

2-1-1968

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Recommended Citation

Brock, William A.; Kilby, W. W.; and Blount, Clyde L., "Wintering beef cows in south Mississippi" (1968).
Bulletins. 146.

<https://scholarsjunction.msstate.edu/mafes-bulletins/146>

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Wintering Beef Cows In South Mississippi

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HENRY H. LEVECK, Director

On The Cover:

Pastures normally provide ample forage for beef cattle in summer but wintering is considerably more expensive. This study compares winter methods in South Mississippi.

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WINTERING BEEF COWS IN SOUTH MISSISSIPPI

WILLIAM A. BROCK, W. W. KILBY and C. L. BLOUNT¹

The 120-day period from December 1 to April 1 is the most critical and extensive season for the cattle industry. Much of the expense in a cow-calf program is supplying roughage and concentrates for wintering the brood herd.

Under poor management it is not unusual for a cow to lose 20 percent or more of her body weight during this period. This is when most death losses occur because a cow in poor physical condition is more susceptible to parasites and diseases. Generally this is the period when most calves are dropped. A cow in poor physical condition may not be able to give her calf as good a start in life and this may result in a smaller, lower quality calf at weaning time.

Finishing yearling calves on winter grazing has been very successful at the South Mississippi Branch Station. A review of the results for eleven years prior to the beginning of this study showed that calves had made economical gains on winter grazing, and that winter grazing was dependable throughout the winter in South Mississippi. Also one herd of cows had been wintered for 11 cents per cow per day on limited winter grazing, while it costs 26 cents per cow per day to winter another herd on hay and one pound of cotton seed meal per day not including labor for feeding.

It was decided in the fall of 1959 to initiate a more detailed study of various methods of wintering brood cows. The objectives of the test were to determine

(1) the cost of various methods, (2) the effects of various methods on the weight change of cows and on the average daily gain of calves, and (3) the amount of feed consumed by the cows.

Mature Hereford cows from two herds of the South Mississippi Branch Experiment Station were used in this experiment. The cows were allotted on the basis of weight and age to each treatment. The average weight of the cows was approximately 1050 pounds at the beginning of each of the winter periods. One herd of cattle is maintained at the McNeill Unit and another at the Tung Unit of the South Mississippi Station. All cows were kept on similar pastures when they were not on the test. Labor costs of \$.75 per hour, and \$3.00 per hour for man and tractor were used in determining the labor cost. Labor costs were figured on the basis of time required to feed or move a group of 25 cows.

McNeill Unit 1959-60 through 1963-64

The winter pasture treatment consisted of a mixture of oats and ryegrass and was planted on approximately October 1 each year. The pastures were fertilized with 100-80-60 at planting and toppedressed with 66 pounds of nitrogen in January. The pasture area was limed with one ton of lime per acre every two years. Oats were planted at the rate of four bushels per acre and ryegrass at the rate of 15 pounds per acre. The average cost per acre of the winter grazing, including land preparation, was \$31.60 per year. The bottom strand of wire on the fence between the grazing

¹Agronomist, Horticulturist, and former Agronomist, respectively, South Mississippi Branch Experiment Station, Poplarville, Mississippi. Mr. Blount resigned September, 1964.

area and the holding area was removed to allow the calves to creep graze on the winter grazing while the cows were in the holding area. Salt, minerals and water were available free choice in the holding area. The holding area consisted of approximately 870 square feet per cow-calf unit.

A sorghum-sudan hybrid was planted during June of each year following the winter grazing, and was harvested in September. The silage was stored in a concreted trench silo and fed with a front and fork in open troughs. The average dry matter content of the silage was 28.1 percent at time of feeding. Two pounds of cottonseed meal per cow was fed daily along with the silage. The silage cost \$6.00 per ton to produce and store, and the meal cost \$89.25 per ton. These prices were used in calculating the cost of the silage treatment.

Mixed grass hay harvested on the Experiment Station was used in the test. It was fed free choice in a hay rack. Cottonseed meal was fed daily in an open trough at the rate of two pounds per head per day. The hay cost \$20.00 per ton to produce and store, and the meal \$89.25 per ton. These prices were used in calculating the daily cost of the hay treatment.

The weight record period of the test was started approximately December 1 and concluded approximately March 1 each year for all treatments. The stocking per acre was maintained at a constant rate for the entire winter grazing season on the pasture treatment, and the total grazing period (approximately December 1 to April 15) was used in figuring the cost per day of winter grazing. Cows were allowed only three hours of grazing per day. They calved during December and January while on test.

Results from this phase of the experiment are shown in Tables 1 and 2. The oat-ryegrass grazing treatment, which was predominantly oats during the fall and winter, was damaged by cold during two of the five years of the test and was not ready for grazing on December 1 on another year. The per day cost on the grazing treatment includes the cost of hay and meal fed during the per-

Daily cost of all treatments were approximately the same. It should be noted that the cost of the oat-ryegrass grazing treatment varied from year to year due to the cold damage to the oats, (Table 1). The cost of the hay-cottonseed meal treatment and silage and meal treatment was relatively constant over the five years of the study.

Tung Unit 1959-60 through 1962-63

The ryegrass pasture treatment was planted approximately September 10 of each year and fertilized with 82-60-45 at planting. The pasture was not topdressed. Weight records from this phase of the experiment were taken from the period approximately December 1 to March 10. The cows grazed three hours per day on the ryegrass until April 15, and the cost per day was calculated for the entire winter grazing season. Ryegrass was planted at the rate of 40 pounds per acre. The pasture cost, including land preparation, averaged \$24.16 per acre per year. The calves were allowed to creep graze on the winter grazing while the cows were in the holding area by removing the bottom strand of wire between the pasture and the holding area. Salt, minerals and water were available free choice in the holding area which consisted of approximately one-half acre per cow-calf unit.

Table 1. Annual performance at the McNeill Unit

	Weight loss/ cow in lbs.	Amount feed/cow per day ¹	Daily gain of calf	Cost per day (cents)
1959-60				
Hay-C.S.M.	68	19.9	.93	29.5
Silage-C.S.M.	94	57.5	1.00	34.5
Oats-ryegrass grazing	134	3 hr.	1.09	18.6
1960-61				
Hay-C.S.M.	144	21.8	1.06	31.1
Silage-C.S.M.	160	37.0	1.08	34.3
Oats-ryegrass grazing	132	3 hr.	1.63	19.9
1961-62				
Hay-C.S.M.	73	22.6	1.20	30.8
Silage-C.S.M.	156	46.0	.99	30.2
Oats-ryegrass grazing	157	3 hr.	1.40	32.9 ²
1962-63				
Hay-C.S.M.	26	33.0	1.50	43.1
Silage-C.S.M.	83	77.0	1.27	36.5
Oats-ryegrass grazing	66	3 hr.	1.39	31.5 ²
1963-64				
Hay-C.S.M.	85	24.0	1.40	42.7
Silage-C.S.M.	38	80.0	1.46	36.7
Oats-ryegrass grazing	66	3 hr.	1.53	40.1 ³

¹ Cottonseed meal was fed at the rate of 2 lbs. per head each day each year. The number represents pounds of hay or silage.

² Hay was fed as a result of cold damage to the oats.

³ Hay and cottonseed meal was fed for 13 days until grazing was available.

Table 2. Five-year average performance at the McNeill Unit 1959-60 through 1963-64.

	Hay & C.S.M.	Sorghum Silage & C.S.M.	Oat-ryegrass Grazing
No. of cows	12.4	15.2	12.4
Days on test	80.8	80.8	80.8
Av. weight loss/cow in lbs.	79.2	106.2	109.8
Av. amount feed/cow/day in lbs.	24.3 Hay 2 CSM	59.5 Silage 2 CSM	3 hrs./day
Acres/cow and calf			.75
Av. daily gain of calf	1.22	1.16	1.41
Av. cost (feed & labor/cow/day, cents)	35.4	34.4	28.6 ¹

¹ The oats were damaged by cold during two of the five years and the cost reflects the additional hay and cottonseed meal fed.

Hay used in this phase of the experiment was mixed grass and Alyce clover harvested at the Tung Unit. The hay cost \$20.00 per ton to produce and store, and the meal cost \$89.25 per ton. These prices were used in calculating the daily cost of the hay-cotton seed meal treat-

ment.

All cows calved during December and January while on test. Hay was fed free choice in a hay rack.

Results from this phase of the experiment are shown in Tables 3 and 4.

Table 3. Annual performance at the tung unit

	Weight loss/ cow in lbs.	Amount feed/cow per day ¹	Daily gain of calf	Cost per day (cents)
1959-60				
Hay-C.S.M.	1	22.5	.77	31.1
Ryegrass Grazing	+72	3 hr.	1.92	18.7
1960-61				
Hay-C.S.M.	83	22.0	1.97	30.4
Ryegrass Grazing	34	3 hr.	2.31	14.8
1961-62				
Hay-C.S.M.	41	22.0	1.95	30.2
Ryegrass Grazing	57	3 hr.	1.83	17.2
1962-63				
Hay-C.S.M.	121	24.0	1.84	34.5
Ryegrass Grazing	26	3 hr.	2.35	13.7

¹ Cottonseed meal was fed at the rate of two pounds per head per day each year. The number represents pounds of hay.

Table 4. Four-Year Average Performance at the Tung Unit 1959-60 Through 1962-63.

	Hay & C.S.M.	Limited Ryegrass Grazing
No. of cows	8.0	8.3
Days on test	90.5	90.5
Av. weight loss/cow in lbs.	61.5	11.2
Av. amount feed/cow/day in lbs.	24.6 Hay 2 CSM	3 hrs./day
Acres/cow and calf		.70
Av. daily gain of calf	1.63	2.10
Av. cost (feed & labor /cow/day, Cents)	31.6	16.1

Table 5. Performance at the McNeill Unit 1965-66

	Hay & C.S.M.	Sorghum silage & C.S.M.	Limited ryegrass grazing
No. of cows	12	12	12
Days on test	126	126	126
Av. weight loss/cow in lbs.	130.0	147.0	85.0
Av. amount feed/cow/day in lbs.	23.2 Hay 1.1 CSM ¹	68.0 Silage 1.0 CSM ¹	3 hrs./day
Acres/cow and calf			.75
Av. daily gain of calf	1.24	1.15	2.24
Av. cost (feed & labor/cow/day, cents)	34.6	33.3	16.2

¹ Fed-two parts of cotton seed meal to one part salt.

McNeill 1955-66

The test was begun on December 1 and continued until the end of the winter grazing season. All cows calved while on test. Weight records were calculated for the entire 126 days of the study.

Ryegrass was planted on September 10 and fertilized with 100-60-60 at planting time and was not topdressed. The stocking rate was maintained at a constant rate of .75 acres per cow. The cows were allowed only three hours of grazing per day. The average per acre cost of the winter grazing, including land preparation, was \$27.40.

A sorghum-sudan hybrid was planted on June 5 following winter grazing, and harvested at the head stage of maturity and stored in a concreted trench silo. It was fed in open troughs with a tractor front end loader. Cottonseed meal was fed in a salt mix containing two parts of cottonseed meal and one part of white salt. The silage cost \$6.00 per ton to produce and store, and the meal \$89.00 per ton. These prices were used in calculating the daily feed cost.

Grass hay harvested on the McNeill Unit of the Experiment Station was fed in a hay rack. A cottonseed meal and salt mixture consisting of two parts meal and one part salt was fed free choice. The hay cost \$20.00 per ton to produce and store, and the meal \$89.00 per ton. Results of the test are shown in Table 5.

McNeill 1966-67

The test was begun on December 1 and continued until the end of the winter grazing season. All cows calved while on the test. Weight records were calculated for the entire 120 days of the study. Ryegrass was planted on September 12 and fertilized with 100-60-60 at planting time and was not topdressed. The stocking rate was maintained at a constant .70 acres per cow.

Corn silage containing 41.13 percent dry matter was fed at the rate of 50 pounds per head per day. The silage had 10 pounds of urea added per ton at the time of ensiling. No other source of protein was fed. The protein content of the silage was 12.32 percent on a dry basis. A cost of \$8.50 to produce and store was used in calculating the cost of the corn silage.

Mixed grass hay harvested at the McNeill Unit was fed free choice in a hay rack. The protein content of the hay was 8.72 percent. Pro-Lix, fed free choice with a commercial "lick wheel" type feeder, was placed 200 yards from the hay and water source. The hay cost \$20.00 per ton to produce and store and the Pro-Lix \$89.00 per ton. The results of the test are shown in Table 6.

Discussion

During the years 1959-60 through 1963-64, the ryegrass treatment at the Tung Unit proved to be the most economical and satisfactory method of wintering brood cows in South Mississippi. The oat-ryegrass mixture pasture at McNeill produced satisfactory and economical gains during the years that the oats were not damaged by cold. As a result of the cold damage the oat-ryegrass mixture was replaced by ryegrass at McNeill during the 1965-66 and the 1966-67 growing season, and results were very similar to those obtained previously at the Tung Station.

The sorghum silage used throughout this test was a sorghum-sudan hybrid type, harvested at the head stage of maturity. These sorghum-sudan silages were not as satisfactory as the limited grazing treatment. Recent research has shown the sorghum-sudan hybrids harvested at this stage of maturity are a poor quality silage. The sorghum-sudan hybrids have been replaced during 1967-

Table 6. Performance at the McNeill Unit 1966-67

	Pro-Lix Hay	Limited Corn Silage with urea ¹	Limited Ryegrass Grazing
No. of cows on test	15	15	15
Days on test	120	120	120
Av. weight loss/cow in lbs.	-24	-45	+16
Av. amount feed/cow/day in lbs.	2.0 Pro-Lix 25.1 Hay	50.0	
Acres/cow and calf			.70
Av. daily gain of calf	1.06	1.13	1.63
Av. cost (feed & labor/cow/day, cents)	34.0	22.2	16.0

¹ Urea was added to corn silage at time of ensiling at the rate of 10 pounds per ton.

68 wintering period with an intermediate sorghum harvested at the hard dough stage of maturity.

Grass hay and protein performed as well as the sorghum-sudan silage and protein, but did not perform as well as limited winter grazing.

Limited corn silage fed during 1966-67 performed as well as the hay or sorghum-sudan silage fed during previous years, but it was decided that corn silage produced in South Mississippi could probably be used to greater advantages, such as feeding steers, and that the improved intermediate sorghums could be planted following winter grazing and would be a more desirable land use system.

Throughout this study the average daily gains of the suckling calves on the winter grazing were much greater than of similar calves on the hay and protein or sorghum-sudan silage and protein treatments. This greater gain made during the winter months was maintained throughout the summer while on summer pastures. The grazed calves were larger, and apparently had better developed stomachs as a result of the winter grazing as compared to calves wintered on sorghum silage or hay.

The average weight loss of the cows was less during all phases of the experiment on the limited ryegrass winter grazing treatments.

Summary and Conclusion

Grazing brood cows for three hours per day on ryegrass proved to be a more satisfactory and economical way to winter brood cows with calves than grass hay and protein or sorghum-sudan silage and protein in a seven-year study at the South Mississippi Branch Station. Results are summarized as follows:

1. Average daily cost to winter a cow-calf unit was: Limited ryegrass grazing, 16.1 cents; sorghum-sudan silage and protein, 34.2 cents; and grass hay and protein, 33.8 cents.

2. Average daily gain of the calves was: limited ryegrass grazing, 2.0 lbs.; sorghum-sudan silage and protein, 1.22 pounds; and grass hay and protein, 1.35 pounds.

3. Brood cows had an average weight loss for the wintering period of: limited ryegrass grazing, 19.0 pounds; sorghum-sudan silage and protein, 113.0 pounds; and grass hay and protein, 72.3 pounds.

4. Limited corn silage, with urea added at time of ensiling, performed similar to sorghum-sudan silage and protein during the one year the corn silage was tested.

5. Limited oat-ryegrass grazing was satisfactory during years that oats were not damaged by cold.