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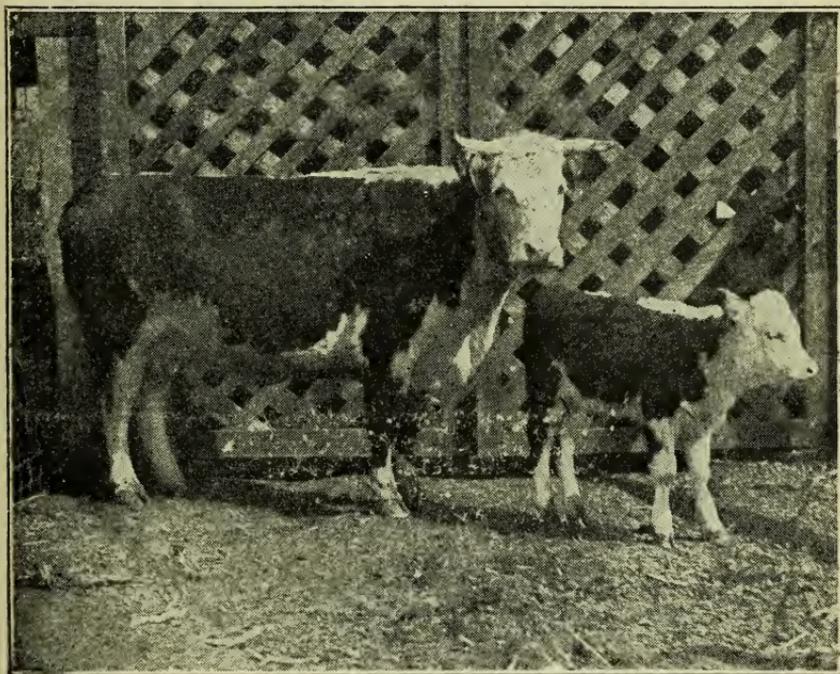
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AGRICULTURAL EXPERIMENT STATION

BULLETIN No. 181

EMERGENCY COW FEEDS

By H. K. GAYLE



AGRICULTURAL COLLEGE, MISSISSIPPI

AUGUST, 1917

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* In coöperation with the United States Department of Agriculture.

EMERGENCY COW FEEDS

BY H. K. GAYLE

Introduction

The annual waste of forage and fodder feedstuffs throughout the Southern States has been often estimated to be sufficient to feed all the cattle in the South through the entire winter.

Corn fields are given very little consideration after the corn has been snapped from the stalk; as a result, from one-fourth to one-third of the feeding value of the corn crop has been left to decay in the fields. Pastures, ditch banks, roadsides, etc., produce annually a tremendous amount of forage, in the form of native grasses, which is usually left to decay on the ground or to be burned off during the fall and winter.

To cut the native grasses from such places will not only make a good forage when saved as hay, but improve the pastures greatly, by destroying weeds and making the stand of grasses thicken. The roadsides, ditch banks, etc., would most certainly be improved in appearance by mowing.

Cotton fields that have been severely damaged by the boll weevil can be turned into an asset, by simply mowing the cotton stalks while heavy with leaf and making them into hay or silage.

Mature cattle are admirably adapted to the economical use of such coarse feeds. Breeding cows and steers that are over one year old can be wintered on such feeds if given a very small amount of supplementary concentrate.

EMERGENCY COW FEEDS

Object of the Work

The object of the experiments described in this bulletin was to determine the practicability of utilizing various waste forages for wintering breeding beef cows, and to determine the approximate feeding values of the forages used.

Feeds Used

Cottonseed meal was used as the supplementary concentrate throughout all lots, and was fed at the rate of one pound of cottonseed meal per cow daily.

The roughages used were:

1. Pasture grass hay.
2. Oat straw.
3. Corn stalks, Johnson grass, etc., as cut from stalk fields.
4. Cured cotton stalks.
5. Cotton stalk silage.
6. Silage mixture of cotton stalks and sorghum.

Cottonseed meal was valued at \$40.00 per ton throughout. The forages used were valued at the labor cost of saving them. Oat straw, however, was valued at \$5.00 per ton.

Cattle Used

The cattle used throughout were breeding cows, eight to ten years old and averaging about 800 pounds in weight. They were all of native scrub stock.

Shelter

All lots of cattle were kept under shelter every night throughout the experiment. The shelter was a good barn open on the south side. Exercise lots were available for the cows during the day time in good weather. Fresh, clean water was available at all times.

Lot No. 1

PASTURE GRASS HAY

Lot 1 was made up of four cows. The hay fed was cut from pastures, ditch banks, etc., and was of wild native grasses. No

extra effort was made to get hay of unusual quality. Most of it was over-ripe; it had been left in the sun too long to be cured as good hay. It was representative of average waste hay from native grasses. This hay was put in the barn at a labor cost of \$2.60* per ton.

The following table shows the results of feeding pasture grass hay to a lot of four breeding cows. The cows were given all the hay they would clean up each day.

TABLE I

Length of Feeding Period	Average Initial Weight per Cow	Average Final Weight per Cow	Average Gain per Cow	Average Daily Ration Per Cow in Pounds		Cost of Ration per Day
				Cotton Seed Meal	Hay	
28 Days	818.6	836.25	17.65	1.0	28.53	\$.057

The foregoing table shows that waste hay with a small amount of cottonseed meal makes a satisfactory ration for breeding cows and a very cheap ration, costing only \$0.057 per cow per day.

Lot No. 2

OAT STRAW

This lot was made up of four cows. The oat straw was good bright straw. It was blown into the barn loft direct from the thresher and was fed in such amounts as the cows would clean up daily. The following table shows the results of the twenty-eight day test of feeding oat straw valued at \$5.00 per ton.

TABLE II

Length of Feeding Period	Average Initial Weight per Cow	Average Final Weight per Cow	Average Gain per Cow	Average Daily Ration Per Cow in Pounds		Cost of Ration per Cow Daily
				Cotton Seed Meal	Hay	
28 Days	776.9	829.0	52.1	1.0	24.8	\$.082

As this table shows, cows can be wintered on oat straw and a little cottonseed meal with unusually good results; the cows make good gains at a daily cost of only \$0.082 per cow.

* All data bearing on the yields per acre and the valuations of forages were supplied by the Agronomist of this Station.

Lot No. 3

CORN STALKS, JOHNSON GRASS, ETC.

Four cows were used in this lot. The forage fed was cut with the mowing machine from the corn fields after the corn had been gathered, and was stacked outside the barn. It consisted of corn stalks, grasses, weeds, etc. The stalk fields yielded this forage at the rate of two and one-half tons per acre, and the cost to cut and put in the stack was \$1.32 per ton.

The results of feeding this roughage are shown in the following table:

TABLE III

Length of Feeding Period	Average Initial Weight per Cow	Average Final Weight per Cow	Average Loss per Cow	Average Daily Ration Per Cow in Pounds		Cost of Ration per Cow Daily
				Cotton Seed Meal	Corn Stalk Forage	
28 Days	817.5	785.5	32.0	1.0	38.06	\$.045

The table shows that the forage of corn stalks, weeds, etc., as cut from the corn fields, is not a satisfactory roughage for wintering cows, but that when no other forage is available it can be used, and makes a remarkably cheap feed.

Lot No. 4

CURED COTTON STALKS

The forage fed to this lot of four cows for twenty-eight days consisted of cured cotton stalks. The cotton stalks were cut from a field which had been practically destroyed by the boll weevil. It was cut before many of the leaves had fallen and was cured as hay and stacked out of doors. Such forage yielded at the rate of one ton per acre and was put into the stack at a labor cost of \$2.30 per ton. The cows were given all the cotton stalks they would clean up each day. Table IV shows the results of feeding cured cotton stalks as a roughage to breeding cows.

TABLE IV

Average initial weight per cow	813.25	pounds
Average weight per cow at end of 14 days	777.	"
Average loss per cow during first 14 days of test	36.25	"
Average weight per cow at end of 28-day test period	802.5	"
Average gain per cow during last 14 days of test	25.5	"
Average loss per cow during whole test period	10.75	"

Average daily ration per cow during first fourteen days of test.	{ Cottonseed meal	1.	pounds
	{ Cured cotton stalks	18.32	"
Average daily ration per cow during last fourteen days of test.	{ Cottonseed meal	1.	"
	{ Cured cotton stalks	36.66	"
Average daily ration per cow during entire 28 days feeding period.	{ Cottonseed meal	1.	"
	{ Cured cotton stalks	27.48	"
Average waste of cotton stalks as unedible part of stalk		58.89%	
Average cost of ration per cow, daily.		\$.052	

This table shows that cotton fields ruined by the boll weevil can be utilized as a feed for wintering mature beef animals. The inference to be drawn is not that cotton can be grown profitably as a feed crop, but that it may be salvaged after being damaged severely by the boll weevil and when other roughage is scarce.

It was hard to get the cows to eat enough of the cured cotton stalks, as they were tough and hurt the cows' mouths while picking over them. The cows did pick off the leaves, but left the stalks—about 59% of the total weight of the forage—as unedible.

After the cows became accustomed to eating cotton stalks, they ate them fairly well and made good gains during the last fourteen days of the test period. Deducting from the ration the 58.89% of waste, we find that the cows actually consumed an average daily ration of cottonseed meal, 1 pound; cured cotton stalks, 11.3 pounds.

Lot No. 5

COTTON STALK SILAGE

The four cows in this lot were fed on silage made from cotton stalks which had been cut from a field severely damaged by the boll weevil. The cotton was cut while heavy with leaf; it yielded at the rate of four and a half tons of silage per acre. The expense of putting it into the silo was \$2.70 per ton.

Table V shows the results of feeding cotton silage to breeding cows for a test period of twenty-eight days.

TABLE V

Average initial weight per cow.	784.4	pounds
Average final weight per cow.	823.1	"
Average total gain per cow.	38.7	"
Average daily gain per cow.	1.4	"

Average daily ration per cow	{ Cottonseed meal	1.	pounds
	{ Cotton silage . .	51.	"
Percentage waste (unedible stalks)		24.15	%
The average daily ration actually consumed per cow was	{ Cotton silage . .	38.68	pounds
	{ Cottonseed meal	1.	"
Cost of ration per cow daily			\$.089

The table shows that cotton stalks can be made into a silage when cut before the leaves have fallen, that the silage is high in feeding value, and can be used for wintering breeding cows in good shape.

Lot No. 6

SORGHUM AND COTTON SILAGE

The roughage used in Lot 6 was a silage mixture of sorghum and cotton stalks. The case had arisen in which there was not enough sorghum to fill the silo. A field of cotton had been ruined by the boll weevil. Both crops were cut and mixed at the silage cutter by running through the cutter first a load of sorghum and then a load of cotton stalks. On weighing the loads of each sorghum and cotton stalks, it was found that the mixture by weight was in the proportion of one-third cotton stalks and two-thirds sorghum. If sorghum silage is worth \$3.00 per ton, and cotton silage is worth the cost of putting it into the silo, \$2.70 per ton, the silage mixture of two-thirds sorghum and one-third cotton stalks is worth \$2.90 per ton.

Table VI shows the results of feeding this silage mixture to a lot of four breeding cows.

TABLE VI

Length of feeding period		28	days
Average initial weight per cow		802.5	pounds
Average final weight per cow		815.5	"
Average total gain per cow		13.	"
Average daily ration	{ Cottonseed meal	1.	"
per cow	{ Cotton and sorghum silage	49.9	"
Cost of ration per cow daily			\$.092

The table shows that cotton stalks can be combined with sorghum and made into a silage which will furnish a good roughage for cattle, and that when fed with a small amount of cottonseed meal will allow the animal to gain in weight.