PUTTING FORAGES TOGETHER FOR YEAR ROUND GRAZING

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A good rotational grazing system begins with a forage system that allows the maximum number of grazing days per year with forages that are suited to the land, the livestock, and the manager.

Forages differ in their seasonal ability to produce grazable yield. Forage can be divided into 4 categories; Cool season grasses and legumes, and warm season grasses and legumes (Figure 1). Cool season species (tall fescue, orchardgrass, timothy, white clover) perform best in spring and after the weather cools down in fall. Warm season species (bermudagrass, eastern gamagrass, alfalfa, annual lespedeza) perform better during summer.

Forages should be matched to soils that will maximize their yield and growth. For example, tall fescue and white clover are well adapted to thin soils or steeply sloping sites that will hold water for growth during spring but that dry out during summer. These fields would be poor sites for warm season forages since they would hold very little moisture for growth during summer, which would be the period of maximum growth for these species. Highly productive forages such as alfalfa should be planted on the deepest, most productive soils.

Forage systems in Kentucky are based on cool season forages such as tall fescue, orchardgrass, white clover and red clover. These systems have an abundance of forage in the spring and most falls but are not productive in mid to late summer. The two biggest challenges in assembling a balanced forage system are maintaining supplies of quality forage in mid-summer and extending the grazing as long as possible into the fall and early winter. Many forages are available that are productive in mid-summer but each seem to have disadvantages that rule out their use for some. Alfalfa for example requires deep, well drained soils and a high level of management for best performance. Eastern gamagrass and other native warm season perennial grasses are slow to establish and seed is expensive relative to other forages. Stockpiled tall fescue is the best forage to use for extending the grazing season into the late fall and early winter. A balanced and well planned grazing system will allow for some acreage of tall fescue to be taken out of the summer forage rotation (due to the presence of summer forages) and rested and fertilized for use in the late fall.

This paper will divide the calendar year into segments and then suggest forage options that can be grazed in some or most years in Kentucky. It is important to realize that forages do not grow year round. In many problem times, producers must rely on stockpiled
forage grown earlier. Having such a forage supply requires planning and management.

**Period 1: January, February, and March**

*Stockpiled tall fescue.* Tall fescue can provide some grazing of growth stockpiled from the fall. Heavy rain, snow or ice or excessive livestock trampling can make this forage unavailable.

*Cereal rye.* Cereal rye grows more in mild winters than other small grains. It is most productive when sown following tobacco or on a prepared seedbed. Rye sown into sod in the fall produces little midwinter growth. As with any ‘winter’ forage option, only mild, open winters will support forage growth, even with the winter active forages like rye and ryegrass.

*Annual ryegrass.* Annual ryegrass is a forage that is getting more attention lately. It is a true annual, seeded in the fall, and producing seedheads in the following May. It can be a troublesome weed in crop fields because it is a prolific re-seeder. Annual ryegrass varieties differ in their winter survival in Kentucky. At present, it is unclear if annual ryegrasses can be used in the most northern parts of Kentucky. However, it is clear that annual ryegrass can be a productive forage component in the southern tier of counties and in western Kentucky. Annual ryegrass has exceptional seedling vigor, and will grow and provide high quality pasture during warm winter weather. The growth and available pasture will be a function of how many warm days occur during winter.

*Perennial ryegrass.* Perennial ryegrass differs from annual ryegrass just as their name suggests. Perennial ryegrass lasts 2 to 3 years and resembles tall fescue in its appearance and growth. Like annual ryegrass, perennial ryegrass is very palatable and of high nutritive quality.

Cereal rye plus annual ryegrass. Cereal rye and annual ryegrass can be sown together for winter grazing. Adding the ryegrass extends the grazing season by about a month in the spring. The seeding rates for this mixture are 1.25 to 2 bu of rye and 15 to 20 lb of annual ryegrass per acre.

**Period 2: April, May and June**

This period of the year has the opposite problem of others - forage is plentiful, and even excessive. The largest problem is handling the extra growth. Much of this growth is harvested as hay, or is wasted.

The first challenge is having pastures in early to mid-April when other cool season
perennials have not begun actively growing. Options include using small grains, ryegrass, or small grain-ryegrass pastures if these are available. Another option would be a section of cool season grass that has been fertilized with N (in February or early March) to have early spring growth. These early pastures should face south or southwest (they will be warmer) and well drained.

Once the major growth of cool season pastures starts, many options exist for grazing. These include all of the cool season grasses and legumes. Start with infected tall fescue pastures that do not have clover for early pasture. Infected tall fescue can be good pasture as long as the temperatures are cool. Have good clover pastures available for later in the summer.

**Period 3: July and August**

Many forage options are available for July and August. During this time, most animals should not be grazing highly infected tall fescue (without clover) because of its negative affect on gain and conception rates. Orchardgrass, and mixes of cool season grasses with red clover and alfalfa and annual lespedeza provide good sources of pasture. These forages are still growing at moderate to rapid rates during this time, depending on rainfall and temperature.

July and August are usually months that see the growth of cool season forage crops begin to slow. In drought years, cool season forage growth can almost completely stop during this time. For this reason, it makes good sense to have true summer forage options.

Warm season annual grasses such as sudangrass, sorghum sudangrass, pearl millet and others will be very productive during mid-summer. All of these can provide pasture as early as 45 days after seeding. Sudangrass and sorghum sudans have prussic acid poisoning potential (grazed less than 18 inches tall or after frost). Pearl millet does not have prussic acid poisoning potential.

Warm season perennial grasses can be divided into the introduced and native species. Warm season perennials are some of the most frustrating species in the Kentucky producer’s options. Each of them have at least one serious obstacle to being widely grown in Kentucky. However, they all are extremely productive during summer and can provide high yields of medium to high quality forage.

The introduced warm season forages include bermudagrass and the ‘old world’ bluestems. Bermudagrass must be established from sprigs, and the location and availability of sprigs limits its use. The recent loss of some pre-emerge herbicides for bermudagrass has increased the number of bushels of sprigs (and the cost) needed per acre to get a stand in a reasonable period. ‘Old world’ bluestems (OWB) are so called because they came from the Caucasus region of Russia. These OWB’s are hard to establish because the seed is hard to handle and is low in vigor. Old world bluestems
growing in central Kentucky have been damaged by recent winters.

Native warm season grasses include switchgrass, big bluestem, indiangrass and eastern gamagrass. The largest obstacles to their adoption include low seedling vigor and relatively high seeding cost. Big bluestem and indiangrass have fluffy seed that requires special handling equipment in seeders. All of these grass seed have a moderate to high degree of dormancy, making emergence slow and uneven. These must be rotationally grazed and rested in the fall for persistence.

During late August, identify tall fescue pastures that will be stockpiled for fall and winter pasture. Nitrogen should be applied by late August for maximum growth. If pastures are drought stressed, it is acceptable to wait for imminent rain before applying nitrogen fertilizer.

Period 4: September and October

These two months are the most difficult of the year. Most surveys of pastures find that pasture condition is lowest during this time. This period is usually dry and warm, and is a time when many warm season grasses have begun to slow in growth, or need resting for persistence. However, ungrazed hay fields and rested cool season pastures will often be good sources of pasture. In addition, alfalfa fields can be grazing up to mid-September and beginning again in the latter part of October if growth is available.

One forage that has gotten more attention recently has been ‘grazing corn’. Grazing corn is a ‘one shot’ grazing species that has to be stripped off for each grazing session. It can be grazed anytime forage is needed, independent of maturity. Gains on grazing corn have been high. An Ohio State demonstration grazed 39 with angus heifers (average beginning weight 791 lb) for 56 days on 6.5 acres of corn. The heifers were turned in on the corn on September 15 and they gained 2.16 lb per day. Gain per acre was calculated to be over 700 lb. Although cost per acre is high (approaching $100 per acre out-of-pocket costs), grazing corn can fill a void that is not easily filled by other forages.

Annual forages such as wheat, rye, and ryegrass should be seeded during this time to have a chance for these fields to provide grazing during January, February and March.

Period 5: November and December

By November, pasture conditions of most cool season grasses should have improved due to rain and cooler temperatures. In November, finish harvesting the growth of remaining grass-clover fields. Graze heavy clover fields first because the clover does not stand up well to winter weather. In other words, if you do not use it you will lose it. This applies to remaining alfalfa and alfalfa-grass fields. Standing alfalfa holds its quality fairly
well, even after frost, until heavy rains come.

Stockpiled tall fescue and bluegrass are the most reliable forages for pasture during November and December. Quality and quantity of this forage can be exceptional. Strip graze these fields to make the forage last as long as possible. A University of Missouri study found that allocating 3 days of stockpiled forage versus 14 days supply increased grazing days by 40% without sacrificing animal gains.

Summary

Kentucky cattle managers should have as their goal to graze as many days of the year as possible. To do this, plan to manage both the surplus and deficit times of the year for forage production. Stockpiling cool season grasses will extend the grazing season into the fall and early winter and is one of the key means to add days to your grazing season. Developing a better summer forage plan will rest cool season pastures so that they come back more quickly in the fall. Summer pasture solutions are more difficult than stockpiling, but are crucial for a sound and stable grazing system. Finally, explore the use of winter-growing species such as the small grains (rye is probably the best, but not only one to use), annual ryegrass, and similar species to give some winter growth during mild conditions. One final thought: Mother Nature always bats last, and this year she pretty well shut out any growth of pastures past mid-summer, regardless of species. That is to say that warm season species need water too, and when there is no water there is no growth. Focus on that time of the year when your pasture system is weakest, and where improvements will pay you the largest dividends. Once you make that determination, put some resources (time, management and money) into making the change for a better grazing system.
Figure 1. Season forage production distribution for several forage species. Note the complementary growth patterns of cool and warm season species.