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Wintering Steers in the Black Belt of Alabama

By

J. C. GRIMES
W. E. SEWELL
G. J. COTTIER

AGRICULTURAL EXPERIMENT STATION
OF THE
ALABAMA POLYTECHNIC INSTITUTE

M. J. FUNCHESS, *Director*
AUBURN

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By

J. C. GRIMES, Head Animal Industry Group

W. E. SEWELL, Assistant Animal Husbandman

G. J. COTTIER, Assistant in Animal Husbandry

FARMERS in the Black Belt of Alabama who winter steers fatten them on grass the following summer, or sell them to neighboring farmers who fatten them on grass. In most instances the desired end is to obtain the greatest total gain on the steers for the year at the least total cost.

The kind and amount of feed which a steer receives during the winter materially affects the cost of feeding the steer for the year, the gain of the steer during the following summer, and the total gains of the steer for the year. Sheets and Tuckwiller² showed that the cost of wintering a steer constituted approximately two-thirds of the total cost of feeding the steer for the year and that practically all of the gain in the weight of the steer was made during the summer. They also showed that a steer which lost or which gained only slightly in weight during the winter made a larger gain during the following summer but less total gains for the year than a steer which made a good gain during the winter. Their work shows, apparently, that the most desirable practice is to feed a steer so as to have him gain between 50 and 75 pounds during the winter.

A ration for wintering steers, to be economical, must be composed largely of home-grown roughage. Such a roughage is to be found on many Black Belt farms in the form of Johnson grass hay. In the process of making Johnson grass hay there often results, from rain or other causes, a large amount of cheap, unsalable hay. Apparently one of the best ways to utilize this hay is by feeding it to cattle.

In the fall of 1926 experiments were started with the object of obtaining information on the value of Johnson grass hay for wintering steers, when fed alone and in combination with a small amount of cottonseed meal. The experiments were conducted on the Kirkwood Plantation, Faunsdale, Alabama, and were continued over a period of seven years. They were divided into three series as follows:

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²West Virginia Exp. Sta. Bul. 186.

- (1) Johnson grass hay versus Johnson grass hay and cottonseed meal.
- (2) Johnson grass hay and one pound of cottonseed meal versus Johnson grass hay and two pounds of cottonseed meal.
- (3) Johnson grass hay fields with free access to stacked hay.

JOHNSON GRASS HAY VERSUS JOHNSON GRASS HAY AND COTTONSEED MEAL

A total of 45 grade Hereford steers were wintered for 112 days on Johnson grass hay alone during the winters of 1926, 1927, and 1928. The hay was self-fed from racks in a barn and the steers were allowed free access to a ten-acre permanent pasture. There were 10 steers on this ration during the first two winters and 25 steers during the third winter.

It will be seen (Table 1) that steers which received hay alone (Lot I) made some gain in weight during the winter of 1926 but lost considerable weight during the winters of 1927 and 1928. The average results for the three winters show a loss of 46 pounds per steer. The average daily hay consumption per steer during this period was 16.71 pounds. The average hay cost to winter these steers was \$6.54 per head or \$1.23 per hundred weight.

During the same three-year period a similar number of steers in Lot II were fed and managed in a similar manner to those in Lot I, except that they were allowed an average of 1.89 pounds of cottonseed meal per head daily in addition to Johnson grass hay. They made an average gain for the three winters of 27 pounds. The feed cost was increased \$2.94 per head or 33 cents per hundred weight by the addition of cottonseed meal to the ration. It is apparent that steers may be wintered on Johnson grass hay alone but that more satisfactory results will be obtained if a small amount of cottonseed meal or other protein supplement is used.

The gains and losses in the weight of the steers varied considerably in both lots during the different winters. This may have been due largely to a difference in the age and condition of the animals at the beginning of the wintering period. The steers used in 1926 and 1927 were two years old and were thin in flesh while those used in 1928 were long yearlings and were in good flesh. A difference in weather conditions may have also influenced the results although weather records show that several freezes occurred during each of the three winters.

TABLE 1.—Summary Johnson Grass Hay Alone Versus Johnson Grass Hay and Cottonseed Meal for Wintering Steers.

Ration	Lot I				Lot II			
	Johnson grass hay, self-fed from racks				Johnson grass hay, self-fed from racks and cottonseed meal			
Year	1926	1927	1928	3-yr. av.	1926	1927	1928	3-yr. av.
Number of steers wintered	10	10	25	15	10	10	25	15
Av. wintering period (days)	112	112	112	112	112	112	112	112
Av. initial wt. per steer (lbs.)	474.00	602.00	600.00	512.44	485.00	619.00	608.00	583.11
Av. final wt. per steer (lbs.)	508.00	578.00	513.00	526.33	545.00	686.00	606.00	610.22
Av. gain or loss per steer (lbs.)	34.00	24.00 loss	87.00 loss	46.11 loss	60.00	67.00	2.00 loss	27.00 gain
Av. daily feed per steer								
Cottonseed meal (lbs.)	-----	-----	-----	-----	2.00	2.12	1.75	1.89
Johnson grass hay (lbs.)	19.24	22.42	13.41	16.71	19.21	20.58	13.18	16.16
Av. feed cost per steer to winter ¹ (dollars)	7.54	8.78	5.25	6.54	10.88	11.52	8.10	9.48
Av. feed cost per cwt. to winter based on final wt. of steer (dollars)	1.48	1.52	1.02	1.23	2.00	1.68	1.34	1.56

¹Cottonseed meal, \$30 per ton; Johnson grass hay, \$7 per ton.

JOHNSON GRASS HAY AND ONE POUND OF COTTONSEED MEAL
VERSUS JOHNSON GRASS HAY AND TWO POUNDS OF
COTTONSEED MEAL

During the winters of 1929, 1930, and 1931 the efficiency of one pound of cottonseed meal per head daily was compared with the efficiency of two pounds of cottonseed meal per head daily as supplements to Johnson grass hay for wintering steers. The hay was self-fed from racks in a barn, although both groups of steers had access to permanent pasture plots of approximately 10 acres. There were 34 steers in each group during the first year, 15 in each group during the second year, and 17 in each group during the third year; the length of the different wintering periods was 119 days, 133 days, and 140 days, respectively.

Results of these experiments show that there was very little difference in the rate of gain on steers in the two lots. During the winter of 1929, for some unknown reason, the steers in Lot III which were fed one pound of cottonseed meal per head daily made more rapid gains than steers in Lot IV which were fed two pounds of cottonseed meal per head daily. During the two following winters the steers in Lot IV made the greatest gains but even during these years there was very little difference in the amount of gains in the two lots. The average gain per head for the three winters was 6 pounds greater in Lot III than in Lot IV.

It will be noted that both lots of steers made much greater gains in 1931 than during the two previous winters. This was due, no doubt, to the very mild winter of 1931. There was only one freeze recorded in Alabama during that winter.

The amount of hay eaten was practically the same in the two lots and the only significant difference in the feed consumption was the difference of one pound of cottonseed meal per day. The additional pound of meal allowed in Lot IV, therefore, increased the wintering cost in this lot \$1.84 per steer or 33 cents per hundred weight. This increased cost was not justified as was shown by the results obtained. Under the conditions of this experiment one pound of cottonseed meal per head daily proved more economical than two pounds of cottonseed meal per head daily.

Figure 1 shows the group of steers which were wintered on Johnson grass hay and one pound of cottonseed meal during the winter of 1931. The photograph was taken at the close of the wintering period.

TABLE 2.—Summary—One Pound Versus Two Pounds of Cottonseed Meal per Head Daily as a Supplement to Johnson Grass Hay for Wintering Steers.

Ration	Lot III Johnson grass hay, self-fed from racks, and 1 lb. cottonseed meal per head daily				Lot IV Johnson grass hay, self-fed from racks, and 2 lbs. cottonseed meal per head daily			
	1929	1930	1931	3-yr. av.	1929	1930	1931	3-yr. av.
Year								
Number of steers wintered	34	15	17	22	34	15	17	22
Av. wintering period (days)	119	133	140	127.60	119	133	140	127.60
Av. initial wt. per steer (lbs.)	502.00	636.00	553.00	545.00	495.00	642.00	554.00	543.00
Av. final wt. per steer (lbs.)	533.00	651.00	663.00	593.00	508.00	663.00	675.00	586.00
Av. gain per steer (lbs.)	31.00	15.00	110.00	48.00	13.00	21.00	121.00	42.00
Av. daily feed per steer								
Cottonseed meal (lbs.)	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00
Johnson grass hay (lbs.)	13.60	14.27	10.84	12.98	12.67	14.02	12.43	12.92
Av. cost per steer to winter ¹ (dollars)	7.44	8.63	7.41	7.70	8.74	10.50	10.29	9.54
Av. feed cost per cwt. to winter based on final wt. per steer (dollars)	1.40	1.33	1.12	1.31	1.72	1.58	1.52	1.64

¹Cottonseed meal \$30 per ton; Johnson grass hay \$7 per ton.



FIGURE 1.—Steers wintered on Johnson grass hay and one pound of cottonseed meal per head daily (Photographed April 1932).

WINTERING STEERS IN JOHNSON GRASS HAY FIELDS

Seventeen steers were wintered in Johnson grass hay fields where they had access to hay stacked in the field during the winter of 1931. No cottonseed meal or other supplements were fed and no shelter was provided. These steers made an average gain of 78 pounds in 140 days (Table 3).

In 1932, twenty steers were fed and managed as described above and they made an average gain of 10 pounds in 125 days. The average gain per steer for the two-year period was 41 pounds (Table 3). It was not practicable to keep a record of the hay eaten by these steers because the hay was self-fed from the

TABLE 3.—Summary—Wintering Steers In Hay Fields, 1931 and 1932.

Ration	Lot I Johnson grass hay fields with free access to stacked hay			Lot II Johnson grass hay fields with free access to stacked hay and 1 lb. cot- tonseed meal per head daily
	1931	1932	2-year average	1932
Year				
Number of steers wintered	17	20	18.50	20
Av. wintering period (days)	140	125	131.90	125
Av. initial wt. per steer (lbs.)	560.00	548.00	553.50	549.20
Av. final wt. per steer (lbs.)	638.00	558.00	594.70	649.75
Av. gain per steer (lbs.)	78.00	10.00	41.20	100.55
Av. daily feed per steer				
Johnson grass hay (lbs.)	15.00	15.00	15.00	15.00
Cottonseed meal (lbs.)	-----	-----	-----	1.00
Av. cost per steer				
to winter ¹ (dollars)	5.25	4.68	4.92	6.60
Av. feed cost per cwt. to winter based on final wt. of steer (dollars)	0.82	0.84	0.83	1.01

¹Johnson grass hay charged at \$5 per ton; cottonseed meal charged at \$30 per ton.

stacks. Previous experiments have shown that steers such as these would not eat more than 15 pounds of hay per head daily. On this basis and with hay charged at \$5 per ton stacked in the field the actual cost of wintering was \$4.92 per head or 83 cents per hundred weight.

In 1931 and 1932, steers which were wintered in hay fields where they had access to stacked Johnson grass hay made good gains (Table 3). In 1927 and 1928, steers which were fed Johnson grass hay alone from the rack lost in weight (Table 1). This difference in results was, no doubt, due to (1) the additional amount of grass and other forage obtained in the hay fields and (2) the very mild winters in 1931 and 1932.

The results of this experiment indicated that farmers who live in the Black Belt of Alabama and who grow Johnson grass hay can winter steers cheaply and in a satisfactory condition by allowing the steers to graze in hay fields and eat hay from the stack. In case greater gains are desired one pound of cottonseed meal per head daily may be fed as a supplement. This statement is based on the fact that 20 steers (Table 3, Lot II) were wintered in hay fields in 1932 and received one pound of cottonseed meal per head daily in addition to stacked hay. These steers made an average gain of 100 pounds during the winter.

SUMMARY

Three series of experiments were conducted to determine the value of Johnson grass hay as a roughage for wintering steers. The experiments covered a period of seven years and included a study of (1) Johnson grass hay when fed alone from the rack, (2) Johnson grass hay supplemented with different amounts of cottonseed meal, and (3) Johnson grass hay self-fed from the stack in the hay field.

(1) Johnson grass hay alone fed from racks did not prove adequate for wintering steers. The steers which were fed on this ration lost an average of 46 pounds per head during three winters.

(2) Steers which received all the Johnson grass hay they would eat plus one pound of cottonseed meal per head daily gained an average of 48 pounds during the three winters.

(3) Steers wintered in the hay field where they had access to Johnson grass hay stacks made an average gain of 41 pounds during two winters.

(4) Of all the rations used for wintering steers in these experiments, one pound of cotton seed meal per head daily plus Johnson grass hay self-fed from the rack or from a hay stack was regarded as the most satisfactory during the average winter. This ration was the most consistent in producing good gains at a moderate cost.