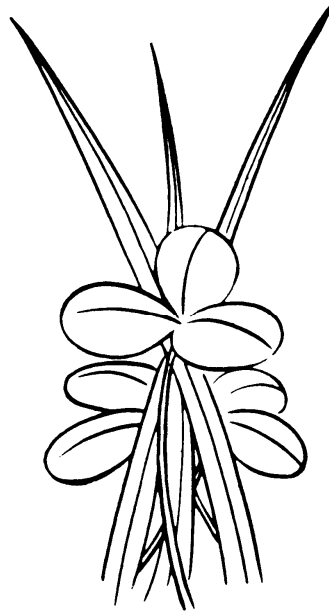


8th Kentucky Grazing Conference



October 30, 2007

**WKU Expo Center
Bowling Green, Kentucky**

**Sponsored by:
Kentucky Forage & Grassland Council**

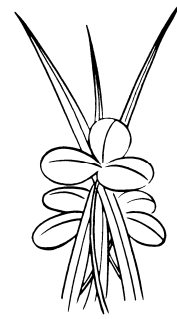
Special Publication KFGC-07-02
Garry Lacefield and Christi Forsythe, Editors

SCHEDULE FOR THE DAY

- 8:00 Registration, Visit Exhibits, Silent Auction
- 8:45 Welcome
- 9:00 Recovering from the “Freeze” and “Drought” of 2007 – *Ray Smith*
- 9:20 Does Grazing Method Matter? – *Garry Lacefield*
Surviving the 2007 Drought – *Roy Burris*
- 9:40 Options for Summer Grazing – *David Ditsch*
- 10:00 Break, Visit Exhibits, Silent Auction
- 10:30 Our Experience With “Teff” (Summer Love Grass) in Kentucky – *Bob Jaynes & Tim Phillips*
- 11:00 Techniques for Reducing MUD Problems and Improving Pasture Abused Areas – *Ken Johnson*
- 11:30 NRCS and Extension – Working Together on Grazing – *Jimmy Henning & Mike Hubbs*
- 12:00 Lunch
- 12:45 KFGC Business Meeting / KFGC Awards / Silent Auction Results
- 1:15 Forage Spokesman Contest
- 3:00 Adjourn

Kentucky Forage and Grassland Council

A Forage-Livestock Educational Association



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ABOUT KFGC...

The Kentucky Forage and Grassland Council is an educational forage-livestock organization composed of farmers, industry, and public service personnel. Forages are produced on more open land in Kentucky than any other crop.

In KFGC everyone interested in forages can work together to improve the forage-livestock industry in Kentucky. At the same time, KFGC serves the interests of the entire state by promoting better land use, soil conservation and improved water quality.

OBJECTIVES

- ▶ Promote the profitable and sustainable and environmentally sound use of forages for the efficient production of feed, food and fiber.
- ▶ Provide a forum for discussing forage problems and the exchange of ideas, opportunities and solutions to problems.
- ▶ To collect and publicize information on forage technology and economics.
- ▶ Promote the development and production of equipment and products by industries needed for forage production and utilization.
- ▶ Encourage expanded and intensified research in production, marketing and utilization of forages.
- ▶ Promote the use of forages for soil and water conservation and control of water pollution.
- ▶ Cooperate with other organizations to promote forage farming, marketing and utilization.
- ▶ Encourage outstanding achievements in the forage industry through a recognition and awards program.
- ▶ Develop vigorous leadership in forage activities to ensure continued support in Kentucky's forage industry.

MEMBERSHIP BENEFITS

- ▶ A Kentucky forage newsletter containing highlights of forage research and extension publications relevant to the Kentucky forage and livestock producer

- ▶ Updates on current and future educational meetings dealing with forages within Kentucky and across the United States
- ▶ Interaction with innovative and motivated individuals from the farmer, industry, and public service sector that can help with forage-livestock problems
- ▶ An affiliate membership in the American Forage and Grassland Council
- ▶ A free subscription to the *Forage Leader*, the magazine of the American Forage and Grassland Council
- ▶ Recognition for outstanding service and accomplishments in the farmer, industry, and public service sector through KFGC's awards program
- ▶ Opportunities to hear leading national speakers in the forage and livestock area through KFGC's annual forage conference
- ▶ A commodity voice in educational and legislative decisions that addresses the unique interests of the forage-livestock producer

ACTIVITIES

- ▶ Annual educational meetings to learn and exchange ideas on the production and utilization of forages.
- ▶ Forage tours and field days to see research and extension work as well as farmer and industry experience with forages.
- ▶ Conduct Grazing Schools across the state that will help farmers learn how forages and improved grazing systems can increase their profits and satisfaction of livestock farming..
- ▶ Print and distribute newsletters and other publications dealing with forage activities and information.
- ▶ Awards program to recognize outstanding accomplishments by forage producers and leaders in education and industry.

- ▶ Coordinate forage promotion efforts with other state and national organizations.
- ▶ Cooperate with state and federal agencies, educational institutions and local organizations in forage research, development and educational efforts (Examples include: SRM/AFGC National Conference, January-February 2008 and Heart of America Grazing Conference)

MEMBERSHIP

KFGC membership is open to anyone who is interested in promoting forage agriculture.

Individual members form the backbone of the council. They provide the leadership and carry out the daily activities of KFGC.

Corporate members are made up of agricultural or industrial business firms interested in promoting the objectives of KFGC. They provide financial support and program direction through their representative to KFGC.

OFFICERS FOR 2007-2008

President – Phil Howell
 Vice President – Jimmy Thompson
 Treasurer – Tom Keene
 Secretary – Ray Smith

TO BECOME A MEMBER

Send the following information and your check to:
 Kentucky Forage and Grassland Council
 Dr. Ray Smith, Plant & Soil Science Dept., 105 Plant
 Science Bldg., 1405 Veterans Road, University of
 Kentucky, Lexington, KY 40546-0312

Name _____
 Address _____

 City _____ State _____
 Zip _____
 Phone _____
 County _____

Please check the appropriate spaces:

Producer:

Beef ____, Dairy ____, Hay ____, Sheep ____,
 Horse ____, Other _____

Public:

Extension ____, VoAg ____, NRCS ____,
 Other _____

Industry: Feed ____, Seed ____, Fertilizer ____,
 Chemical ____, Other _____

Annual Dues:

_____ Individual (\$20)
 _____ Corporate or Business (\$40)

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Website: <http://www.uky.edu/Ag/Forage>

DATES TO REMEMBER

January 7-8	Heart of America Grazing Conference, Columbia, MO
January 11	Forages at KCA, Lexington, KY
January 26-	
February 1	SRM/AFGC Forage Conference, Louisville, KY
February 21	28 th Kentucky Alfalfa Conference, Cave City Convention Center

KFGC Award Winners History

Year	Grassroots	Public Service: County	Public Service: State	Industry
2007	John & Randy Seymour	Rick Greenwell	Lowell bush	Ralph Quillin
2006	Bill Payne	George Kelley	Mike Barrett	Buddy Rowlett
2005	Paul Beauchamp Ova Alexander	Rankin Powell	Byron Sleugh	Bred Winsett
2004	Lee Robey	Don Sorrell	Donnie Davis	Joe Stephens
2003	Jason Sandefur	Keenan Turner	Tim Phillips	Mike Feldhaus
2002	Jimmy May	Doug Shepherd	Chuck Dougherty	Charlie Leppert
2001	Steve Johnson	Charlie McIntire	Donna Amaral-Phillips	Sharon Burton
2000	Nicky Baker	Gary Tilghman	Oran Little	Phil Rowland
1999	Russell Hackley	Bill Green	Joe Wyles	John Long
1998	Minos Cox	Dr. Luther Smith	Billy Ray Smith	Bill Cisney
1997	Cecil Cade	Terry Gibson Darrell Burks	David Stipes	J.W. Stephens
1996	Bryan Hatfield	John Fourquarean	Jimmy C. Henning	Phil Howell
1995	Donnie Shaw	Steve Moore	John Johns	Tim Keene
1994 (Nov)	J.B. & Bill Holtzclaw	Steve Osborne Ken Johnson	David Williamson	Bill Talley
1994 (Jan)	Ben Crawford	Jack Ewing	Mike Collins	Gary Coughlin
1993	Larry Shirley	Paul Deaton	Roy Burris	Gary Lane
1992	Larry Jeffries	Tom Curtsinger	Harold Vaught	Dink Embry
1991	John Nowak	Dan Grigson	Ken Wells	Tim Sickman
1990	Wallace Campbell	Kelsey Driskill	Don Henry	Charles Dobbs
1989	None	None	None	None
1988	None	None	Normal Taylor	Henry T. McCarley
1987	Hillary Skees	John Kavanaugh (1 st year awarded)	Paul Burris	Wayne Harr
1986	Don Moore		Curtis Absher	Garland Bastin
1985	Lenn Lee Nelson Dr. G.L. Simpson		Monroe Rasnake	
1984	Paul McCarthy		A.J. Hiatt	Jack Crowner
1983	Dale Lovell		Bobby Pass	
1982	Larry Campbell			
1981	Harry Goodin Henry Besuden		Garry Lacefield J. Kenneth Evans	Aubrey Warren
1980	Charles Schnitzler Harold Rose John Turner Don Evans		Tim Taylor	Warren Thompson
1979				
1978				
1977				
1976			E.N. Fergus Bill Johnstone	Barney Arnold

TABLE OF CONTENTS

	PAGE
Recovering from the “Freeze” and “Drought” of 2007 Ray Smith	1
Does Grazing Method Matter? Garry Lacefield	5
Surviving the 2007 Drought Roy Burris	12
Options for Summer Grazing David Ditsch	14
My Experiences with Summer Lovegrass Tim Phillips	19
Experiences with “Teff” (Summer Love Grass) in Kentucky Bob Jaynes	21
Techniques for Reducing MUD Problems and Improving Pasture Abused Areas Ken Johnson	24
Forage Spokesman Information	
Lowell J. Clifford	27
Barry Drury	30
John McGlone	31
Mac Stone	32

RECOVERING FROM THE "FREEZE" AND "DROUGHT" OF 2007

Ray Smith
 Extension Forage Specialist
 University of Kentucky

As all of you know, 2007 has been a devastating year for forage agriculture in Kentucky. The season started with an abnormally warm 7 weeks during late winter and early spring, which promoted lush vegetative growth. Normally this would have been a "good thing", but it actually made forage plants more vulnerable to below freezing temperatures. Then the severe freeze occurred, with April 7, 8, and 9 the coldest 3 day period in April in KY history. Pastures were stunted for weeks and first cut hay yields were reduced by 35 to 100%. At this point we were still hopeful because topsoil and subsoil moisture was at adequate to surplus levels in most KY counties (Table 1). There was some reduction in pasture condition from April 8 to April 15 (Table 2) as a result of the freeze, but all indications were that pastures and hayfields would recover (Tables 1 and 2 - USDA Agricultural Statistics Service - http://www.nass.usda.gov/Statistics_by_State/Kentucky/Publications/Crop_Progress_&_Condition/).

Table 1. Soil Moisture for Week ending April 15, 2007.

	This Week	Previous Week
Percentage		
TOPSOIL		
Very Short	1	1
Short	4	10
Adequate	63	70
Surplus	32	19
SUBSOIL		
Very Short	1	1
Short	11	13
Adequate	70	75
Surplus	18	11

Table 2. Crop conditions in KY in early April 2007.

CROP	WEEK ENDING APRIL 15, 2007					WEEK ENDING APRIL 8, 2007				
	VERY POOR	POOR	FAIR	GOOD	EXCEL-LENT	VERY POOR	POOR	FAIR	GOOD	EXCEL-LENT
Wheat	30	34	20	15	1	9	6	21	49	15
Barley	57	31	12	0	0	4	6	17	53	20
Pasture	1	12	42	38	7	0	4	28	53	15
Tobacco										
Transplants	1	4	36	50	9	-	-	-	-	-

As the 2007 growing season progressed, most of the state had below normal rainfall, but cooler than normal conditions limited obvious symptoms. By the end of July though, continued below normal rainfall and low soil moisture had begun to show up in dramatic reductions in pasture and hay production. There was still some hope that things would turn around (Table 3 and 4 – USDA Agricultural Statistics Service - http://www.nass.usda.gov/Statistics_by_State/Kentucky/Publications/Crop_Progress_&_Condition/).

Table 3. Soil Moisture for week ending July 30, 2007.

	This Week	Previous Week
Percentage		
TOPSOIL		
Very Short	23	21
Short	42	40
Adequate	34	38
Surplus	1	1
SUBSOIL		
Very Short	35	42
Short	38	35
Adequate	26	23
Surplus	1	0

Table 4. Crop conditions July 30, 2007.

CROP	VERY				EXCEL-
	POOR	POOR	FAIR	GOOD	LENT
Corn	6	8	25	35	26
Soybeans	3	8	20	40	29
Pasture	20	32	30	15	3
Hay Crops	20	33	31	14	2
Tobacco	5	11	27	45	12

By mid-September, topsoil moisture was rated at 87% short to very short and sub-soil moisture at 90% short to very short (Table 5). To put it simply, most of KY did not have the soil moisture necessary for growth of cool season pasture and hay fields. In other words, we were in severe drought. Crop condition reporting in mid-Sept. showed that only 3% of hay fields and only 5% of pastures were in good to excellent condition (Table 6) (Table 5 and 6 – USDA Agricultural Statistics Service - http://www.nass.usda.gov/Statistics_by_State/Kentucky/Publications/Crop_Progress_&_Condition/).

Table 5. Soil Moisture for week ending Sept 16, 2007. , 2007.

	This Week	Previous Week
Percentage		
TOPSOIL		
Very Short	55	66
Short	32	26
Adequate	13	6
Surplus	0	2
SUBSOIL		
Very Short	66	72
Short	24	23
Adequate	10	5
Surplus	0	0

Table 6. Crop conditions September 16, 2007.

CROP	VERY				EXCEL-
	POOR	POOR	FAIR	GOOD	LENT
Corn	6	13	22	34	25
Soybeans	19	19	39	20	3
Pasture	39	33	23	4	1
Hay Crops	38	34	25	3	0
Tobacco in Field	5	11	30	41	13

Recovering from Drought of 2007

The real question now is what will the status be of pastures and hay fields when it does start to rain again? Will some plant species recover better than other ones. Let me answer this question using some overviewing some of the explanations that Jimmy Henning put together during the dry summer of 1999.

Alfalfa: Alfalfa goes into a dormant state and will in general not be hurt very much by hot, dry weather. It does bloom at a very short height, and can be grazed off without hurting the stand after November 1st or a killing frost.

Red Clover: Unfortunately, drought stress will hurt red clover. Red clover does not like drought during the seedling stage. Hot, dry summers will shorten stand life of this legume. The net effect is that red clover plants will die after the second season of growth. Improved varieties will show better persistence and yield than common types, but they suffer from the drought as well. Frost seeding red clover next spring is recommended.

White Clover (ladino and common types): White clover has a very shallow root system and plants often die during severe droughts. Interestingly, many of you may have noticed that white clover bloomed profusely this summer and then went to seed. Therefore, even if stands are severely thinned, natural reseeding will occur if we have adequate moisture late winter.

Orchardgrass: Orchardgrass is a strong perennial, and unless severely overgrazed, will come through the drought. Close clipping or overgrazing will deplete energy stores as well as allowing the crown to get hot and will damage orchardgrass.

Tall Fescue: Endophyte-infected tall fescue can be expected to survive the drought, while endophyte-free fescues are more negatively affected, and in severe cases stand may be thinned significantly. Novel endophyte tall fescue varieties should survive very well, but this summer will provide a good test for their longevity in Kentucky.

Kentucky Bluegrass: Kentucky bluegrass is much like white clover with a very shallow root system. There will be some stand thinning, but in most cases bluegrass will recover from the drought.

Timothy: Timothy stands tend to be hurt by droughts, and stands can be thinned. However, timothy in hay fields that have been left idle due to low/no growth will be less stressed than pastures. You are going to have to wait and see.

Managing Drought Stressed Pastures

Even though your pastures are probably heavily grazed there are several things you can do this fall to insure recovery next spring. First, limit the fields that are getting “pounded” if at all possible. Even though grass is not growing, animal traffic and their repeated nipping of new growth will harm pasture fields.

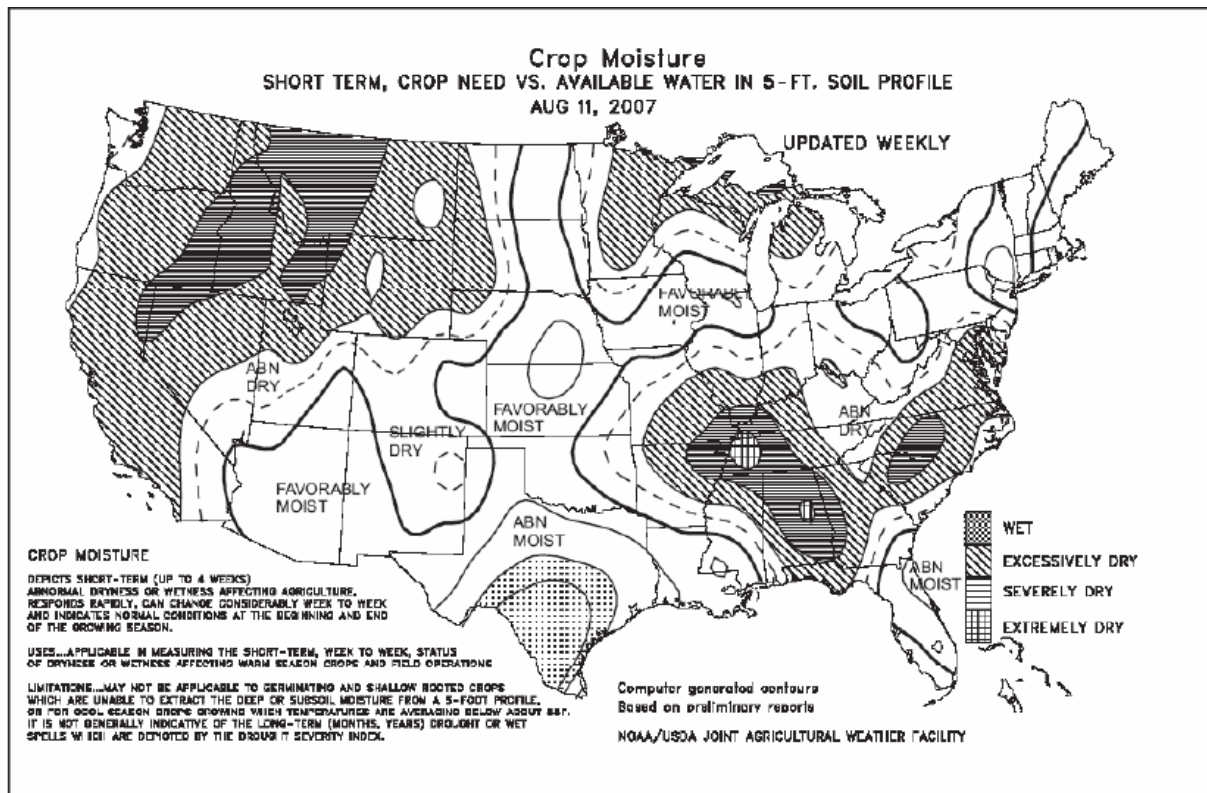
The second point is like the first, and that is to leave some stubble wherever possible. This will shade the ground and the grass crown, and will aid in plant survival, especially species like timothy, orchardgrass, and endophyte free tall fescue.

Third, apply light rates of nitrogen (30 to 40 lb of actual N per acre) to grass pastures and hay fields in November to stimulate root growth and tillering. Tillers are the individual shoots or stems that make up a grass plant. These grass tillers will be more vigorous and increase in number with fall fertilization and result in a thicker stand next

spring. In addition, a thicker stand going into winter will help to shade the germination of winter annual weeds.

State Summary of 2007

The April freeze plus the summer drought have resulted in alfalfa hay yields down 50% or more. Cool season grass hay yields were down 60 to 70% and pasture production was down 60 to 90%. Warm season pasture and hayfields fared better, but the even the yield of drought tolerant native grasses was reduced in 2007. There were some bright spots around the state with needed rainfall in July and August, but these areas were few and far between and it seemed like the same areas received rainfall over and over and areas just a few miles away received none. A survey of hay needs by county agents in mid-September showed that 1.5 million tons of hay were needed for the 2007/2008 winter. And this huge need is compounded by a general shortage of hay across the country and record high prices. No doubt about it, this has been a tough growing season and this winter will not be an easy one for livestock producers in Kentucky.



DOES GRAZING METHOD MATTER?

Garry D. Lacefield
Extension Forage Specialist
University of Kentucky

Interest in and opportunities for grazing continues to increase not only in Kentucky, but throughout the U.S. In Wisconsin, 12% or approximately 5000 dairymen are now using grazing. In Michigan, over 40% of the dairymen are using grazing for a significant part of their feed requirements. Over 15% of these dairymen are using intensive grazing. Similar numbers exist for Pennsylvania.

Research and demonstrations have also increased dramatically in the past few years. Pennsylvania State University has made a major change in their forage-livestock research program with major emphasis currently directed toward grazing. Research in Pennsylvania has shown that grazing results in milk being produced at \$1.00 per hundred cheaper than traditional confinement and a return of \$153.00 more per cow per year.

Researchers at the University of Georgia compared continuous with rotational grazing over a two year period. Rotational grazing resulted in a 38% increase in stocking rate and a 37% increase in pounds of calf gain per acre. In addition, pounds of hay fed per cow was 32% less for rotational over continued grazing. Workers at Purdue University compared animal performance with different levels of pasture management. Low maintenance was continuing grazing with no fertilizer or legumes. Moderate maintenance required temporary fence to separate pasture in half and adding some clover. Intense management required dividing the pasture into five subdivisions, adding adequate levels of fertilizer and renovating with legumes. Results showed a dramatic response to level of management. Weaning weights, grain per acre and net return per acre showed a dramatic increase with each level of pasture improvement.

Missouri workers compared stockpiled tall fescue to round bale fescue hay for late fall early winter feed. Cost to feed a mature, pregnant beef cow was 71.32 cents per day from the hay and 31 cents a day for grazing stockpiled tall fescue.

Michigan workers compared grazing to traditional grain-silage-hay feeding and found a \$78 per cow per year savings for the grazing program. Pennsylvania workers showed that rotational grazing resulted in \$100 more net income per cow compared to continuous grazing.

In Tennessee, researchers studied total crop and livestock programs in a whole farm setting and found grazing alfalfa to be more profitable per acre than cash hay on other row crops grown.

In Kentucky, rotational grazing showed increased gains per acre from 300 to over 800 lbs compared to continuous grazing. Record beef production per acre of 1354 was achieved by grazing alfalfa-grass using rotational grazing.

In addition to some of the numbers above, several other studies have shown that controlled grazing usually provides greater returns than continuous grazing. First nutrients in pasture and usually ¼ to ½ the cost of those same nutrients in stored feed (Table 1).

Table 1. Relative economic efficiency of supplying a unit of digestible energy to ruminant livestock.	
	Cost Ratio
Grazed pasture	100
All hay	160
Alfalfa hay	152
Timothy hay	161
Silage	195
Dehydrated forages	320
Grain and concentrate	457
SOURCE: USDA and Agricultural Canada	

Grazing Methods

Several grazing methods have been developed to accomplish various objectives. Low cost, high voltage electric fences have made it much more feasible to implement a variety of grazing methods that reduce pasture waste, conserve surplus forage as hay or silage, and possibly increase forage quality for the grazing animals. The objective of a grazing method should be to manage the pasture and other feed inputs to efficiently produce animal products. Effectively managing forage quantity and quality over the grazing season is the ultimate challenge.

Grazing methods are of two general types: continuous and several variations of intermittent grazing. They vary from simple to complex (Figure 1).

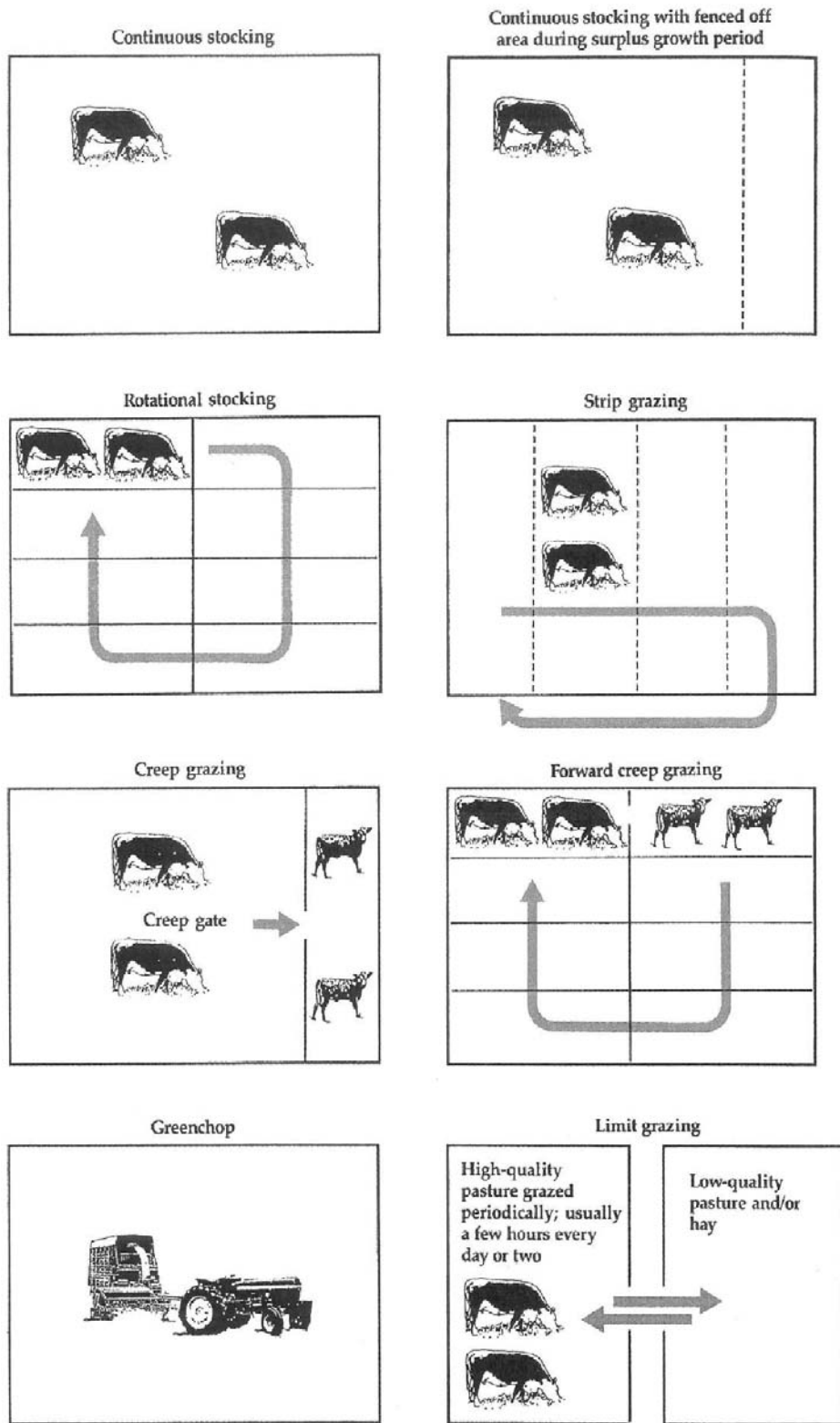


Figure 1. A variety of grazing/harvest methods may be used successfully. (SOURCE: Southern Forages, 4th Edition. 2007.)

Continuous Stocking (often referred to as continuous grazing). Animals are maintained on a single pasture unit during the grazing season. This method allows animals to selectively graze unless the stocking rate is too high. If animal numbers or pasture size are not adjusted as pasture conditions change, this method may result in some plants being undergrazed and others being overgrazed. Also, without adjustment, the stocking rate may be near ideal part of the time and too high or low at other times during the grazing season. Pastures may be set-stocked with a fixed number of animals, or numbers may be adjusted to fit the feed supply over the grazing season. Adjustment of the stocking rate as needed greatly improves forage utilization. A temporary fence is sometimes used to close off part of a continuously stocked pasture during periods of surplus growth. This allows accumulated forage to be harvested for stored feed.

Continuous stocking has often been incorrectly equated with overgrazing and poor management. A continuously stocked pasture can be just as productive and efficient as any other method provided that available forage is controlled by adjusting stock numbers as needed. Continuous stocking can encourage a high number of grass tillers to maintain pasture stability and production over a long period of time.

Certain plant species such as johnsongrass, big bluestem, indiagrass, and switchgrass are not suited to continuous stocking unless the stocking rate is low enough to maintain 6 to 8 inches of leaf tissue. Stands of conventional hay-type alfalfa varieties will weaken and die under continuous close stocking. However, grazing-tolerant alfalfa and sericea lespedeza varieties will persist under moderate continuous stocking, though rotational stocking will provide increased forage utilization and lower the likelihood of weed encroachment.

Creep Grazing. This method allows young animals to pass through a fence opening or creep (Figure 2) to a special small pasture of higher quality forage (such as pearl millet, small grains, chicory, clover, or alfalfa) than the lower quality pasture where their mothers are maintained. This is particularly effective in summer when low forage availability restricts gains and when nutritive quality of a perennial grass pasture is low (Table 2).

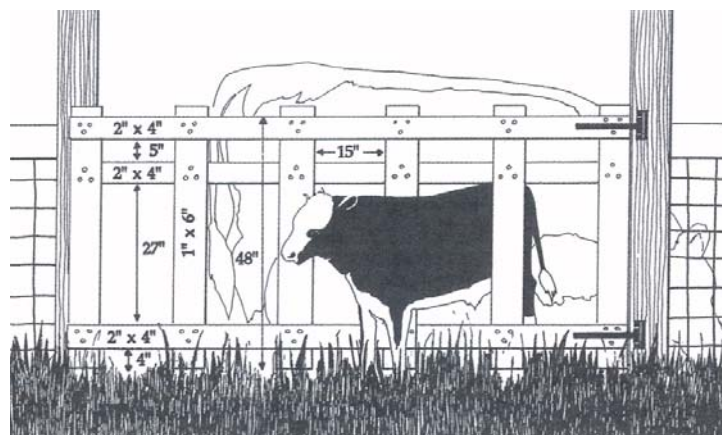


Figure 2. A creep gate allows calves, but not their mothers, to have access to high quality pasture. (SOURCE: Southern Forages, 4th Edition. 2007.)

Table 2. Creep grazing of beef calves on pearl millet from June-September (104 days) when cow-calf pairs were maintained on tall fescue pasture in northern Alabama.		
	Control	Creep grazing
Calf weight gain, lb	1.44	219
Calf average daily gain, lb	1.38	2.10
Cow weight change, lb	-60	+27
Source: E.E. Thomas, J.T. Eason, D.M. Ball, and B.G. Ruffin. Alabama Agric. Exp. Stn. Highlights Agric. Res. Vol 30, No. 2.		

With beef cattle, calf gain increases and cow condition is often improved with creep grazing. This is a relatively inexpensive system as it requires only a small area of high quality pasture for the young growing animals. Creep pastures should be close to water or loafing areas so calves will utilize the high quality forage.

Forward Creep Grazing. This method allows calves or lambs with a high nutrient requirement to pass through an opening in the fence to graze fresh ungrazed pasture ahead of their mothers in a conventional rotational method. A creep gate or a single stand of electric fence positioned at the correct height to allow calves, but not cows, access to a higher quality paddock can be highly effective in creating a creep pasture.

Strip Grazing. Movable electric fence is used ahead of and sometimes behind the animals to ration daily forage. This method results in high forage utilization and is most effective with excellent pasture during cool weather when nutritive quality declines slowly. With low-quality forage, animal daily gains may suffer with strip grazing because of reduced selectivity. This method is especially valuable for minimizing waste when grazing stockpiled tall fescue during late autumn and winter.

Limit Grazing. Maintaining livestock on lower quality pasture, but allowing them access to a high quality winter annual pasture for a few hours each day or every few days, can reduce waste from trampling. This method is often used in the lower South where beef cows are kept on frosted bermudagrass or bahiagrass pasture during winter and fed low-quality hay, but allowed periodic access for a few hours each day or every few days to high-quality rye, wheat, and/or annual ryegrass pasture as a protein supplement. This provides good nutrition at relatively low cost as the area needed for winter annual pasture is relatively small.

Greenchop. Green forage is chopped mechanically and fed to livestock. This method reduces waste by grazing animals so that more animals can be fed per acre, but forage selectivity is reduced, and individual animal output is often lower. Equipment costs are high with the method. Forage often is not harvested at optimum growth stage, lowering nutritive quality. Also, daily harvesting can be difficult, especially in winter when rain results in wet soils and poor field conditions.

Deferred Grazing or Stockpiling. This is an excellent way to reduce hay feeding costs by grazing during early and mid winter the grass that was left ungrazed during autumn. For example, tall fescue fertilized in late summer or early autumn can

be allowed to grow and accumulate forage until needed. Stockpiled tall fescue will usually contain 14 percent crude protein and over 60 percent digestible dry matter and maintains this high nutritive quality well into the winter. Unfortunately, stockpiled endophyte-infected tall fescue will still have some toxic properties, but the effect on animals is less severe during cool weather. Orchardgrass is less well suited for stockpiling as it makes less autumn growth and deteriorates more in winter. Warm season grasses such as bermudagrass or bahiagrass can also be stockpiled and grazed after frost, but nutritive quality is lower than tall fescue, and leaf quality deteriorates more quickly. Continuous stocking of stockpiled grass will result in a high percentage of the forage being trampled and wasted. Strip grazing with a movable electric fence is a useful way to ration daily forage for cattle and reduce waste.

Rotational Stocking (often referred to as rotational grazing). The pasture is subdivided into several paddocks and for a particular subdivided area, a rest period follows each grazing period (Figure 1). The number of paddocks may vary from only a few to 12 or more. A high stocking rate is imposed on a paddock for a short time, generally no more than seven to 10 days. Animals are then shifted to another paddock.

During periods of surplus growth, one or more paddocks may be harvested for hay, haylage, or round bale silage while animals are rotated through other paddocks more quickly. When grazing animals are given access to a fresh pasture, the best quality forage is consumed first. Therefore, moving animals more quickly when pasture growth rates are high provides top quality forage to the livestock while helping to prevent excess forage accumulation in any of the paddocks.

A major advantage of rotational stocking often is increased carrying capacity, which may be 20 to over 30 percent higher than obtained with continuous stocking. This is mainly a result of less wasted forage from trampling as well as increased leaf growth. Some studies have shown little or no increased production as a result of rotationally stocking winter annuals. However, when high quality wheat-annual ryegrass no-till planted in bermudagrass was grazed during the cool season in Arkansas, steer gain/A was increased about 40 percent as a result of improved carrying capacity, while steer average daily gain was not affected. In this case, three- and 11-paddock systems gave similar results. However, during the warm season on bermudagrass there was no improvement in gain per acre with rotational stocking. Average daily gain trended downward. Rotational stocking often reduces the opportunity for animals to select only the leafiest forage, thus decreasing the overall quality of forage ingested and sometimes lowering individual gains. This is especially true on low-quality warm season perennial grasses such as bermudagrass and bahiagrass. Small grains and annual ryegrass are highly palatable. Their nutritive quality remains high over the grazing season, allowing animals to maintain high performance, regardless of grazing method, if stocking rate is appropriate.

A variation on rotational stocking is to give first access in a paddock to animals having high nutritional requirements such as growing steers or lactating dairy cows, followed by animals with lower nutritional requirements. This is referred to as forward grazing. For example, steers or heifers with high potential for gain can be allowed to graze a paddock first, followed by beef cows that utilize the remaining lower-quality

forage. This method maintains high gains on the young animals and removes the old residue to stimulate new growth of high-quality leafy forage while the pasture is rested. This approach can also be used with lactating dairy cows followed by dry cows or replacement heifers.

Summary

Much skill is required to obtain optimum or near optimum animal production from pastures. It is one thing to produce forage, but efficient utilization is usually a greater challenge. In order to provide adequate quantities of good quality forage and economically convert it to animal products, good grazing management is essential. It involves frequent observation of pasture height, forage available, and periodic adjustment of stocking rate or movement of animals as needed.

The choice of grazing method to be used depends on the individual farm and the livestock producer. Continuous and some form of intermittent stocking such as rotational or creep grazing may be used on the same farm for different livestock enterprises or at different seasons of the year. Different methods are not mutually exclusive, and one is not necessarily superior to another.

A grazing method is a tool that allows a producer to efficiently and profitably harvest the forage with livestock and maintain the pasture in a productive state. Each method requires management control to be successful. This involves variable stocking rates that may be achieved by altering animal numbers per acre, altering the size of the land area to a fixed number of animals, harvesting surplus forage as hay, haylage, or round bale silage, and/or mowing excess growth in a pasture.

Each grazing method has advantages and disadvantages. A producer must select the one(s) that best suits a particular situation. This varies, depending on the type and class of livestock, pasture species, resources available, and objectives of the operation.

As you plan and prepare your beef feeding program, let me encourage you to consider using more of your pasture over a larger time of the year in as high a quality form as possible. Also, make plans to have adequate amounts of quality hay and/or silage to meet animal needs when we have no opportunity for grazing.

Reference

D.M. Ball, C.S. Hoveland, and G.D. Lacefield. 2002. Southern Forages - Third Edition. Potash & Phosphate Institute and the Foundation for Agronomic Research, Norcross, GA.

SURVIVING THE 2007 DROUGHT

Roy Burris
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University of Kentucky

Kentucky beef producers could feel the effects of the '07 drought for a long time. Decisions made now will impact the '08 and '09 calf crops. The current hay/feed shortage has stimulated a lot of "panic buying". Feedstuffs with very low nutritive values are being purchased at an alarming rate. These "feeds" are being purchased at much higher costs than we normally pay for good quality hay. If properly supplemented, they can be used successfully. However, their use to replace the normal hay supply could have disastrous results.

Producers should adjust their cow inventory to a manageable level and then feed the herd to meet its nutritional needs. The best quality hay should be fed at or near calving time. Low quality hay can be fed while the cows are not lactating. We must meet the nutritional needs of the cows this winter both before and after calving, though.

There are at least three areas of concern for this coming winter/spring. They are: (1) very low protein levels prior to calving can cause weak calves, (2) low energy levels and poor body condition can cause cows to produce low quality colostrum milk that is much lower in maternal antibodies causing lower calf survival rates, and (3) poor body condition of the cows in the spring will dramatically decrease pregnancy rates.

These problems can be anticipated with extended feeding of corn stalks, CRP residue and soybean stubble. These "feeds" are generally lower than 5% crude protein and 50% TDN. Intake by cows will also be much lower than for good quality hay. In a demonstration at Princeton, cows which were offered 28 lb of baled corn stalks daily actually consumed about 18 lb and refused (wasted) 10 lb of the stalks.

According to NRC requirements, an 1100 lb cow would have the following nutrient needs according to her stage of production:

Stage	CP, lb/day	TDN, lb/day
Mid 1/3 Gestation	1.4	10.0
Last 1/3 Gestation	1.6	11.1
First 60 days Lactation (20 lb milk)	2.9	15.9

There is a dramatic increase in nutritional needs of the postpartum cow during the first 60 days of lactation. About 18 lb of stalks, for example, will provide only 0.9 lb CP and 9 lb of TDN compared to the required 2.9 and 15.9 lb of CP and TDN, respectively.

That leaves a lot of protein and energy which must come from other sources. This difference can not be met by simply providing a pound or so of a protein supplement. Cows will lose weight/condition rapidly without a great deal of supplementation after calving.

In my opinion, the best approach is to limit feed good quality hay and provide the needed supplementation. Low quality feedstuffs can also be limit-fed successfully but are worth considerably less than good hay.

Here are some sample commodity rations that could be used for cows in late winter:

Feed/ration	1	2	3	4
Grass hay	5	5	5	10
Soyhulls	14	6	8	11
Corn gluten feed		7	2.5	
DDGS			2	
Protein block				X

If we don't feed the cows adequately; this winter we can expect increased calving losses in 2008 and decreased pregnancy rates in the spring which will impact the 2009 calf crop. The following table illustrates the effect that body condition at breeding can have on pregnancy rates:

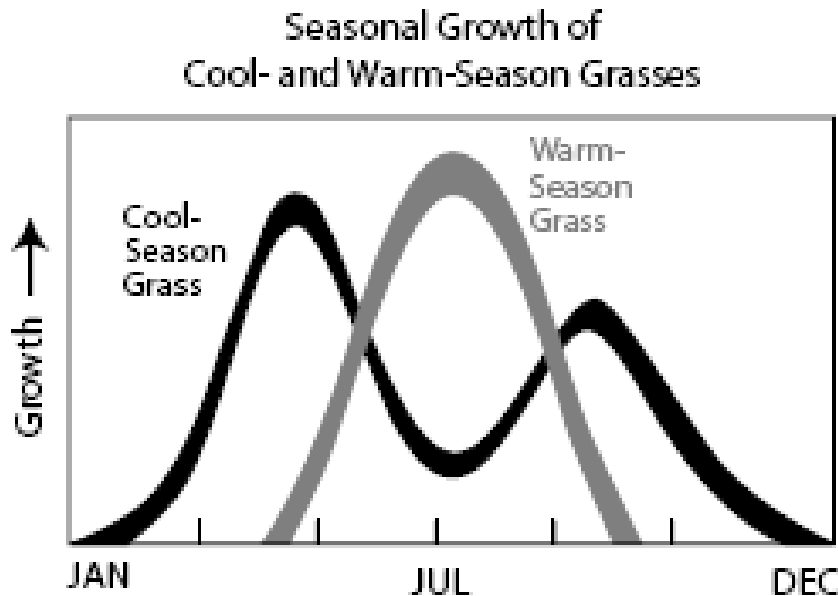
BCS	3	4	5	6
% Pregnancy	51	76	92	100

*JAVMA 207:1292

If cows are permitted to lose weight or if thin cows don't regain weight before calving, low pregnancy rates will result. Body condition scores of 3 may not be uncommon on many Kentucky farms. Thus, pregnancy rates of about 50% can be expected unless we (1) purchase more nutritionally dense feeds than the nontraditional feedstuffs like corn stalks, (2) have good quality hay available, or (3) feed limited amounts of roughage with adequate energy and protein supplementation. It's really a matter of "pay now or pay (more) later".

Options for Summer Grazing

Dr. David C. Ditsch
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UK Robinson Station



Summer is the time during the growing season when shortages of forage most often occur in Kentucky. The summer of 2007 will long be remembered as one the warmest and driest in recent years and cause many livestock producers to evaluate their current forage systems. Most Kentucky pastures are predominately cool-season grasses such as tall fescue, orchardgrass and bluegrass. During the historically hot, dry periods in July and August, these species produce very little growth and can quickly become overgrazed. At this point, some producers have no alternative except to buy feed or begin feeding stored forage intended for winter feeding. According to Ag Economist, grazing is the cheapest way to feed livestock and the difference between profit and loss in the livestock business can usually be related back to the producer's ability to grow his own feed.

Advanced planning can help reduce the risk of a forage shortage during the summer months. Some practices to consider are:

- Tailor herd size to expected forage production.
- Renovate pastures with a legume to increase production and quality.
- Follow a good soil testing and fertilizer program.
- Practice rotational grazing.
- Establish alfalfa for summer grazing.
- Establish warm-season grasses and legumes.
- Establish summer annual forage species.
- Use corn as a grazing crop.

Alfalfa for Summer Grazing

The deep root system of alfalfa (*Medicago sativa*) makes it more drought tolerant than cool-season legumes and grasses. Although alfalfa does not make maximum growth during summer drought, it usually provides good summer pasture. With proper grazing management, alfalfa's high yield potential can be converted to high levels of animal production per acre.

Significant advances have been made in the development of alfalfa varieties that are more tolerant of grazing conditions. Alfalfa varieties selected under grazing pressure will better tolerate hoof traffic and allow more flexible grazing schedules than hay-types while maintaining thicker stands. Alfalfa must be grazed on a rotational basis. This will require that fields be subdivided so that cattle are restricted to one paddock for a time, then moved to another paddock. General recommendations are to graze a paddock for one week and allow four to six weeks for a rest or recovery period.

The following suggestions will reduce the potential for bloat when grazing alfalfa:

- Grow grass with alfalfa
- Provide grass hay or grain during the first week or two of grazing alfalfa
- Feed Rumensin®
- Feed bloat-preventing compounds
- Do not turn hungry cattle into alfalfa when plants are wet from dew
- Do not graze immature alfalfa
- Provide salt and minerals
- Do not graze alfalfa for three days following a killing frost (below 24°F).

Warm-Season Perennial Grasses

In contrast to the cool-season grasses, warm-season grasses grow best in late spring and summer. They can be grazed during summer when cool-season grass pastures are less productive. Including up to 25% of the forage acreage as a warm-

season perennial grass may reduce the risk of a pasture shortage in July and August. It may also permit resting of cool-season pastures when they are stressed.

Switchgrass (*Panicum virgatum*) is a tall growing (3 to 9 feet), wide-leaved grass that produces short rhizomes. The seed are relatively large and smooth so they will flow through most drills. Switchgrass becomes quite stemmy as it matures so it needs to be grazed before seed heads emerge for good quality forage. Varieties such as Cave-in-Rock and Blackwell are shorter and better adapted to well drained (even droughty) soils on side slopes and ridge tops. Properly managed switchgrass should be rotationally grazed leaving at least 6 inches of stubble.

Eastern gamagrass (*Tripsacum dactyloides*) is a bunchgrass that produces short thick rhizomes near the soil surface. Leaves of gamagrass emerge from the base and may reach a length of 3 feet. The seed are large, enclosed in a cylindrical seed coat and tend to be very dormant. Seed treatments such as wet-chilling increase seed germination. Eastern gamagrass is best adapted to deep well-drained soils but can withstand short periods of flooding. Rotational grazing and leaving a 6 inch stubble height will extend the life of the stand.

Big bluestem (*Andropogon gerardii*) is a tall growing (6 to 8 feet), stemmy bunchgrass that provides excellent wildlife habitat. Big bluestem is more drought tolerant than eastern gamagrass and switchgrass but dry matter yield is usually lower. Specially modified drills are necessary for seeding big bluestem. Establishment can be slow. Must be rotationally grazed.

Indiangrass (*Sorghastrum nutans*) is also a tall growing bunchgrass similar to big bluestem. It produces more of its growth later in the summer. It is very drought tolerant and can be grown on steeper, shallower soils.

Bermudagrass [*Cynodon dactylon* (L.) Pers] is a sod forming forage species that spreads by rhizomes, stolons and seed. It makes its best growth at 80-90°F. and is extremely drought, grazing and traffic tolerant. Bermudagrass is a high yielding (5-7 tons d.m./ac) forage that responds to high levels of nitrogen fertilization (250 lbs N/ac). When using bermudagrass as far north as Kentucky, the potential for winterkill always exists and only the most winter-hardy varieties should be considered.

Warm-Season Perennial Legumes

Sericea Lespedeza (*L. cuneata*) is the only perennial warm-season legume used for livestock forage in Kentucky. It is extremely drought resistant and well adapted to shallow, low fertility soils. Because of its low seedling vigor, sericea lespedeza should be established before overseeding with other grasses. It is naturally high in tannin, which is a component of some forages that can cause poor acceptance in ruminants (Serala, AU Lotan, AU Donnely are reduced tannin varieties). Sericea is best suited to steep terrain pastures where establishment and management of other forage species is limited.

Summer Annual Grasses

Sudangrass and sudangrass hybrids are rapidly growing annual grasses of the sorghum family. They are medium yielding and re-grow quickly after harvest.

Sorghum x Sudangrass hybrids (*Sorghum bicolor*) are more vigorous and higher yielding than sudangrass. They are more likely to contain toxic levels of prussic acid and nitrates during environmentally stressful periods. They produce large stems and are difficult to cure as hay. Brown midrib types have less lignin increasing palatability and digestibility.

Millets are small seeded, fast growing summer annual grasses. They have smaller stems and are more leafy than the sorghum-type plants. The millets do not have a problem with prussic acid poisoning. **Pear millet** (*Pennisetum glaucum*) is higher yielding than **foxtail millet** and will re-grow after harvest if a five-inch stubble height is left. **Foxtail millet** (German Millet) is shorter and finer stemmed. It will not re-grow to produce another harvest.

* Horses should **NOT** be allowed to graze sorghum or sorghum cross plants. An unidentified toxin in sorghum, apparently more common in hybrid strains, occasionally causes spinal cord degeneration and paralysis in horses.

Teff, [*Eragrostis tef*. (Zucc.) Trotter], also known as “summer love grass or annual love grass”, is a warm season annual grass native to Ethiopia. It is adapted to environments ranging from drought-stressed to water logged soil conditions. It germinates quickly and can be ready for first harvest in 50-55 days. Teff can grow over 4 feet tall and produce more than 6 tons per acre. Teff is new to Kentucky and currently being evaluated by the University of Kentucky College of Agriculture.

Corn (*Zea mays*) is not a traditional grazing crop in Kentucky but results from several on-farm trials suggest that corn is a versatile crop that can be green-grazed as a rescue forage or late season grazed to extend the grazing season.

***Nitrates**. Under certain summer conditions such as high nitrogen fertilization, drought or sudden weather changes, forage plants (including corn) can accumulate high levels of nitrates. When eaten, nitrates are converted to nitrites and are directly absorbed from the digestive tract. The absorbed nitrites combine with hemoglobin of the red blood cells to produce methemoglobin, a form incapable of transporting oxygen.

Related publications from the University of Kentucky Cooperative Extension Service

Producing Summer Annual Grasses for Emergency or Supplemental Forage ... AGR-88
Native Warm-Season Perennial Grasses for Forage in Kentucky AGR-145
Grazing Alfalfa ID-97
*2006 Alfalfa Grazing Tolerance Report....*PR 546

Grazing Corn: An Option for Extending the Grazing Season in Kentucky ID-152
Bermudagrass: A Summer Forage in Kentucky AGR-48
Growing Lespedeza in KentuckyAGR-86
Lime and Fertilizer Recommendations AGR-1
Planning Fencing Systems for Intensive Grazing ManagementID-74
Rotational Grazing ID-143

Species	Seeding Dates	Seeding Rates	Grazing Considerations
Alfalfa	Mar 1-Apr 15 Aug 1-Sept 15	15-20 lbs /ac	Rotational grazing required. Graze close to stimulate regrowth from crown. Use grazing tolerant variety. Prevent cattle bloat.
Switchgrass	May 15-Jun 15	8-10 lbs PLS/ac	Rotational grazing required. Leave 6-8 inch stubble.
Eastern gamagrass	May 15-Jun 15	8 lbs PLS/ac	Rotational grazing required. Leave 6-8 inch stubble.
Big bluestem	May 15-Jun 15	10 lbs PLS/ac	Rotational grazing required. Leave 6-8 inch stubble.
Indiangrass	May 15-Jun 15	10 lbs PLS/ac	Rotational grazing required.
Bermudagrass	Apr 15-Jun 15	Sprigs 30-50 bu/ac Seed 8 lbs/ac	Tolerant of continuous grazing. Responses to N fertilization. Choose winter hardy variety.
Sericea Lespedeza	Mar 15-May 15	30-35 lbs/ac (scarified)	Rotational grazing required. Leave 6 inch stubble. Best suited for steep terrain.
Sorghum x sudangrass hybrids	May 10-Aug 1	20-40 lbs/ac	Rotational grazing required. Leave 6 inch stubble. Prussic acid and nitrate poisoning possible. Responses to N fertilization.
Pearl Millet	May 1-Aug 1	15-20 lbs/ac	Rotational grazing required. Nitrate poisoning possible.
Foxtail Millet	May 1-Aug 1	20-30 lbs/ac	Use as emergency pasture.
Teff	May 1-Aug 1	6 lbs/ac	Rotational grazing required. Leave 3-4 inch stubble.
Corn	Apr 15-May 15	24,000 seeds/ac	Strip grazing recommended. Nitrate poisoning possible

MY EXPERIENCES WITH SUMMER LOVEGRASS

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I first heard about teff (*Eragrostis tef*) being used as a hay crop in early 2006 at a meeting near the Shenandoah Valley area of Virginia. The meeting was about orchardgrass production, so I was speaking about new varieties that are available for producers to grow. Several farmers had experienced massive stand losses of their established orchardgrass hay fields, so they had tried this 'new' summer annual grass. Some of the farmers were surprised that I knew about this grass, but I didn't know about its use as a hay or pasture grass. Teff is the Ethiopian name for a grain crop that supplies the majority of the calories for the diet of the people in Ethiopia (and Erytrea). The straw is used as a fodder for animal feed after the seed is threshed, but this would be of lower forage quality than if the grass were harvested in a vegetative stage of growth.

I began looking for information on the crop and its use as a forage grass. It turns out that it isn't really new after all. South African farmers have grown it as a hay crop for over 100 years. Recent interest in the crop in the USA has led to new varieties being released. It has been proposed that we call the forage varieties 'summer lovegrass' or 'annual lovegrass' and reserve the name 'teff' for the grain-type varieties. Another justification is that 'teff' is not in most Americans' vocabulary, so spelling and pronunciation problems become more of an issue. As a species in the *Eragrostis* genus, summer lovegrass is a warm-season species. As such, it is completely frost-sensitive. Most areas in Ethiopia where the species originated are several thousand feet above sea level, in mountainous areas with ample rainfall. So, while the grass is heat and drought tolerant, it performs best with at least 3 inches of rain per month. This summer's heat and drought reduced yields of many crops, so it is not surprising that summer lovegrass also suffered.

In 2006 we conducted several trials using a forage variety of summer lovegrass called 'Dessie' (the name of one of the states in Ethiopia). In a nitrogen rate study, we confirmed that the recommended rate of 60 pounds of nitrogen per acre probably was enough for good yields, but maybe more would give the highest yields. We used 0, 50, 100, 150, and 200 pounds of nitrogen per acre, and saw the best yield at 3.47 tons/A at 100 # N/A, 3.44 at 150, then lodging reduced yields to 3.34 tons/A at the 200 # N/A. At 50 # the yield was only slightly higher than the 0 nitrogen treatment. Reports claim that the crop can provide 2-3 tons of dry matter in about 6 weeks with subsequent yields being similar if sufficient rainfall or irrigation is available, for two-four harvests. More research is needed to determine if supplemental fertilization after each harvest would boost yields. Certainly forage quality would be higher with higher levels of nitrogen

fertilization, and harvests in the vegetative stage rather than in full flower. The varieties 'Tiffany' and Dessie were seeded at Princeton this summer. Two bulk samples were harvested and dried for forage quality analysis. One was at 8 inches of growth, with the second at 32 inches. The table below shows the results of these analyses. The data are somewhat surprisingly high for a warm-season grass, and more work needs to be done to confirm the data, using more varieties, with different planting dates and fertilizer rates.

Parameter	8 inches	32 inches
ADF	27.29	29.90
NDF	56.27	59.58
Protein	23.3	19.54
DDM	67.64	65.61
RFV	111.83	102.44
TDN	71.94	69.04

The heat and drought of 2007 dramatically limited the productivity of summer lovegrass in Lexington. We seeded several trials using Dessie, Tiffany, and 'Pharoah' varieties. This 'new' crop has a niche role to play in providing another alternative summer annual grass for haying or grazing. Its small seed size can result in planting depth issues, as well as seedbeds problems (firmer is better). I see a role in erosion prevention as it can provide a quick cover to disturbed sites, even if only broadcast on the surface. Expect more choices in varieties as more companies see the merits of summer lovegrass / teff.

EXPERIENCES WITH "TEFF" (SUMMER LOVE GRASS) IN KENTUCKY

Bob Jaynes
Farm Manager,
Western Kentucky University

Reports on the performance of Teff Hay in 2005 - Ken Rykbost

Following publicity about the Klamath Experiment Station evaluation of Teff as an annual forage in 2003 and 2004, requests for more information and seed sources kept KES staff busy for weeks last spring. We received over 300 contacts from 41 states. Local seed salesman Laverne Hankins processed over 150 orders for more than 5 tons of seed. Those who received seed were sent a questionnaire this fall in hopes that we would get feedback on growers experience with this new forage species. To date we have received responses from about 15 growers.

Results have varied widely as expected. Eastern U.S. producers experienced drought through much of the year, however, there are several positive replies. A Western Kentucky University study achieved over 6 tons/acre in 3 cuttings. In South Carolina, a farmer produced over 4 tons/acre in two cuttings and reported excellent acceptance by his customers including dairy goat, horse, and sheep owners. On the western border of Ohio, a farmer took 5 cuttings for a total of 5.4 tons/acre. In Northern New York, an extension agent conducted trials following different crop sequences. With a planting date of July 21, the crop produced 4.6 tons/acre in 2 cuttings. Quality tests indicated good quality for dairy use. A Delaware planting produced 4.5 tons/acre in 2 cuttings. A Missouri farmer produced 2.5 tons/acre in 2 cuttings with very little rainfall throughout the summer.

The only negative feedback from the east was one report of nitrate levels at 1 % in a test in North Carolina. Several producers from the east indicated that disease problems with cool season grasses, including orchardgrass, have become serious and no disease in Teff may make it an attractive alternative forage in their areas. A couple of reports of slow germination due to drought conditions noted good production when rains 2-3 weeks after planting brought on germination, emergence, and good crop development.

Western U.S. reports included a producer in Scott Valley in northern California who admitted poor seed bed preparation, but about 4 tons/acre production in a Teff/Millet blend. He and several others have confirmed our belief that seed bed preparation should be done well. A southern California producer achieved 5 tons/acre in 2 cuttings and reported excellent acceptance by his horse owner customers. Two Klamath County, Oregon fields produced about 3 tons/acre in a first cutting but neither attempted to take a second cutting. A Wyoming farmer produced 2 tons/acre in one cutting and grazed the aftermath, getting 6 weeks of feed for one cow/calf and one

horse per acre. He flood irrigated only 5 times after planting. Hay growers in the mid-Columbia Basin in Washington produced about 700 acres of Teff in 2005 with favorable results, including reports of 6 tons/acre in 3 cuttings. They expect to expand production significantly in 2006 and hope to develop an export market for Teff.

Several reports include quality analysis data. Crude protein levels range from about 12-18 %. RFV levels range from 80s to 120s. The New York study reported RFQ as high as 154 in one test. Several reports of potassium at 2.5 to 3.0 percent may represent a potential problem. We have had some dairymen indicate a concern for dry cows at this level. Others, including the NY extension agent, indicate they are not concerned at that level and often encounter higher levels in clover and other forages.

Several of the replies received indicated some problems in cutting or curing Teff compared to their standard crops. Disc Bines pulled plants in a couple of cases and a few reported needing an extra day or two for curing compared to other species. We anticipated the problem of plants being pulled up by the roots as we have experienced this when plants have lodged. However, the Wyoming farmer who grazed the aftermath did not indicate a problem with livestock pulling plants up. His frugal irrigation management (only 5 irrigations) may have resulted in development of a better root system compared with our frequent irrigations.

Tests were conducted at the Klamath, Ontario, and Medford experiment stations in 2005 to evaluate irrigation and nitrogen rate responses. In all sites, there was no economic advantage for N rates of about 200 lb N/acre over a 100 lb N/acre rate, either in yield or quality. In most cases high N increased crude protein levels by 3-4 % but had little affect on RFV or RFQ. Typical values for ADF were 32-36 at Klamath, 34-40 at Ontario and 39-41 at Medford. NDF values were 53-60 at Klamath, 67-71 at Medford, and 56-63 at Ontario.

Irrigation response was measured using a line source irrigation system following standard irrigation practices for crop establishment. At Klamath, irrigation at 3 distances from the line source was estimated at 18, 8, and 0 inches for the season following establishment. Very little production occurred at the farthest distance (about 40 feet) from the irrigation line. At both Medford and Klamath Falls, yields were only slightly lower (.5 tons/acre or less) at the intermediate irrigation rate. Some carryover of moisture from the establishment period was partly responsible.

At Klamath Falls we also evaluated seeding rates of 3 and 6 lbs seed/acre in 2005. There were no measurable yield differences between rates. Under good seed bed and soil moisture conditions, a seeding rate of 3 lbs/acre is probably very adequate. Under less than ideal conditions, higher seeding rates may offset other limitations and provide economic benefits, particularly as seed costs are minimal compared with crops that require 15 to 20 lb/acre seeding rates.

Summary

We will continue to seek input from around the country on the performance of Teff under a wide range of climate, soil, and management conditions. Early seed orders for 2006 currently exceed 60 % of 2005 sales for our local seed salesman. Seed sales from Idaho are apparently also significant but we do not have any information on that volume except to note that Washington crops used Idaho seed primarily. Based on the limited feedback received to date, it would appear that the overall reaction to Teff hay has been very positive and it may become an important forage species in several areas around the country.

TECHNIQUES FOR REDUCING MUD PROBLEMS AND IMPROVING PASTURE ABUSED AREAS

Ken Johnson
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Tompkinsville, KY

I would like to approach this topic from two directions, mud control and then problem areas. Mud control in concentrated areas almost impossible with forages alone. Using a mud control product is usually advised. I will talk about several.

- Filter Fabric - A plastic like product is the most widely used product. Lay this product on the soil surface and cover with 6-8 inches of gravel. The big advantage is low cost; the disadvantage is maintenance if used by large numbers of livestock on a continuous basis.
- Rubber Mats - In lanes and narrow areas, used conveyor belts are an excellent choice. The disadvantage is they are hard to find. Cost is usually low. New mats are very expensive.
- Plastic Grids - Like mats lay on the ground and clamp together, they do not require gravel. They can be added to create as large of an area as needed. They are more expensive than mats or filter fabric.
- Concrete - The best and highest cost.
- Rotating Feeding Areas - The lowest upfront cost, but you destroy a large area. When considering reseeding, the cost is much higher. Consider moving in a circle, using the same area several times during the winter.

Improving pasture abused areas usually requires moving the animals to another area and seeding forage that tolerates more abuse. No forage will tolerate continuous abuse. Some of them are:

- Bermuda grass - will tolerate more abuse than many grasses, but has several disadvantages. It can become a problem moving all over the farm. It also can be very low quality.

- Fescue, endophyte infected - an excellent choice. Very tolerate of heavy abuse and still and still come back. The disadvantage is the reduced gain in cattle.
- Ryegrass - use to reestablish abused areas. Inexpensive but short lived, can spread across farms and become a problem. Very high quality.
- Small Grains - use like ryegrass, even mixed with ryegrass to reseed abused areas for short periods of time. High quality, but only moderate resistance to abuse.

Forage Spokesman Information

**Lowell J. Clifford
HillTops Grazing
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Cynthiana, Kentucky 41031**

The farming question for me and a question for many Kentucky farmers was and persists to be What can you do on a farm defined as an “outer KY bluegrass hill farm,” suitable only for grazing to make it increasingly productive and increasingly profitable.

The description of the topography of this 375 acre Harrison County Kentucky farm (30 miles north of Lexington and 60 miles south of Cincinnati) would be from rolling to moderately steep, and then on to steep. About 80% of the farm falls under the steep headings. Most of the soil falls under the description of clay, stones, erodible, shallow, and droughty with low yield potential. Put simply, soils and terrain not suited for cultivation.

There is 15% to 20% of the land which would classify as rolling acres with more favorable soils than the hillsides. We sort of consider our rolling acres as our “level” fields. It adds up to a grazing type of farm. Plows and cultivators have not done any favors for this type of land, and for me, at this location, are considered tools of the past.

Burley tobacco was a viable row crop raised on this farm for as long as anyone can remember. The farm has eight tobacco barns and some more have fallen down. The burley base probably averaged 6 acres during my ownership. Enough acres could be found on this type of farm for Burley with good production and income potential. However, the quota system of raising Burley has been legislated away and today’s production factors make it impractical to raise Burley on this limited type of hill farm. This is a way of saying that grazing and cattle have become more important than ever on these types of KY farms. There are many farms somewhat similar to this one in Northern and Eastern Kentucky. As you drive west from here the state begins to level out.

On this farm there are:

21 Fields	Grazing Only (Too steep/rugged for hay, etc.)	193 Acres
19 Fields	Hay/Grazing (Grass or Grass/Clover)	122 Acres
6 Fields	Alfalfa/Grazing	30 Acres
4 Fields	Woods	12 Acres
1 Field	CRP	6 Acres
<u>1 Field</u>	Wildlife Management Area	<u>12 Acres</u>
52 Fields Total		375 Acres Total

Our farm purpose is to make “HillTops Grazing Farm” as “Cattle Big” as possible through improved and improving practices.

Here is a list of a dozen of our important practices that we use to improve things along with my grade and comment on that practice.

1. “Use border collies to aid in cattle movement” – gets a grade of “A” because I love em for helping work cattle.
2. “Certified for Performance and Health Calf Sales” – gets an “A-” because we do a pretty good job preconditioning our calves. These sales are considered a necessity and not an option because they bring in extra money and helps meet our concept of adding value and being “Cattle Big.”
3. “Always have feed, water and high quality minerals in front of cattle” – get a “B-” because I am a little erratic about keeping the minerals caught up with the cattle.
4. “Backgrounding all calves to a minimum of 600 pounds” – gets a “B-“because there is still too much weight spread (inconsistency) between calves in my calf program. There still are some small ones at weaning that are a challenge to get to 600 pounds. Selling in a CPH sale helps here because the calves are commingled in the sale by size. That keeps you from selling calves as singles, which is always money in the pocket.
5. “Pregnancy check cows every year” – gets a “B-“ because I am still trying to make excuses to keep cows on the farm that should be culled, however, I am getting there (i.e.: Get them off the farm before they get you.)
6. “Cross Breeding” – get a “C” because it is hard to make a decision on exactly what you need to do.
7. “Electric Fence” – gets a “C” because it is the only way to go in intensive grazing, but keeping electric fence hot and effective is a constant problem.
8. “Soil testing and fertilization” – gets a “C” because I am always “dragging my feet.”
9. “Hay testing and strategic hay feeding” – gets a “C+” because I harvest too much low quality hay.
10. “Rotational grazing” – gets a “C+” because of my timelines of moving cattle is not so good.
11. “Alfalfa in all fields where practical and possible” – get a “B” which is up from a “D” because I got a couple of more Alfalfa fields established. All Alfalfa is no-till to decrease the danger of erosion.

12. "Stockpile for early winter feeding" – also gets a "C" because I am always 15 to 20 days late getting the nitrogen on, but stockpiled fescue gives the cows an excellent high quality feed boost going into winter.
13. There are many other practices such as pelvic measuring heifers, etc., but these 12 are enough to establish the drift for improved and improving management.

So where are we? We have land that probably at best gets a rating of "D" and a set of fairly good practices, promoted extensively by extension and publications, on the farm which as practiced deserve an overall rating of about B- or C+.

On the plus side, I am a member of the University of Kentucky Bluegrass Farm Analysis group. Therefore, I do possess objective information and comparisons that display "how well" the farm cattle operation is doing in meeting our concept.

Keep in mind that Kentucky farmers who pay to see production numbers through "Farm Analysis" are usually considered to be among the more progressive Kentucky farmers. The average statistics, therefore, from this group would probably be a higher average than an overall average of the states farms.

In 2005 "HillTops Grazing" total returns per cow in the category "Beef Cow Herds - Calves Backgrounded" was \$600. The average returns per cow in this category per farm on UK analysis farms was \$386 per cow. Advantage to HillTops Grazing \$214 per cow.

In 2004 total returns per cow for HillTops was \$776 and the average UK analysis farm was \$635. Advantage to HillTops Grazing \$141.

In 2003 total returns per cow for HillTops Grazing was \$603 and the average UK analysis farm was \$499. Advantage to HillTops Grazing \$104 per cow.

There are many other categories of comparison such as "returns above feed." In 2003 HillTops Grazing return above feed was \$355 while the average Farm Analysis farm was \$210. Advantage to HillTops Grazing \$145 per cow.

I think that there is enough evidence presented here to make a point. My point is that if you can take this type of marginal hill farm and achieve the performance numbers mentioned by using commonly promoted practices – as best you can - then what could be achieved on high quality land with a higher quality of fulfilling these practices.

Bottom line: there is a lot of room for a US cattle farmers/ranchers to improve our cattle production and, by doing so, improving our well being and the amount of dollars coming in from our cattle operations. A lot of these touted practices work and pay off.

I know that over the years, I have left a lot of dollars on the table.

**Barry Drury
500 Elliston Lane
Versailles, KY 40383**

I am the owner and manager of Rolling Acres Farm located in Woodford County, Kentucky. The total farm operation consists of 250 acres, 95 of which I own. I run a cow/calf operation consisting of 27 cows and calves, and a hay enterprise. The hay enterprise includes 18 acres of alfalfa, 60 acres of Timothy, and 100 acres of grass that is marketed to area horse farms.

I have attended the master cattleman, advanced master cattleman, and master grazer programs offered through the extension service. As a result of what I have learned in these courses, I built two hay storage facilities with the capacity to store over 450 round bales and implemented a rotational grazing system for the cattle. I used to take forages for granted (with the exception of alfalfa), but I have learned that even the cattle pasture is a crop and must be managed as such.

John McGlone
2739 Straight Creek Road
Ashland, KY 41102

Our beef cattle farm is operated on the principle of less is more. With 34 head of mixed angus, Hereford and limousin cows and calves, currently grazing on about 100 acres, of hillside and forest, we try to get all we can out of the pasture.

We have a goal of raising natural freezer beef with a minimal amount of labor and capital involved in the process. At the moment there is no tractor or implements on the farm. We hire a local farmer to do custom baling, and hire bush hogging done on an annual basis.

While we don't recommend this method for everyone, it is fairly doable for small farming some operations. I will share the financial numbers during my presentation.

We have been fortunate to have only 4 steers the past 2 calving seasons. Fortunate, since we are trying to grow the herd to about 40 cows. we harvest the steers at about 900 lbs, at 1.25 per lb. Plus processing. This is about 40 cents per lb. above market price.

We maximize that by keeping them on pasture until 6 weeks prior to harvest. We finish them on corn/soy bean meal and free choice hay.

Mac Stone
3636 Paris Road
Georgetown KY 40324

Mac farms with his wife, Ann Bell Stone, and her family in Scott Co. Ky. Together, we produce certified organic poultry, beef, vegetables, and tobacco. All poultry are raised in moveable shelters and electric enclosures on pasture in a semi-synchronized system of grazing with the sheep and cattle. Some vegetables are raised for the commercial market, lamb, and tobacco is produced sustainably. On farm composting and pasture rotation has helped us to reduce off-farm inputs for this 375 acre operation. Primary markets include farmer's markets, CSA, restaurant delivery, and commercial contracts. Mac also works for the Kentucky Department of Agriculture as Director of the Value added Plant Production Division. Program areas include ornamental horticulture, grape and wine industry development, farmers market activities, organic certification, "Kentucky Proud" buy local campaign, grape and wine council, ginseng, farm to school, and forage testing.