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**Winter Grazing Costs & Considerations
Fall 2005**

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As fall approaches, many cattlemen are gearing up for winter and the additional feeding that occurs then. Although there are many fall and winter feeding scenarios, most producers utilize some type of winter annual (wheat, rye, oats, ryegrass, etc.) in their winter feeding program. However, the high prices for fuel and fertilizer have many producers reexamining their winter feeding program. To help producers in examining their options, the following report was prepared.

Two winter annual systems are compared using both conventional and no-till practices. Factors affecting the profitability of these scenarios as well as a discussion of grazing cotton stalks are presented in this report.

Budgets presented and analyzed are:

1. Wheat and Rye conventional tillage
2. Wheat and Rye no-till
3. Overseeded Ryegrass conventional tillage
4. Overseeded Ryegrass no-till

The budgets were developed using the Mississippi State Budget Generator (MSBG) Version 6.0. Unless otherwise specified, all budgets utilize a 100 hp tractor. Conventional tillage budgets include disking twice with a 14' disk harrow, spreading the seed with a tractor mounted spin-spreader, and incorporating the seed with a 14' disk harrow and drag. No-till budgets utilize a 12' no-till grain drill towed by a 100 hp tractor. Fertilizer cost estimates assume that the fertilizer is custom applied with the spreading charge included.

A summary of the budgets and their expected costs are given below in [Table 1](#). For detailed budget information including field operations and their associated costs, interested readers can download PDF versions at <http://www.ces.uga.edu/Agriculture/agecon/printedbudgets.htm>.

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Table 1
Summary of Various Southeastern Forage Programs
Fall 2005

	Wheat/Rye Conventional	Wheat/Rye No-till	Overseeded Ryegrass Conventional	Overseeded Ryegrass No-till
Seed	\$ 28.13	\$ 28.13	\$ 6.75	\$ 6.75
Fertilizer	\$ 116.57	\$ 116.57	\$ 116.57	\$ 116.57
Fuel	\$ 5.16	\$ 2.37	\$ 4.48	\$ 2.37
Repairs	\$ 3.50	\$ 3.83	\$ 2.90	\$ 3.83
Labor	\$ 3.81	\$ 1.76	\$ 3.31	\$ 1.76
Interest	\$ 0.61	\$ 0.60	\$ 0.44	\$ 0.43
Total	\$ 157.78	\$ 153.26	\$ 134.45	\$ 131.71

As is usually the case, fertilizer comprises the largest percentage of the budget ranging from 74 percent to 88 percent of variable expenses. This analysis assumes “normal” but not overly favorable weather conditions. If producers are forced to apply additional amounts of fertilizer due to excessive rainfall, cost per acre could approach or exceed \$200 for winter annuals. By the same token, producers who can utilize poultry litter or other fertilizer sources can greatly reduce their cost of winter grazing.

High fuel prices are also a major concern for stockmen this year. As such, many producers may be considering no-till drilling winter annuals. In the scenario analyzed, no-till winter annuals are \$2.00-\$2.50 less per acre because of fuel savings. However, cattlemen should also take into consideration the later emergence of no-till planted winter annuals in some situations and plan accordingly.

Even though the cost per acre is an important consideration, it is more vital to compare the cost on a per unit of production basis. For instance, winter annuals are often used for either stocker calves or lactating cows, thus the cost per unit would be \$/Cwt. for stockers and \$/head for cows.

A comparison of stocker and mature cow costs are shown below in [Table 2](#). The stocking rates and performances are based on grazing only. So, if one wanted to increase stocking rates and maintain the same level of production, he would need some level of supplemental feeding. Readers should keep in mind that the cost per day for cows or \$/Cwt. for stockers include only the cost of the grass. They do not include vaccinations, mineral, death loss etc.

Table 2
Comparison of Production Unit Costs from Various Winter Annual Systems

	Wheat/Rye Conventional	Wheat/Rye No-till	Overseeded Ryegrass Conventional	Overseeded Ryegrass No-till
Costs per acre	\$ 157.78	\$ 153.26	\$ 134.45	\$ 131.71
Estimated grazing days	150	150	150	150
\$/Grazing Day	\$ 1.05	\$ 1.02	\$ 0.90	\$ 0.88
Cow-calf pairs/Acre	0.50	0.50	0.50	0.50
\$/Cow/Day	\$ 2.10	\$ 2.04	\$ 1.79	\$ 1.76
Stockers/Acre	1.00	1.00	1.00	1.00
Estimated ADG/Stocker	2.00	2.00	2.00	2.00
\$/Cwt. Gain for Stockers	\$ 52.59	\$ 51.09	\$ 44.82	\$ 43.90

Fertilizer costs, especially nitrogen costs can vary widely across the state. To show the difference in costs of nitrogen based on ammonium nitrate prices, Table 3 was prepared. The costs in this table are based on applying 125 pounds of nitrogen in addition to the nitrogen that is provided by DAP or some other form of phosphorous applied at planting.

Table 3
Cost of Nitrogen as Ammonium Nitrate at Various Price Levels

Cost of Ammonium Nitrate (\$/ton)	Nitrogen Cost (\$/pound of actual N)	Nitrogen Cost (\$/acre) 125 pounds/acre	Nitrogen Cost \$/500 pound stocker	Nitrogen Cost (\$/1,100 pound cow)
\$ 300.00	\$ 0.44	\$ 55.15	\$ 45.96	\$ 101.10
\$ 325.00	\$ 0.48	\$ 59.74	\$ 49.79	\$ 131.43
\$ 350.00	\$ 0.51	\$ 64.34	\$ 53.62	\$ 141.54
\$ 400.00	\$ 0.59	\$ 73.53	\$ 61.27	\$ 161.76
\$ 450.00	\$ 0.66	\$ 82.72	\$ 68.93	\$ 181.99

It is easy to see that depending on fertilizer prices, winter grazing could become expensive very quickly. As a result of this situation, many producers will be looking for ways to reduce their winter feeding costs. One alternative that many producers should consider is simply to calculate the expected costs of winter grazing this year and see if they could feed animals cheaper than they can graze them.

To illustrate this point, an example was prepared using the numbers from Table 2 with an assumed no-till ryegrass cost of \$134.45 per acre. This works out to \$1.79 per cow per day assuming no other feeding costs. If the producer can add some supplemental grain or hay and increase his stocking rate he could reduce his winter feeding costs considerably. To make a valid economic comparison, producers should calculate the costs for all of the feeding alternatives and

divide them by the number of days the cow will be in this scenario. For example, if a producer wanted to increase his stocking rate on overseeded ryegrass (\$134.75/acre) to two cows per acre and supplement them with 4 pounds of grain (4.5 cents per pound) and 20 pounds of hay (\$75 per ton or 3.8 cents per pound) for 100 days during the 150 days that he would have the ryegrass, his cost per day would be \$1.08 per day.

The math in this example would work like this:

Grazing cost = \$134.45

Grain = \$.045 × 4 pounds × 100 days = \$18 per cow or \$36 for two cows

Hay = \$.038 × 20 pounds × 100 days = \$76 per cow or \$152 for two cows

$$\frac{\text{Cost of Grazing one acre} + \text{total feeding cost per cow} \times \text{number of cows}}{\text{number of grazing days} \times \text{number of cows}}$$

$$\frac{\$134.75 + ((\$18 + \$76) \times 2)}{150 \times 2} = \frac{\$134.75 + \$188}{300} = \frac{322.75}{300} = \$1.08 \text{ per cow per day}$$

NOTE Producers are highly encouraged to use their own numbers for their situations.

Finally, and perhaps most importantly, cattlemen should be aware of the growth patterns and other plant characteristics of the winter annuals under consideration. These are addressed in the following section written by Dr. John Andrae, UGA Extension Forage Specialist.

Selection of Winter Annuals

Several cool season annual grass species are available for fall, winter and spring forage production in Georgia. Of these species, rye and annual ryegrass are the most widely planted; but wheat and oats are also relatively common. Each of these species differs in forage production distribution, disease tolerance, forage quality, and seeding rate (Table 4). For clarity, each species' attributes and detriments will be discussed individually. Recommended varieties for forage and grain production are provided annually by the UGA Small Grains Extension Team. These recommendations are based upon replicated yield trials and are available in the annual Small Grains Variety Trial bulletin at your local county Extension office or online at <http://www.peachnet.griffin.edu/swvt>.

Rye is probably the most popular small grain for winter annual pastures in Georgia. It is the earliest maturing and most cold hardy small grain species. These traits make clean-tilled rye the most dependable winter annual grass for fall and early winter forage production. Seedlings are also more drought and heat tolerant than wheat or oats. Rye generally matures and is ready to plow under by mid to late April in the Coastal Plain. This early maturity makes it most suitable when it is to be followed with a row crop in spring. Rye has been severely affected in recent years by *Helminthosporium sativum*, which damages or kills seedling plants. This disease is more prevalent in years with warm, wet fall weather. Oats and wheat are not as severely damaged by this disease, so establishing mixtures of winter annual species can be a useful management tool to minimize risk and decrease the impact of this disease.

Wheat is another popular small grain for winter forage production. Seed can be cheaper than rye, but this varies from year to year. Wheat is also a cold-hardy species and is later maturing than rye. This later maturity provides about three weeks extra spring grazing when compared to rye; however, wheat produces less fall forage than either rye or oats. Peanut and cotton fields can be planted after wheat without interfering with spring planting.

Oats are also an option for winter grazing. Oats are a highly palatable forage, but are the least cold tolerant of the winter annuals. Stands can be thinned or lost in severe winters which limits the usefulness of this forage crop in North Georgia. Oats are similar to wheat in maturity. Barley yellow dwarf is a viral disease spread by insects in the fall months. Oats are particularly susceptible to this disease and growth can be severely stunted in some years. The early planting of small grains for grazing increase risks that susceptible varieties will become infected with barley yellow dwarf.

Annual ryegrass is the latest maturing of the winter annual grasses and can be grazed until early June in some areas of the state when adequate moisture is available. Ryegrass may produce a small amount of forage in late fall when planted on clean-tilled land, but this forage production is highly dependent on rainfall and temperature. Ryegrass can also be damaged in severely cold weather and may be susceptible to rust; however, varieties with improved cold hardiness and disease resistance are available. Ryegrass will typically produce higher quality hay than wheat, oats or rye, but can be difficult to cure in wet spring months.

Table 4. Characteristics of various winter annual grass species. P= Poor, F=Fair, G=Good and E=Excellent. *Individual species characteristics are for clean tilled scenarios while overseeded category is to provide information typical of multiple species interseeded into bermudagrass sod.

			Pasture Type*		
	Rye	Wheat	Oats	Annual Ryegrass	Overseeded
Fall Production	G+	F-G	F-G	P	P
Winter Production	G	G	F	F	F-G
Spring Production	F	G	G	G	E
Late Spring Production	P	P	P	E	G-E
Winter Hardiness	E	F	P	F-G	G
Disease Tolerance	G	F	F	E	E
Grazing Quality	E	E	E	E	E
Hay Quality	P	G	G+	E	P-G

Grazing Cotton Stalks

Another alternative, especially for producers in row-crop areas is to utilize crop residue. With over 1.2 million acres of cotton, one of the most readily available crops to graze is cotton residue. The following section taken from a forthcoming Extension Publication “**Utilization Of Cotton By-Products In Beef Cattle Diets**” by Dr. Johnny Rossi, Extension Beef Specialist, addresses grazing cotton residue and some of the things producers should consider

The utilization of crop residues to provide winter feed for dry pregnant cows can greatly reduce feed costs. Substantial amounts of potential feed residue remain on the cotton plant after harvest. This includes cotton lint, cottonseed, leaves, and burrs. Cotton producers in the southeast primarily harvest cotton with spindle type pickers. These types of pickers leave much more cotton lint, leaves and bolls than stripper type pickers. Thus, there is a significant underutilized source of available winter feed for cattle with low nutrient requirements.

Dry pregnant cows can be maintained on this residue and achieve equal performance as cows fed hay. Research has been conducted in Georgia to determine the performance and feed costs of wintering cows on cotton stalks. Cows were allowed to graze cotton stalks and performance and feed costs compared to cows fed round baled coastal bermudagrass hay. Performance and body condition score changes are shown in [Table 5](#). One acre of cotton stalk residue provided feed for one cow for 44 days. Total weight gain was 48 pounds for the cows fed hay and 15 pounds for cows grazing cotton stalks. Because both groups of cows were in good condition, little weight gain was desired. Likewise body condition was essentially unchanged during the trial for each group. Producers can expect similar performance when feeding mature gestating cows with hay that is at least 8% crude protein and 50% TDN or by grazing cotton stalk residue. If body condition of cows is less than 5, supplemental feed will be needed to increase body condition score.

Cows should be removed when no cotton lint and all leaves are eaten, cows become restless, or cows are losing body condition. Cows will eat little if any of the actual stalk. The residue eaten by the cows is the leaves, lint, and seed of the cotton residue.

Determining available residue

The amount of cotton stalk residue available for grazing was approximately 4,487 pounds per acre ([Table 6](#)). Cows consumed 1,614 pounds of the residue, which resulted in a utilization rate of 36%. Therefore, producers can expect cattle to consume about one-third of the available cotton stalk residue. Available residue for can easily be estimated to plan a winter feeding program. The amount of residue available will vary greatly among fields of cotton, but some estimates of grazing days available can be made.

For example, to determine the amount of residue per acre in a field with 36 inch rows you can do the following.

- 1) Cut each stalk in a row at no more than 1 inch in height for a distance of nine feet.
- 2) Weigh the amount of cotton stalk residue collected.
- 3) Calculate the amount of square feet that was harvested. Each section cut was 3 feet wide by 9 feet long. Therefore, the total area harvested per sample would be $3 \times 9 = 27$ square feet.

- 4) Calculate the amount of residue per square foot. For example, use three pounds of residue for the average weight of the 27 square foot area. In 27 square feet there are 3 pounds of residue or 0.11 pounds per square foot (3 divided by 27 = 0.11).
- 5) To determine the amount of residue per acre you must multiply the number of square feet in an acre by the pounds of residue per square foot ($43,560 \text{ ft}^2$ per acre \times 0.11 = 4,792 pounds of residue per acre).
- 6) Determine total feed residue available per acre for grazing. With a utilization rate of 33%, the expected residue available per cow is 1581 pounds ($4,792 \text{ lb} \times 0.33 = 1581 \text{ lbs}$).
- 7) Determine number of days one acre will supply grazing for one cow. Assume a cow will utilize 2.7% of her body weight per day in available cotton stalk residue. A 1200 pound cow would utilize 32.4 pounds per day ($1200 \times .027 = 32.4 \text{ lbs}$). Next divide the total pounds of available residue by 32.4 to determine number of days one acre of residue would supply feed for the 1200 pound cow (1581 divided by $32.4 = 48.8$ days).

The costs of grazing cotton stalk residue are fencing, water, and a mineral supplement. The rule of thumb is one acre will maintain a cow for 30 days. In this study, one acre maintained a cow for 44 days. Grazing days will vary greatly from field to field and year to year. As mentioned above, cows should be removed when no cotton lint or leaves are available for grazing. Some producers have had success in providing free-choice hay while cows are grazing cotton stalk residue and using consumption of hay as a guide to removing cows from the cotton stalk residue. Cattle will consume little hay if sufficient cotton stalk residue is available.

There are some potential problems that can occur when grazing cotton stalk residue. This study was done with dry pregnant cows and results should not be applied to lactating cows. Lactating cow will likely need supplemental energy and/or protein if grazed on cotton stalk residue. Bulls may have reduced fertility because of the gossypol toxicity. To be safe, do not allow bulls to graze cotton fields.

Table 5
Effects Of Grazing Cotton Stalk Residue On Intake Performance And Condition Score Of Dry Pregnant Cows

Item	Hay	Cotton Stalk Residue
Initial weight, lb	1359	1359
Final weight, lb	1407	1374
Weight change, lb	+48	+15
Initial body condition score ^a	5.5	5.6
Final body condition score	5.7	5.5
Body Condition score change	+0.2	-0.1
Hay intake, lb/day	21.2	-----
Cotton stalk residue intake, lb/d	-----	36.6
Hay savings, \$/day ^b	0.90	-----

^aBody condition score of 1 = thin and 9 = fat.

^bHay valued at \$70 per ton.

Table 6
Cotton Stalk Residue Available For Grazing And Grazing Day Per Acre

Item	Pounds/acre
Initial cotton stalk residue	4487
Final cotton stalk residue	2873
Cotton stalk residue disappearance	1614
Grazing days per acre	44

Conclusions and Summary

Winter annuals can be a key component of a winter feeding program. They can also be very expensive. The cost of fertilizer and fuel this fall will place winter annual cost in the \$135-\$175 per acre range. Producers should keep a close eye on the cost of fertilizer as well as evaluating ways to reduce their dependence on store feed.

Additional Resources

UGA Beef Team Webpage www.ugabeef.edu

UGA Forage Team Webpage <http://commodities.caes.uga.edu/fieldcrops/forages/>

Preconditioning and Receiving Calves <http://pubs.caes.uga.edu/caespubs/pubcd/B896.htm>

Statewide Variety Trials www.griffin.uga.edu/swvt/ Click on forage crops