 to 80 pounds of nitrogen per acre as well as with any needed phosphorus and potassium) and grazing is deferred until the time hay would otherwise need to be fed, use of this stockpiled material by grazing can delay the feeding of hay for several weeks. Yields of stockpiled fescue growth can be substantial (Table 1). Stockpiled forage in essence serves as “standing hay,” but the difference is that in the case of this forage, no harvesting costs are incurred other than the fence that needs to be used to enclose the area where the forage has been stockpiled.

Tall Fescue is particularly well suited for stockpiling because autumn growth is of higher quality than spring growth (Table 2) and the forage does not lose its quality very rapidly. In order to efficiently utilize stockpiled forage, it is desirable to strip graze by
allowing the animals to only have access to a few days supply of grazing at a time. If a legume is to be grown with tall fescue to be stockpiled, red clover is the best one to use.

<table>
<thead>
<tr>
<th>Nitrogen Applied</th>
<th>Fescue Yield lbs/Acre</th>
<th>% Protein</th>
</tr>
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<tbody>
<tr>
<td>lbs/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1700</td>
<td>11.1</td>
</tr>
<tr>
<td>45</td>
<td>2800</td>
<td>11.8</td>
</tr>
<tr>
<td>90</td>
<td>3900</td>
<td>14</td>
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</tbody>
</table>


Table 2. Seasonal percentage changes in chemical composition and digestibility of tall fescue.

<table>
<thead>
<tr>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
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<tbody>
<tr>
<td>Sugars</td>
<td>9.5</td>
<td>8.5</td>
</tr>
<tr>
<td>Protein</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>DDM*</td>
<td>69</td>
<td>66</td>
</tr>
</tbody>
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*Digestible Dry Matter

Graze Crop Residues

The residues of summer row crops, especially corn, can be utilized by livestock after the crop has been harvested. While the fodder of such crops is of low nutritive value (Table 3), in some cases there may be substantial quantities of grain available that help increase the energy value of the material present. Even if only a few weeks of nutrition is provided for animals when a row crop field is grazed, delaying hay feeding by this amount of time can help reduce wintering expenses.
Timing of Nitrogen Fertilization

Although a variety of nutrients are required to be present in adequate quantities in order to obtain good forage production, the level and timing of nitrogen fertilization has an especially important impact on forage yield and the timing of pasture forage availability. Perhaps the most important consideration regarding timing of nitrogen fertilization is to make certain there are adequate amounts available for plant growth in early spring at the beginning of the growing season of perennial grasses. Failure to have adequate nitrogen available when perennial grasses begin to grow can delay pasture forage availability, with the result being extension of the winter hay feeding period.

Grazing Management

There are numerous potential benefits to be gained from exercising good grazing management, but two deserve mention in this discussion. First, when pastures are grazed appropriately for the forage species they contain, the plants will be healthier and more productive over a longer period of time. If pastures are grazed too closely, the food-producing capacity of the plants is reduced, resulting in lower production and weakening of plants due to depletion of food reserves. Some forage crops are much more sensitive to this than others.

Good grazing management also reduces forage waste. If pastures are undergrazed (which often occurs with poorly managed continuously stocked areas), losses due to trampling and fouling of forage can be substantial. The use of limit grazing, strip grazing, or rotational stocking can reduce these losses, often resulting in utilization of 20 to 30 percent more of the forage produced, and lengthening of the grazing period.
Minimize Hay Losses

A final consideration pertains to minimizing hay losses. Because hay and other stored feed is costly, it would be desirable to eliminate the need for it entirely, but for most producers this is unrealistic. On most livestock farms there will inevitably be times when pasture growth is inadequate, with the result being that some amount of stored feed will be required to provide nutrition for grazing animals.

Unfortunately, due to poor hay storage and feeding practices, many producers end up needing to produce or purchase much more hay (sometimes more than twice as much) than they would otherwise need. Space does not permit a thorough discussion of this topic in this paper, but suffice it to say that there are many approaches that can be used to lower hay losses, many of which cost little or nothing to implement, making the minimization of hay losses an important strategy for reducing stored feed requirements.