

NEW DEVELOPMENTS IN GRAZING SPECIES AND VARIETIES

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During the last 10 years there have been several new forage species that have emerged as useful in grazing systems and many new varieties have been released of traditional species. Plant breeders continue to make improvement in our traditional pasture species like tall fescue, orchardgrass, and red and white clover. In the following paragraphs, I will focus more on some of the forage species that you may not be as familiar with and highlight the advancements occurring in developing new varieties for grazing. There are many sources of information on this subject. I especially encourage you to read the new publication written by Dr. Garry Lacefield and colleagues, "Extending Grazing and Reducing Stored Feed Needs". I have used information from this publication and other publications from the University of Kentucky Forage Website (www.uky.edu/Ag/Forage) in writing this article.

I am often asked, "Which variety survives the best under a range of grazing conditions?" To answer this question Dr. Jimmy Henning initiated a series of grazing trials a number of years ago. Since that time the University of Kentucky, under the direction of our variety testing coordinator Mr. Gene Olson and others, has become one of the leaders in the U.S. in conducting variety tests specifically for tolerance to grazing. These grazing tolerance variety reports can also be found at the UK Forage website under Forage Variety Trials.

Summer Annuals

While corn is a warm-season annual grass, most of us first think of warm-season annual grasses such as **sudangrass**, **sorghum-sudangrass hybrids**, and **pearl millet**. These grasses have been used for many years to complement cool-season perennial forages and offer the advantage of producing a lot of forage quickly. One of the main limitations to these summer annuals is that grazing management can be challenging. First of all, these upright-growing forages should be planted separately from cool-season perennials to prevent excessive shading. They regrow slowly if grazed closer than 8 inches and should be rested between grazings. They perform best when planted on a prepared seedbed, although establishment costs are higher and the potential for soil erosion is greater when using this approach.

Grazing Corn

We all know that corn is an important grain and silage in the U.S. and around the world, but it can also be grazed during late summer/fall or throughout the winter. In either case the corn crop is planted using standard equipment and management

conditions. It can be grazed during the vegetative stage as an emergency late summer forage, or it can be left until maturity and grazed as standing corn during the winter. This may seem like a waste of a good corn crop, but the ears with mature grain provide a very high energy feed and make up half the weight of the crop and the leaf and upper part of the stalk are highly digestible forages that provide a good fiber balance to the grain. It is important to remember that cattle will waste much of a standing corn crop if they are turned into an entire field. To prevent excessive waste and livestock metabolic problems from eating too much grain, strip grazing with temporary fencing is essential.

Brassicas

Brassicas (including **turnips, rape, kale, and swedes**) are highly productive, digestible forbs (broadleaf forages that are not legumes) that contain relatively high levels of crude protein when fertilized with nitrogen. Animals will readily consume the tops and will also grub the root bulbs out of the ground. These crops are best suited for crop rotation pastures or for being no-tilled into sod that has been severely thinned by drought or overgrazing. Dry matter yield is variable and highly dependent upon soil type, fertility, time of seeding, and precipitation.

Turnips are the main brassica used in Kentucky. They grow fast and can be grazed as early as 45 days after planting. They reach their near maximum production level in 80 to 90 days. The proportion of top growth to roots for turnips can vary from new grazing-type varieties with 90% tops and 10% roots to the more traditional bulb-type with 15% tops and 85% roots. Many livestock producers prefer the grazing-type turnip because it can be grazed repeatedly and the majority of the plant growth is leaf material rather than bulbs. In addition, several companies are now selling “summer grazing turnips.” These varieties are usually hybrids of heat tolerant rape and grazing turnips and are most often planted in combination with warm-season annuals for high quality summer grazing.

It is important to remember that brassicas should not comprise more than about two-thirds of livestock diets because of their low dry matter content. Therefore, it is important to provide adjacent pasture, corn stalks, or provide a palatable, free choice dry hay to cattle when grazing these crops. It is also desirable to introduce livestock to brassicas slowly by limiting grazing to a couple of hours per day until their digestive systems are accustomed to them.

Combination Systems

Grazing crop residue has long been used for low-cost grazing, but forage quality is fairly low. By overseeding **oats, turnips, and rye** into corn fields the quality, production, and grazing season can be improved dramatically. Turnips provide a very high quality forage, spring oats grow quickly for fall grazing, and cereal rye has rapid fall growth and survives the winter for early spring grazing. One method used for overseeding in areas of Illinois and Indiana involves broadcasting seed from an airplane over standing corn that has started to brown off. With adequate rainfall these seeds will germinate and start to grow under the corn canopy and then grow quickly once the crop is harvested. This system works best when rainfall occurs within two weeks of seeding,

but even with poor germination there is usually enough growth to more than cover the cost of seed. In Kentucky, several producers have added a broadcast seeder on their high-boy sprayer to seed over the top of standing corn.

An even better way to seed this mixture is into crop stubble or a prepared seedbed in late August/early September. You are virtually guaranteed establishment and the earlier date seeding provides for ample crop growth for late-season grazing.

Teff

Teff is a summer annual crop species and has been used for grain production in Ethiopia for thousands of years. In recent years, it has been gaining in popularity as a forage because of its quick germination, quality forage, high water-use efficiency, and good summer production. Teff is not known as a grazing crop, because it has a shallow root system and can be pulled out of the ground by the ripping/tearing action that cattle use when grazing. Producers that have successfully grazed teff have found that it is important to take the first cutting off as hay, and then graze subsequent cuttings. We have recently started a variety testing program with teff and reports can be downloaded from the forage website.

Warm Season Legumes

Striate lespedeza and Korean lespedeza are warm-season annual legumes that work well in some situations in the Upper South. Both species typically produce relatively low yields, but are adapted on dry, acid, upland sites where clovers do not persist well.

Furthermore, they produce good quality forage during summer when the quality and quantity of cool-season perennials, such as tall fescue, is low. Therefore, annual lespedeza can greatly enhance a tall fescue pasture, especially if the fescue is highly infected with toxic endophyte. New annual lespedeza varieties have been developed in recent years, but there is limited forage yield data from controlled experiments.

Cool season Annuals

Numerous winter annual forage crops can be used to extend the grazing season. The growth habit and seasonal distribution varies widely between these annual species. Annual ryegrass, which makes most of its growth in early- to mid-spring, is a particularly productive winter annual in areas where it is adapted. By contrast, small grains such as cereal rye, triticale, and oats are more productive in autumn. Wheat does not have as much fall growth as these small grains, but produces a higher quality hay or silage when harvested at an early grain filling stage.

Cereal rye is more productive than wheat or triticale for both fall and early spring production. However, forage quality is better with triticale than with rye. Oats seeded in the fall can be excellent quality and very productive, but will be killed by cold weather during winter (except in the Deep South). Depending on geographical location, planting date, and fall moisture, rye, triticale, and wheat should be available for grazing from October through much of December and then again in early spring. The intended use of small grain determines what the stocking rate and grazing dates should be. If a silage or

grain harvest is planned, grazing should only be moderate, as heavy grazing can reduce grain yields. Moderate grazing in the autumn will not result in significant silage or grain losses provided moisture and soil fertility are adequate. In fact, fall pasturing can be beneficial where the small grain was seeded early and has made excessive growth and soil conditions are dry. Spring grazing may be started when growth resumes. If a grain or silage crop is to be harvested, grazing should be discontinued when the plants start to grow erect just before jointing (growth stage); otherwise grain yield will be reduced.

New Cool-Season Perennials

Cool-season perennial grasses like tall fescue, orchardgrass, and Kentucky bluegrass form the backbone of most permanent pasture-based grazing systems in Kentucky. Several new species have been introduced in recent years, and companies are continually trying new and unique cool season grass varieties in the important Kentucky market.

Meadow fescue is an example of high-quality grass that may have potential for Kentucky. A new variety was recently released from Wisconsin that shows good heat tolerance and summer growth. Currently though, we have limited test data in Kentucky and are taking “a wait and see approach” before recommending new plantings of meadow fescue.

Meadow bromegrass has been widely planted across the upper Midwest and Great Plains states for over 15 years. It is related to smooth bromegrass and shows similar drought tolerance, but is more grazing tolerant and shows much better regrowth than smooth bromegrass. In addition, meadow bromegrass is a bunch-type grass, therefore it mixes well with alfalfa and clovers. It shows similar annual yield to tall fescue and orchardgrass, but is more palatable than tall fescue and more drought tolerant than orchardgrass. We are not yet sure if meadow bromegrass is a good fit for Kentucky producers, but have started including it in our variety testing program.