The Forage Leader

FALL 2012

SPECIAL POINTS OF INTEREST:

- **2013 Conference Information on Pages 4 & 6**

INSIDE THIS ISSUE:

Forage Brassica Crops in Grazing Systems

By: Marvin Hall, Penn State University

Forage brassica crops such as turnip, swede, rape, and kale can be spring-seeded to supplement the perennial cool-season pastures in August and September or summer-seeded to extend the grazing season in November and December (Figure 1). Brassicas are annual crops which are highly productive and digestible and can be grazed 80 to 150 days after seeding. In addition, crude protein levels are high, varying from 15 to 25 percent in the herbage and 8 to 15 percent in the roots depending on the level of nitrogen fertilization and weather conditions.

Brassica Species

Kale

Varieties of kale differ markedly in rate of establishment, stem development, time required to reach maturity, and in winterhardiness. The stemless type kale has a faster rate of establishment than varieties which produce stems. Crop height of the stemless type is approximately 25 inches, whereas that of stem kale is 60 inches with primary stems often 2 inches in diameter. Stemless kale attains maturity in approximately 90 days, allowing two crops/year, whereas varieties that develop stems require 150 to 180 days to attain maximum production.

Rape

Rape is a multi-stemmed crop with fibrous roots. The stems vary in length, diameter, and in palatability to livestock. Forage yields of spring-planted rape increase until plants become physiologically mature. Growth slows or ceases at maturity and yields plateau until leaves senesce and die. Varieties differ in when this occurs.

continued on page 2

"Re-inventing green with forages – Merging environment and economics" was theme of first AFGC National Forage Tour

By: John Jennings, University of Arkansas

The Arkansas affiliate council hosted the first annual AFGC National Forage Tour and Hay Show on May 17-18. The tour theme "Re-inventing green with forages – Merging environment and economics" emphasized production of top quality hay and protecting water quality. Tour attendees saw some of the top forage operations in northwest Arkansas. Arkansas Council president Matt Flynt and AFGC president Howard Straub welcomed the group at the tour headquarters in the Embassy Suites hotel in Rogers. The National Forage Tour is the result of a three-year commitment by the AFGC board of directors to hold an annual tour that moves around the US each year and a separate academic conference held during the winter at a central location. The move will increase educational opportunities for members and improve exposure for AFGC.

The first tour stop was at the Rogers Pollution Control Facility. Washington County Extension agent Johnny Gunsaulis and Benton County extension agent Robert Seay discussed the forage production history of the site and the issue of water quality protection in the region.

continued on page 5

...Forage Brassica Crops in Grazing Systems

Continued from Page 1

Generally, yields of rape varieties are maximized with two, 90-day growth periods. However, performance of some rape varieties is best with one 180-day growth period, and yields of rape hybrids were greatest with 60 days of growth before the first harvest and a 30-day growth period before the second harvest.

Turnip or Turnip Hybrids

These crops grow very fast, reaching near maximum production levels in 80 to 90 days. Studies in southwestern Pennsylvania showed that turnip can accumulate dry matter in October as fast as field corn does in August. Growing "out of season" (October/ November) makes turnip a valuable crop for late fall grazing.

The proportions of tops to roots vary markedly depending on variety, crop age, and planting date. Research by the USDA Pasture Laboratory showed that turnip crops can vary from 90 percent tops and10 percent roots to 15 percent tops and 85 percent roots. Some hybrids have fibrous roots which cannot be readily grazed by livestock. All varieties produce primarily tops during the first 45 days of growth. Sixty to 90 days after seeding, some turnip varieties continue to produce a high proportion of tops while other varieties have nearly equal top and root production. The significance in the proportion of tops and roots is that the crude protein concentration of roots is approximately one-half of that in turnip tops. Therefore, greater root production tends to reduce the crude protein yield of the total crop. On the other hand, stockpiled tops appear to be more vulnerable to weather and pest damage than roots. Varieties differ in resistance to diseases, but this often is not evident until the crop is more than 80 days of age and the plants are reaching full production.

Swede

Like turnip, swedes (Rutabaga) produce a large edible root. Yields are higher than those of turnip, but they grow slower and require 150 to 180 days to reach maximum production. Swedes usually produce a short stem but can have stems 2 1/2 feet long when grown with tall crops which shade the swede. Unfortunately, stem elongation is at the expense of root development. In general, all swede varieties are recommended for late fall grazing.

Grazing Management

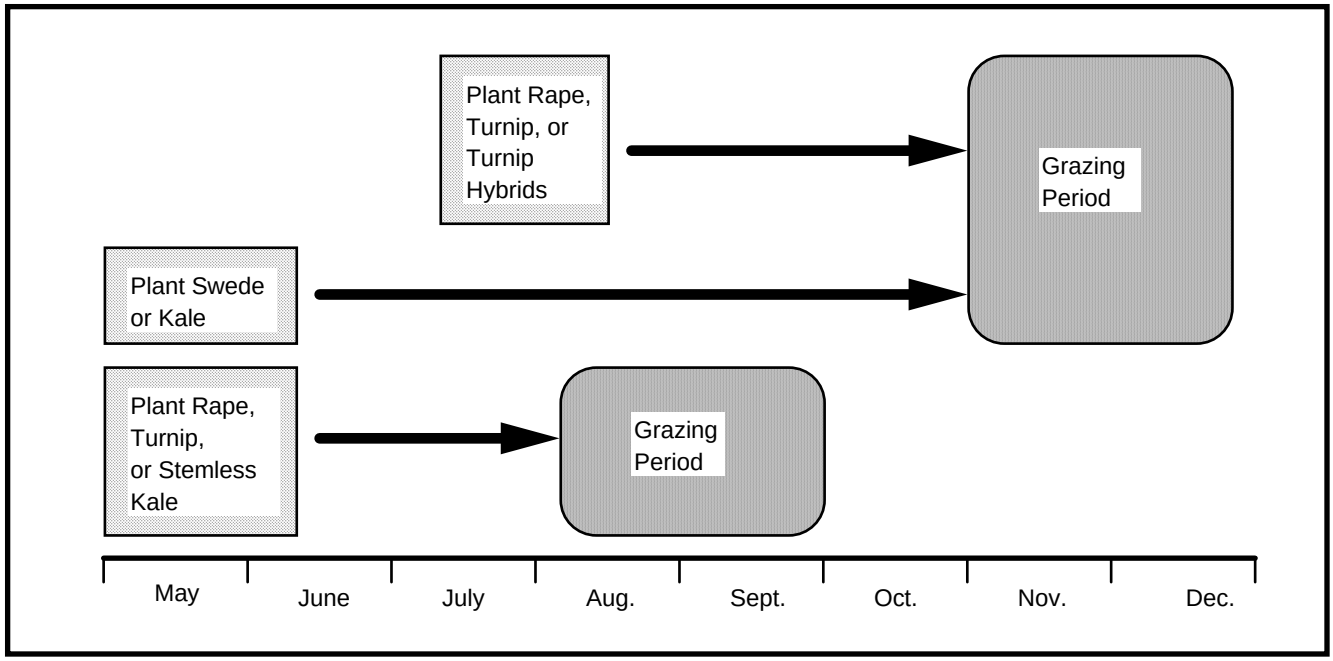
Grazing management is important to optimize the true potential of brassica crops. Strip grazing small areas of brassica at a time provides the most efficient utilization. Grazing large areas increases trampling and waste of the available forage. Rape is more easily managed for multiple grazings than are the other brassica species. Approximately 6 to 10 inches of stubble should remain after grazing rape to promote rapid regrowth. Regrowth may be grazed in as few as 4 weeks after the first grazing. Graze rape close to ground level during the final grazing.

When turnips are grazed more than once, only the tops should be grazed until the final grazing when the whole plant can be consumed. Like rape, regrowth of turnips can be sufficient to graze within 4 weeks of the first grazing.

For more information about establishing and managing brassica crops see: *Using Brassica Crops to Extend the Grazing Season*, Agronomy Facts 33, Penn State University. (http://pubs.cas.psu.edu/freepubs/pdfs/uc100.pdf)

Marvin Hall is a Professor of Forage Management at Penn State University. His research and extension interests include forage production and utilization involving both annual and perennial forage crops and their interaction with consuming animals. To learn more about Dr. Hall and his research and extension programs visit http://plantscience.psu.edu/directory/mhh2.

Figure 1. Planting and grazing sequence for forage brassicas.



Grazing Pasja Turnips

By: Terri Hawbaker, Grazeway Dairy, MI

Our experience with Pasja turnips began as a study conducted by Dr. Joe Rook of Michigan State University. Although the study has been completed we continue to grow and use Pasja turnips within our grazing rotation.

We own and operate a 120 cow grass based dairy near Pewamo, Michigan. We are a seasonal herd, in which the cows calve exclusively in April, May and June. Each winter we pick 3 paddocks (3 acres each) that need renovating and use these lots for wintering the cows. They have access to them all winter with exception of extreme mud, and will continue to use them through the dry season into calving. This results in paddocks that have heavy manure application before we apply the new seeding.

We begin with a prepared seed bed, plowing, discing and cultimulching as needed to create desired results. Next, the turnips are broadcasted on with a broadcast seeder mounted onto an ATV. Our goal is to plant 3-5 lbs of turnips per acre. Using a very old drill, we drill on the pasture mix. The drill drops the seed onto the ground-it does not actually put it under the soil. It is used mainly to correctly meter out the seed amount. Behind the drill a cultipacker finishes the planting. Our pasture mix is Climax timothy, perennial ryegrass, orchard grass, medium red clover and alfalfa. This is planted at a rate of 30 lbs per acre.

We see three distinct benefits when using Pasja turnips. The turnips are most often ready to graze 30 days after planting. This gives up quick turn-around in usage of our renovation lots. We are at or above capacity concerning cows/per acre, so we need to keep as many paddocks in production as we can. It would take the pasture mix a longer period of time to create a hardy enough stand to hold up the grazing cows. While going into summer they also help slow down the rotation some to give the other paddocks more re-growth time. Secondly, we do see an increase in milk production while grazing the turnips. The cows are given one half of a turnip paddock for 12 hours, followed by one half of a grass paddock for the next 12 hours. Pasja turnips do not flavor the milk. This is a kind gesture upon whoever is milking the cows, as their manure will be looser while grazing the turnips. This gives us about 1 week worth of turnip grazing. We will easily see an increase of 500 lbs. milk/day while grazing the turnips. We can expect 3-4 grazings off of each lot for the year. Lastly, but maybe most importantly is the result they have on the new pasture seeding. The new pasture seeding does not come up very well the first year, as the turnips take over. However, the next year the new seeding is the best that we see on our farm, and produces better than when we plant a new pasture without the turnips. We have been told that this is because the turnips help aerate the soil. Whether that is the reason, or they somehow add nutrients that are valuable to the new seeding, all we know is that it works.

Some practices that did not work for us was mis-calibrating the seeder and planting the turnips at 8lbs/acre. Also, using the drill to plant the turnips instead of broadcasting them resulted in lower yields. Overall, we've been very pleased with the turnips and will continue to use them where appropriate on the farm.

Terri Hawbaker, her husband Rick, and four children Clyde, Eli, Ruby, and George own and operate Grazeway Dairy located outside of Pewamo, MI. Terri is a current member of the American Forage and Grassland Council's Board of Directors and past winner of the AFGC's prestigious Forage Spokesperson Contest. To learn more about the Hawbaker's and Grazeway Dairy visit http://www.mimilk.com/memrelations/archive/2011%20Folders/Jan%202011/OYDC%20Hawbaker%20Jan2011.pdf.

AFGC Annual Conference

January 6-9, 2013

Join the **American Forage and Grassland Council** for the very best in education, exhibits and networking. You will hear relevant presentations about forage production and utilization practices that will help you be more profitable. From the opening program to the closing session, you'll find activities and information designed to help you navigate today's forage and grassland environment. The Forage Spokesperson Competition, Forage Bowl, Emerging Scientist Competition, Photo Contest and more await you in Covington, KY, January 6-8, 2013. For more information call 800-944-2342 or visit www.afgc.org!

Conference Highlights

- **Sessions addressing our most pressing issues**
- **The best products and services displayed on the exhibit floor**
- **Networking opportunities designed to keep you connected with your peers**
- **One day registration fees to accommodate schedules**
- **Contests, awards, research displays and much more**

Room rates are $99 per night at the Cincinnati Marriott RiverCenter in Covington, KY

...AFGC National Forage Tour

Continued from Page 1

In years past, Greenfield bermudagrass was grown on the acreage to use nutrients from biosolids applied from the waste water treatment process. Bermudagrass can convert the nutrients into high quality hay which was harvested from the acreage. Changes in biosolids management brought an end to applications on the property. Unfortunately, that move increased the cost of bermudagrass hay production since nitrogen fertilizer would be required to continue high forage yield. Current producer-contractor Bobby Umberson acquired the forage management contract of the acreage and looked for something different. He became interested in University of Arkansas research that showed how to establish alfalfa into existing stands of bermudagrass. That information gave Umberson the opportunity to grow high quality, high value forage that could be sustained on the high soil nutrient levels resulting from years of biosolids application. Seay pointed out that after 5 years of alfalfa production, soil phosphorus levels have decreased by 800 lbs per acre which reduces risk of runoff into streams. Umberson discussed how he grows and markets top quality alfalfa forage as hay and wrapped haylage in large square bales. His quality tests have ranged up to a Relative Feed Value of 300 RFV. John Jennings, Arkansas Extension Forage Specialist, discussed the steps for planting alfalfa into bermudagrass and for maintaining productive stands. His work has shown that as long as the alfalfa remains productive it shades the bermudagrass making it uncompetitive. But enough bermudagrass survives to eventually fill back in as the alfalfa stand thins over time.

Managing for top quality bermudagrass became the theme for the afternoon as the group toured farms involved in the Benton County Quality Forage Program. Producers from Arkansas, primarily Benton County, have won the top places in the warm-season grass class at the AFGC national hay show for 12 consecutive years. The Quality Forage Group is very competitive, but members will readily tell others how to do a better job of growing top quality hay. If this had been school, tour attendees were taught classes Bermudagrass 101 through 401 as they went from the Larry Miser farm to the Dennis Malone farm. At the Larry Miser farm and the Dennis Malone farm, county agent Blair Griffin walked folks though two herbicide trials aimed at controlling early season weeds that detract from bermudagrass growth and quality. Robert Seay discussed differences among bermudagrass varieties and management to match each one. Dr. Nathan Slaton, U of A Professor of Soils, discussed fertility management of top yielding bermudagrass and how to maintain yield with poultry litter and commercial fertilizer application. Dr. Ron Morrow, retired NRCS Grassland Specialist, discussed grazing management for warm season grasses especially crabgrass.

The evening program included a delicious catfish dinner, a hay weight guessing competition, hay sampling demonstration, and AFGC national hay contest. Kevin Grooms, Director of Olsen's Agricultural Lab in McCook Nebraska talked to the group about the National Forage Testing Association's lab certification program and how it helps member labs maintain reliable and accurate forage test procedures. Jim Singleton, Quality Forage Group spokesperson and Arkansas Forage and Grassland Council board member, talked about the history of the program and how it has become so successful in both competition and education of its members.

Day two of the tour took the group to the Jeff Marley farm in the White River watershed near Elkins, AR. The University of Arkansas has been working with Marley to collect data from his poultry and beef operation regarding how recommended production practices impact water quality. Information from this "Discovery Farm" is being used by Dr. Andrew Sharpley and others at the U of A to formulate recommendations for the region. Later at the University of Arkansas Watershed and Research Education Center, Dr. Chuck West and Dr. Dirk Philipp discussed their research on the facility. West was instrumental in designing filter strip plantings of native grasses, trees, and shrubs along a riparian corridor that runs through the property. Water quality is measured along the stream length to assess the effect of the vegetation types. West is also conducting biofuel research on the impact of poultry litter application on nutrient removal by switchgrass and sorghum. Philipp is conducting research on the effect of legume N turnover on bermudagrass yield as well as work on Teff and glyphosate resistant alfalfa. Dr. Clarence Watson, Director of the Arkansas Experiment Station and Associate VP for Agricultural Research, gave a final welcome to the group at the Pauline Whitaker Livestock arena before tour attendees departed for home. The 2013 National Forage Tour will be held May 22-24, in Syria, Virginia.

John Jennings is a Professor in the Animal Science Department at Arkansas State University. His research and extension interests include grazing management, hay production, forage soil fertility, and legume management with special emphasis on designing and implementing year around grazing systems. To learn more about Dr. Jennings and his research and extension programs visit http:animalscience.uark.edu/905.php.

AFGC Calendar

August 1, 2012	**AFGC 2013 Call for Presentations Due**
September 15, 2012	**AFGC National Emerging Scientist Nominations Due**
October 1, 2012	**2013 Presenter Abstracts Due**
November 1, 2012	**AFGC National Forage Spokesperson Nominations Due and Youth Essay**
December 1, 2012	**AFGC National Photo Contest Entries Due**
December 9, 2012	**GLCI Conference**
January 6, 2013	**AFGC Board Meeting**
January 6-9, 2013	**AFGC Annual Conference in Covington, KY**
May 22-24, 2013	**AFGC National Tour hosted by the Virginia Forage and Grassland Council in Syria, VA at Graves Mountain Lodge**

2013 AFGC ANNUAL CONFERENCE AGENDA OUTLINE

January 6 – Sunday
3:00pm – 5:00pm - Registration
4:00pm – 5:30pm - President's Reception
5:30pm – 7:00pm - Opening Mixer in Exhibit Hall (Silent Auction , Photo Contest & Forage ID Contest)

January 7 – Monday
7:30am - 5:00pm - Registration
7:30am – 8:30am – Continental Breakfast in Exhibit Hall
9:00am – 11:45am– OPENING SESSION
12:00pm – 1:00pm – Lunch
1:00pm – 3:00pm – VOLUNTEER PAPER SESSIONS
3:00pm – 4:00pm – Break, Exhibits, Poster (Author's present), Silent Auction, and Forage ID Contest, Photo Contest
4:00pm – 5:30pm – YOUNG SCIENTIST COMPETITION
5:45pm – 6:45pm – FORAGE BOWL

January 8 – Tuesday
7:00am – 5:00pm - Registration
7:00am – 8:00am – Continental Breakfast in Exhibit Hall
7:15am – 8:00am - Business Meeting
8:00am – 9:30am – VOLUNTEER PAPER SESSIONS
9:30am – 10:30am – Break, Exhibits, Poster (Author's present), Silent Auction, and Forage ID Contest, Photo Contest
10:30am - 12:00pm – VOLUNTEER PAPER SESSIONS
12:00pm - 1:00pm – Awards Luncheon
1:00pm – 3:00pm – FORAGE SPOKESPERSON
3:00pm – 3:30pm – Break, Exhibits, Poster (Author's present), Forage ID Contest, Photo Contest
3:30pm – 5:00pm – VOLUNTEER PAPER SESSIONS
4:00pm - Exhibit Takedown
5:00pm – 6:15pm - Hot Topics Session
7:00pm - 8:30pm - AWARD'S BANQUET (Main AFGC *Awards with beverage service beginning at 6:30pm*)

January 9 – Wednesday
9:00am – 12:30pm– Forage Suitability Groups – The What, Why, How, When, and By Whom for Successful Development
(Additional registration fee applies)

MEDIA DISTORTIONS ABOUT TIFTON 85

By: Dennis Hancock, Forage Extension Specialist, The University of Georgia

You may have heard or seen news articles about a case of several calves that died of cyanide poisoning in Texas while grazing 'Tifton 85' bermudagrass. Unfortunately, some news outlets picked up on this story and added substantial distortions and false information. This brief article seeks to dispel these falsehoods and the distortions about Tifton 85.

Tifton 85 is a Hybrid, Not a GMO

Several news articles, most notably an article on CBS News' website (which has since been corrected), have asserted that Tifton 85 is a transgenic or, so-called, genetically modified organism (GMO). Tifton 85 is a hybrid and NOT a transgenic or GMO crop.

Tifton 85 is a cross between a bermudagrass [*Cynodon dactylon*, specifically cv. Tift 292 (an armyworm resistant plant introduction in the USDA-ARS collection)] and a closely related *Cynodon* species called stargrass [*Cynodon nlemfuensis*, specifically cv. Tifton 68 (highly digestible, but cold susceptible).

Plant hybridizations are commonly used in many crops (e.g., peppermint, grapefruits, tangelos, triticale, loganberries, etc.). This is not a new or extraordinary process. As with all hybrids and new cultivars, Tifton 85 was thoroughly evaluated prior to its release. Tifton 85 is a high yielding, highly digestible hybrid bermudagrass that also has a tremendous number of environmental benefits, as well (e.g., produces substantially more dry matter per unit of rainfall/ irrigation or unit of fertilizer, has a much deeper root system than other bermudagrasses, improves soil organic matter content, increases carbon sequestration, reduces the carbon footprint of pasture-based livestock production, reduces nitrate leaching through the soil into the groundwater, etc.).

Cyanogenic Compounds are Natural Plant Products

Some of the news articles have also claimed that Tifton 85 has had a random mutation that has caused it to produce cyanide gas. This is a misleading statement.

Some plants naturally produce compounds that are cyanogenic, or precursors to cyanide (sometimes called prussic acid). They are present in the plants (typically) as cyanogenic glycosides or glucosinolates, neither of which are inherently toxic in those forms. However, these compounds are readily broken down when the plant is consumed by an herbivore or if crushed. It is a natural defense mechanism for these plants. Notable examples of plants that produce cyanogenic compounds include common pasture and forage crops (e.g., forage sorghum, sudangrass, white clover, etc.) and pasture weeds (e.g., Johnsongrass, black cherry trees, etc.). Even some fruits, vegetables, and nuts (e.g., almonds, peaches, apples, apricots, cherries, lima beans, cassava, etc.) produce cyanogenic compounds in some of their plant tissues (usually seeds).

These cyanogenic compounds are not normally broken down in the intact plant because the glycosides and the enzymes that break them down are separated in different compartments. In members of the sorghum family, for example, the cyanogenic glycoside dhurrin is present in the epidermal cells at the surface of a leaf while the enzymes are located in the mesophyll cells in the middle of the leaf. However, when the plant is consumed, the cyanogenic glycosides and the enzymes that break them down then come into contact and the cyanide is released.

As previously mentioned, Tifton 85 is a hybrid of a bermudagrass and a stargrass. Some stargrass varieties have, in very rare cases, formed cyanogenic compounds. Even so, producers in Florida have grazed stargrass since 1972 without any incident. Stargrass has also been used in the tropics for much longer. Dairies in Puerto Rico, for example, frequently green chop stargrass and feed it to their dairy cattle. If the risk of cyanide poisoning was a significant problem, green chopping the forage and feeding it to dairy cattle would be a situation that would pose the greatest risk. Even so, forage specialists and researchers at the Univ. of Puerto Rico had never dealt with a single instance of cyanide poisoning in Puerto Rico related to stargrass.

Specialists at Texas A&M University have confirmed reports of cyanogenic compounds being present in Tifton 85. However, it appears that a confluence of events particular to that instance may have led to this finding. The investigation is still in a preliminary stage and no conclusions should be reached until it has been completed. Further details will emerge about this case as the investigation continues. Until then, avoid over-reacting to this report of cyanide poisoning and rushing to judgment about Tifton 85.

Dennis Hancock is a Assistant Professor and Forage Specialist at the University of Georgia. His research and extension programs focus on improving forage production and utilization in the southeastern United States by emphasizing the integrated use of proven methods and technologies to enhance yields, stand persistence, and input use efficiency, decrease the threat to our environment, and increase profitability. To learn more about Dr. Hancock and his research and extension programs visit http://www.cropsoil.uga.edu/personnel/faculty/hancock.html.

American Forage and

Grassland Council

Non-Profit Org.

US POSTAGE

PAID

The Forage Leader is published quarterly by the American Forage and Grassland Council. For editorial or sponsorship information, please contact AFGC via mail, phone, fax or e-mail. AFGC, PO Box 867, Berea, KY 40403. Telephone 800.944.2342. Fax 859.623.8694. E-mail info@afgc.org.

WEBSITE

http://www.afgc.org