



### Winter Pastures and Stocking Rates

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Football to the SEC fans is what ryegrass is to cattle producers in the south. There is nothing better when it comes to animal performance. Annual ryegrass decreases the dependence on hay and silage and decrease supplementation expenses by providing sufficient forage production during the winter months. Annual ryegrass can provide gains of over two pounds per day when grazing lightweight calves (400-600 lbs). The grazing period can extend from November (South MS) to May. This can be achieved with very low feed cost per pound of gain.

It is important to note that the expected weight gains in an annual ryegrass pasture can vary throughout the season based on forage available, dry matter intake, nutritive value (Fig. 1), and pasture composition (grass vs. grass/legume mixture). Annual ryegrass can have excess protein and sufficient energy to produce average daily gains up to two pounds. Energy can become a limiting nutrient for higher gains, especially in small calves due to limited intake. In situations where energy can be come limiting, several studies has indicated energy supplementation with an ionophore can boost gains when cattle has been properly implanted and dewormed.

### 80 Forage Nutritive Value (%) 70 60 50 40 30 20 10 0 Nov Dec Jan Feb Mar Apr May

CP -NDF -ADF -

# **Figure 1.** Nutritive value of cool-season annual forages over a ten-year period at two locations in Arkansas. CP = Crude Protein; NDF = Neutral Detergent Fiber; ADF = Acid Detergent Fiber; DMD = Dry Matter Digestibility. Source: Beck et al., 2013.

### Setting Stocking Rates Based on Forage

**Yields** – Annual ryegrass production follows a biphasic production curve in whish productivity during the fall and winter (late November- early

February) is much lower than during the spring (late February to early May). Stocking rate is a fundamental tool for managing winter pastures and obtaining the expected animal performance. This means that stocking rates in the fall and winter should be about one to two acres per calf (600 lbs) and then two to three calves per acre in the spring. Some of the studies conducted at Oklahoma state in wheat pastures indicated that steer's and dry matter intake and performance can be limited with pastures are less than 1,100 pounds of dry matter per acre. That means that pastures should not be stocked and grazed until forage production has reached this threshold level.

In order to determine the forage allowance (pounds of forage dry matter per pound of calf body weight) that will result in optimal stocking rates for fall and winter grazing, researchers at University of Arkansas have utilized steer performance data on wheat from a ten-year period. They have indicated that maximum average daily gain (ADG) of 2.7 pounds per day could be expected with forage allowance of 5.0 pounds of forage dry matter per pound of initial calf body weight. For an ADG of 2.0 pounds per day, it should be expected an initial forage allowance of 2.4 pounds of forage dry matter per pound of initial calf body weight. This indicates that to have an ADG of 2.0 lbs per day, a 500-lb calf will require approximately 1.2 acres on a pasture with forage dry matter production of 1,000 pounds.

A grazing stick can be used by cattle producers to help determine proper stocking rates based on forage production. It is recommended to take approximately 20 random height measurements and get an average height. Annual ryegrass can produce in average 250 lbs of dry matter forage per inch of growth (values range from 75 to 400 lbs and can be impacted by fertilization). That means that if the ryegrass is 8 inches tall, there is 2000 lbs of dry matter forage. Let's not forget

mend to graze to three inches stubble height, which means that only 5 inches of growth or 1,250 lbs of dry matter forage is available for grazing. By using this approach pasture can be stock lighter in the fall and much heavier in the spring. Higher stocking rates in the spring will prevent the formation of a dense canopy and the annual ryegrass heading out which can heavily

impact nutritive value.

that we usually recomseason at Starkville, MS.

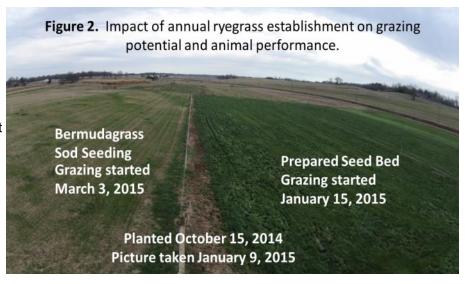
	Establishment	Annual Ryegrass	Clover	Nitrogen (lb/ac)	Calendar days of grazing	Grazing head days	Total gain per acre (lb of beef/ac)	ADG (lb/ac)	Total pasture cost (\$/ac) <sup>1</sup>	of gain (\$/lb)
1		Marshall	Berseem	25	98	98	383.58	3.91	109.85	0.29
	Prepared Seed Bed	/ <del></del>	Berseem	0						
		Marshall	-	100	105	105	423.88	4.04	125.20	0.30
		Lonestar	Berseem	25	93	117	650.75	5.56	110.45	0.17
	Prepared Seed Bed		Berseem	0	68	64	222.39	3.47	95.20	0.43
		Lonestar	-	100	93	147	689.55	4.69	125.95	0.18
		•		-		-				
		Lonestar	Berseem	25	34	34	158.21	4.65	129.20	0.82
	Bermudagrass Sod		Berseem	0	34	34	102.98	3.03	111.20	1.08
		Lonestar	-	100	34	79	216.42	2.74	128.70	0.59

<sup>1</sup>Pasture include seed cost and fertilizer cost. Labor, equipment and land rent were not included in the analysis.

Impact of Winter Grazing Systems – It is also important to note that animal performance can be influenced by the type of pasture composition, fertilization and establishment method. A grazing demonstration at Mississippi State during the 2014-15 winter grazing season provided information about the impact of various grazing systems in forage production, grazing days and animal performance (Table 1). The study was set to compare three razing systems: (1) ryegrass + 50 lbs N/ac, (2) rygerasss/bermseem clover mix + 25 lb N/ac, and (3) berseem clover alone. These three treatments were established in a conventional tilled seed bed and in a bermudagrass sod that received a Paraquat burned down. All treatments were established and fertilized at the same time. Annual ryegrass treatment with nitrogen fertilization provid-

ed more grazing days and higher gain per acre compared to other treatments. The number of grazing days and gain per acre were largely impacted by planting into the bermudagrass sod (Fig. 2) with lower productivity. This is data from only one year, but it is an excellent example of planting methods and forage species can have large impacts on forage growth, subsequent animal grazing and the cost of gain.

**Summary –** The most common reason for efficient winter grazing in Mississippi is a lack of dry matter quantity, not forage quality. Annual ryegrass pastures are often stocked for season-long grazing. These season-long stocking rates may be too high during the mid-winter months of November



through February, when cooler temperatures restrict plant growth. Conversely, stocking rates may be too low during March and April when rapid plant growth is taking place. The higher season-long stocking rates may reduce the average daily gain on a per animal basis while total pounds of beef produced per acre may be optimized.

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January 10-12, 2016 - American Forage and Grassland Annual Conference, Bouton Rouge, LA

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