

I. Cotton Production: Cotton Silage

PALATABILITY AND NUTRIENT VALUE OF COTTON SILAGE FOR STEERS

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For an evaluation of cotton for ensilage, three varieties were harvested at two maturity dates and ensiled in heavy polyethylene bags. In addition, silage was made from the leaves and stems of cotton at 195 days after planting. For the palatability studies, hegari silage was used as the control.

Results

Palatability studies. Three steers were each offered cotton silage or hegari silage. The consumption of the silage during a two-hour period was considered as indicative of the palatability of the product. During the two-hour period, only 55% of the cotton silage was consumed as compared to 87% of the hegari silage. These results indicated that cotton silage was not as palatable as hegari silage. However, it did not determine if steers would consume cotton silage if no other material was offered.

Chemical analysis. The pH on the cotton silage, as well as the hegari silage, was determined when the bags were open for feeding. The pH of the cotton silage was approximately 6 as compared to 3.8 for the hegari silage. The high pH for the cotton silage suggested that the cotton probably would not have ensiled under normal conditions. The results of the proximate analysis of the cotton silage, as well as that of hegari and alfalfa silage, are given below. The results show that the acid detergent fiber of the cotton plant is very high when compared to hegari or alfalfa silage. The high fiber content of the cotton silage would certainly detract from its feeding value. Ash values are also very high on the cotton silage, especially at the later maturity date. Of special interest is the low nitrogen free extract, which represents the soluble carbohydrates, of the cotton silage. The nitrogen free extract content of the hegari silage was approximately 47% as compared to 21% for the cotton silage. It is questionable if adequate performance of growing cattle could be maintained on cotton silage due to the low nitrogen free extract value. The protein content of cotton silage can be considered adequate.

Observation

When cotton silage yields (see 1967 Cotton Report), proximate analysis, and palatability studies are considered, there is nothing to indicate that cotton silage would be competitive with the crops currently being grown for silage. In fact, some of the analytical values, particularly crude fiber, nitrogen free extract, and ash, would suggest that cotton silage would have limited use as a roughage for cattle.

PROXIMATE ANALYSIS OF COTTON SILAGE HARVESTED AT TWO STAGES OF MATURITY AND ANALYSIS OF OTHER SILAGES^a

Proximate fraction	Crude Protein		Ether Extract		Acid Detergent Fiber		Acid Detergent Lignin		Nitrogen Free Extract		Ash	
	155	235	155	235	155	235	155	235	155	235	155	235
Pima S-2	13.1	11.5	3.3	2.8	49.4	51.8	11.3	11.0	23.3	19.8	10.9	14.1
Hopicala	11.7	9.7	2.8	3.6	49.2	56.6	9.6	10.0	27.1	12.8	9.2	17.3
Deltapine Smooth Leaf	11.8	9.1	3.9	2.4	51.7	57.9	9.2	9.9	23.0	15.1	9.6	15.5
Cottonstem silage (195 days) ^b	8.9		2.7		56.7		14.0		25.6		6.1	
Cotton leaf silage (195 days) ^b	20.0		5.0		30.8		12.4		23.5		20.7	
Hegari silage (110 days) ^b	8.2		3.6		32.9		5.0		46.7		8.6	
Alfalfa silage (40 days) ^{bc}	18.6		2.8		33.8		8.8		35.0		9.8	

^a All analysis on dry matter basis.

^b Maturity stage at time of harvest.

^c Silage taken from the Harveststore at the Yuma Station.