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Forage Team Newsletter

UNIVERSITY OF GEORGIA EXTENSION

GRASS

In This Issue

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How long can you go?

By Katie Burch
Jenkins County

Are you looking to improve your grazing management system? The first step is to develop a grazing management plan! To better manage your grazing, you have to have goals. Our ultimate goals are to improve our efficiency, reduce pasture waste, conserve surplus forage, improve animal performance, and improve forage quality at its time of use.

How do we reach these goals? By managing our pasture and other inputs, we can effectively produce desired animal response and performance. The first rule of grazing management is monitoring pastures for proper minimum grazing height. We have to always think about what we see and what we don't see. What we do to the top, happens to the bottom.

cont'd p.2

Continued from page 1

When the forage is removed (grazed or harvested), the roots die back because initial regrowth comes from root carbohydrates. If we come back too early to graze or cut, those roots die back even more. Continuously overgrazing will lead to loss of that plant in the field. However, with managed grazing, we remove that animal from the field to provide that adequate growth and a stronger root system. Now we have developed a system where our forages will stick around longer. The minimum grazing height establishes the point at which livestock should be rotated off of a pasture. Proper height management and rest equals the key to grazing success.

Forages are often inefficiently utilized when pastures are continuously stocked. Many times, grazing animals will only utilize 30-40% of the forage in a pasture with the rest refused or wasted. There are many reasons for this waste. The grazing herd is typically lazy and will heavily graze areas close to shade or water and ignore more distant areas. Animals also prefer young, tender, and leafy portions of forages and refuse stemmy mature material when allowed a choice. When allowed to choose, the grazing animal frequently returns to grazed areas to utilize fresh regrowth and they refuse large amounts of previously un-grazed forage because it is too "tough".

We know that the more vegetative a plant is, the higher the quality. Many plants respond well to short grazing periods followed by long periods of rest. Rest periods allow plants to produce new leaves which collect energy, transform it into sugars, and store these sugars so that more leaves can be produced following the next grazing cycle. Not only is regrowth potential improved, but root depth and stand life are improved as well. As the season changes, so do our grazing intervals. Be mindful of warm and cool season grasses, because forage species and time of year affect forage growth and grazing times. Remember, grass grows grass!

Grazing sticks look like a simple measuring device, but are really a measurement system. They include a ruler for measurement, grazing guidelines, and conversion formulas for making immediate pasture management decisions. Grazing sticks are handy tools that simplify measuring pasture yield, allocating pasture to animals, and tracking productivity changes.

According to recommendations listed on the grazing stick, the grazing height is 3” for tall fescue, and 2” for bermudagrass. Other minimum grazing heights are: bahiagrass 2”, ryegrass and small grains 3”. Keep in mind these are minimum heights. Grazing can be stopped at higher residuals which can lead to even quicker recovery. As a rule of thumb, a 2-4 day rotation with a 24-30 day rest period, when feasible, works best for most beef operations.

In addition to good rotational practices, the key to good grazing management is matching the stock rate to the grass growth rate. To maintain forage growth within the desired limits, vary the stocking rate by adding or removing animals from a pasture or by reducing the area available for grazing.

For questions on various forage species management systems, rotational practices, stocking rates, or if you are just getting starting or looking to improve your current system, contact your local county extension agent.

Placing value on harvested forages

By Jeremy Kichler
Colquitt County

Every once in a while, I will get a comment or question about how to charge for hay. Growers need to know their cost of production to calculate the profitability of their operation. A production budget is a way to organize revenue, expenses and then calculate profit for the commodity that is being produced. If a grower needs hay market information then a great resource is the USDA Agricultural Marketing Service. Hay prices can be very locally driven based on supply and demand, and forage quality.

Growers need to know their cost of production to calculate the profitability of their operation.

When growers are penciling out a budget, the production expenses are classed as fixed or variable costs. In the variable cost portion of the budget, the inputs associated with the production of the crop are included. Feed, fertilizer, seed, crop protection, and fuel are considered variable costs. A producer has control over these expenses in the short run, and they will change as total production changes. Currently, inputs such as fertilizer and fuel have increased, resulting in a lower probability of a profit. According to Amanda Smith, UGA Ag Economist, various inputs have increased compared to a year ago. For example, nitrogen, phosphorus, and potassium have increased 45%, 53%, and 18%, respectively. Farm diesel is averaging around $2.50 per gallon at the moment; last year at this time, it was under $2 per gallon.

One resource that county agents and growers have access to is UGA production budgets and which can be at https://agecon.uga.edu/extension/budgets.html. Remember that the most important column in production budgets is the one named "Your Farm." Producers utilize different production practices and are in various financial situations.

Continued from page 3

The illustration below shows the variable costs for irrigated large round ball bermudagrass production. In this example, the prices of N = $0.60, P = 0.63, and K = 0.33 per unit are used. The current fuel prices are around $2.50 per gallon. The fertilizer recommendations are based on UGA Soil Sample recommendations. This example is based on 20 acres of production with an 8-ton yield. Land rent is not included in this budget. The variable cost for this example is $90.00 per ton or $749 per acre.

NUMBER OF ACRES 20.00

	BEST	OPT.	MEDIAN	PESS.	WORST
YIELD (TONS)	12.00	10.00	8.00	7.00	6.00
SELLING PRICE ($/TON)	$150.00	$140.00	$130.00	$105.00	$80.00

ITEM	UNITS	UNITS/ACRE	TOTAL UNITS	COST ($/UNIT)	TOTAL COST	COST $/ACRE	COST $/TON
VARIABLE COSTS:							
LIME	TON	0.50	10.00	$42.00	$420.00	$21.00	$2.52
FERTILIZER:							
NITROGEN	LB.	350.00	7,000.00	$0.60	$4,200.00	$210.00	$25.21
PHOSPHATE	LB.	60.00	1,200.00	$0.63	$756.00	$37.80	$4.54
POTASH	LB.	180.00	3,600.00	$0.33	$1,188.00	$59.40	$7.13
CROP PROTECTION							
HERBICIDE	APPS	1.00	20.00	$11.00	$220.00	$11.00	$1.32
ARMYWORM CONTROL	APPS	2.00	40.00	$14.75	$590.00	$29.50	$3.54
MACHINERY:							
FUEL	GAL.	22.11	442.20	$2.50	$1,105.50	$55.28	$6.64
REPAIRS & MAINT.	ACRE	1.00	20.00	$29.31	$586.20	$29.31	$3.52
TWINE	BALE	16.00	320.00	$2.00	$640.00	$32.00	$3.84
WRAPPING	BALE	16.00	320.00	$7.00	$2,240.00	$112.00	$13.45
IRRIGATION	INCHES	6.00	120.00	$13.50	$1,620.00	$81.00	$9.72
LAND RENTAL	ACRE	1.00	20.00	$0.00	$0.00	$0.00	$0.00
LABOR	HRS.	3.97	79.40	$12.50	$992.50	$49.63	$5.96
OTHER	$	0.00	0.00	$0.00	$0.00	$0.00	$0.00
INTEREST ON OP. CAP.	$		$14,558.20	6.00%	$436.75	$21.84	$2.62
TOTAL VARIABLE COST					**$14,994.95**	$749.75	$90.01

Fixed costs, on the other hand, include the costs of owning a fixed input or resource. These fixed costs incur even if the input is not used. Fixed costs include depreciation, insurance repairs, property taxes, and interest. For perennial forages, such as bermudagrass the establishment costs can be spread over numerous years and are included in the fixed costs.

One common challenge for hay production is the equipment requirements. Hay producers need balers, rakes, tedders and other equipment which can be very expensive. Your county agent can assist producers with calculating equipment costs. Factors such as equipment age, capacity, interest rates, repair costs and other things can influence the fixed costs of the operation. Custom harvest might be an option for producers who cannot afford equipment.

If you have any questions about hay economics please contact your local county Extension agent.

Grazing Summer Annuals

By Charlotte Meeks
Houston County

While bermudagrass and bahiagrass are great warm season perennials, warm season annual grasses work well in a forage system to offer high quality forage throughout the summer months. There are several warm season annuals on the market with sorghum x sudangrass and pearl millet being the most popular. In this article we will discuss grazing management for these species.

Warm season grasses can be planted in the spring as soon as soil temperatures (2 in depth) reach 65°F through July. Seed can be broadcast or drilled, ideally into well drained, fertile soils. Grazing is our most effective way to harvest warm season annuals, since they can be notorious for being difficult to dry down for making hay. Because livestock are selective in their grazing habitats, they tend to feed on the young, tender growth. Because of this, grazing should commence at the pre-boot stage. Target heights to initiate grazing varies based on species.

Table 1. The approximate heights at which common summer annuals reach a maturity stage suitable for grazing or cutting for hay/haylage and the stubble height that should be left for regrowth.

	Grazing Management		Hay/Haylage Management		
Species	Height	Maturity Stage	Height	Maturity Stage	Stubble Height*
	(inches)		(inches)		(inches)
Pearl Millet	18-22	Pre-boot	30-40	Early Head	8-10
Sorghum x sudan	22-30	Pre-boot	30-40	Early Head	6-8
Sudangrass	24-28	Pre-boot	30-40	Early Head	6-8

* Stubble grazed or cut below these height ranges may result in poor or no regrowth.

While continuous grazing may be the easiest way to manage livestock, it is not the best option when grazing warm season annual grasses. It is best to implement rational grazing, only turning out enough animals to effectively graze the paddock or strip for a few days. Rational grazing will allow for a rest period for regrowth, reduce waste, and prolong the stand. A down side to warm season annual grasses is the potential for high nitrate levels and prussic acid toxicity. Forages should be tested for nitrates before grazing if plant stress (such as drought or frost) has been induced, especially following N applications.

Continued from page 5

So let's look at our most popular species:

Pearl Millet is a deep-rooted, bunch grass that is drought tolerant. Under good management, pearl millet can yield 4-6 tons per acre. Grazing can begin at 20-24 inches, but animals need to be removed at 4-6 inches to prevent plant injury and allow for regrowth. High nitrates can be an issue during drought stress especially after fertilization. Concentrations of nitrates are often highest in the stem and leaves closest to the ground. Consult with your local county extension agent about nitrate testing. A main advantage that pearl millet has over sorghum family is that it does not produce prussic acid.

Sorghum x sudangrass hybrids have the highest yield potential of warm season annual grasses if adequate rainfall or irrigation is received. Brown midrib (BMR) varieties are preferred since they have less lignin and higher digestibility. Grazing can begin at 24 inches, with animal removal at 8-12 inches. Unlike pearl millet, sorghum x sudangrass cannot be grazed as severely since the regrowth point is at the node instead of the basal bud. Nitrate toxicity and prussic acid toxicity can be an issue. Prussic acid is volatile and will dissipate in a few days. Cattle should not be allow to graze for 4-5 days after a frost. For the most part nitrate levels can be managed by limiting grazing, but a forage analysis will need to be performed to determine the level.

As stated earlier, nitrate levels can be an issue especially after fertilization, but fertilization is a must for warm season annual grasses to reach their yield potential. Fertilization and lime application should be made following soil test recommendations. Soil pH for warm season annual grasses should range from a 6.0 or higher. For grazing apply 40-60 lbs of nitrogen per acre for establishment, and 50-60 lbs per acre each month during the growing season. To help reduce the possibility of nitrate toxicity split your application of nitrogen during the growing season. When warm season annuals are damaged by drought stress, they should not receive a nitrogen application.

Pest management is important to maintain your yield and quality during the growing season. Pearl millet and members of the sorghum family are fast growing and competitive with weeds. Chinch bugs and white sugarcane aphid are common pest in warm season annual grasses. Scout your fields and apply an insecticide when economic thresholds are reached. Your county agent can help you with recommendations.

While we discussed just a few highlighted warm season annual grasses, there are other varieties and options that may fit your forage system better. Please contact your local county extension agent for more information.

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