

SUGARCANE BAGASSE PELLETS AND COTTONSEED HULLS AS ROUGHAGE  
SOURCES IN COMPLETE RATIONS FOR LACTATING COWS.

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Florida dairymen generally use a single mixed feed to supplement the available roughages such as pasture, green-chop, silage or hay. When these forages are in short supply some roughage may be incorporated into the mixed feed. Cottonseed hulls have been the principal ingredient roughage used because acceptable results have been obtained with them and their physical form is suitable for mechanical handling.

In 1969, sugarcane bagasse pellets were manufactured commercially in Florida for use as a roughage source in cattle rations. These pellets are produced by drying the sugarcane residue after juice extraction, grinding the dried bagasse, adding about 10% of blackstrap molasses and pelleting through a 3/8-inch die. These pellets were compared with cottonseed hulls as the roughage source at 7.5 and 15 percent levels in steer fattening rations at the Range Cattle Station and found to be satisfactory.

Dairymen became interested in the use of these bagasse pellets as roughage sources in rations of lactating cow so an experiment was designed to study their suitability as a roughage source for complete rations in terms of animal health, maintenance of milkfat test, feed intake and milk production. For this purpose a complete ration containing 25% of bagasse pellets, and one with 12.5% bagasse plus 12.5% cottonseed hulls were compared with a basal ration containing 25% cottonseed hulls. Ingredient composition of the rations are shown in Table 1. These experimental rations were designed to compare the roughage sources under rigorous conditions and did not contain any pasture, green-chop, silage or hay as is generally fed in Florida. After 2-week standardization period on the complete ration containing 12.5% pellets and 12.5% hulls, 12 Holstein and 6 Jerseys were divided into three comparable groups of 6 cows each. Each of the three rations were assigned by random to a group of cows. All rations were fed ad libitum and records were kept on each cow for daily feed intake and production was recorded at each milking. Milk-fat and solids-not-fat tests were made at weekly intervals.

A summary for 10 weeks on the experimental rations is given in Table 2. The daily dry matter intake of 3.9 to 4.1 percent of body weight is quite high when compared with 3.0 to 3.2 which is the upper level expected on most dairy rations. Since these data were collected in the cooler period of January through March and when the lactation stage was near peak production one would logically anticipate some reduction in intake level during the warmer months and as production declined.

Average daily production of milk ranged from 47.8 pounds on the ration with pellets to 49.6 on that with cottonseed hulls. When production was converted to solids - corrected milk containing 340 kilocalories per pound (about 3.5% fat milk) average daily yield figures ranged from 56.2 for the ration

containing bagasse pellets to 52.0 on that with cottonseed hulls.

Milk fat test appeared to be maintained well on the ration with sugarcane bagasse pellets. On the ration with cottonseed hulls, fat test declined about 45% with one cow, 21% with another and a small amount with a third. Test was maintained by the other three cows. The ration containing pellets and hulls maintained test with all cows with the possible exception of one near the end of the 10-week period.

There were occasional cases involving all rations where the appetite of cows would decline and then recover, usually within a period of one week. There were a few cases in all rations where individual cows went off feed. Most recovered within a few days without treatment. Feeding some forage plus infusions of Ketosol gave prompt favorable response to those so treated. Some stiffness was noted in a few cows. If there was any ration difference with respect to health, animal numbers were too small to detect it.

The results to date indicate that sugarcane bagasse pellets may be used as a substitute for cottonseed hulls in rations for lactating cows. Bagasse pellets appeared to maintain milkfat test better than did the cottonseed hulls. Additional research is needed to determine optimum levels for bagasse pellets and cottonseed hulls in dairy rations.

Table 1. Experimental rations

Ingredients	Rations*		
	Cottonseed Hulls	Hulls and Bagasse	Bagasse
Cottonseed hulls	25	12.5	—
Pelleted Bagasse	--	12.5	25
Citrus Pulp, S.D.	37	37	37
Corn, ground	26	26	26
Soybean Meal, 49%	10	10	10
Duophos	1.1	1.1	1.1
Urea, 281	0.5	0.5	0.5
Salt, TM	0.4	0.4	0.4

\*Vitamin A - 25,000 IU per pound

Table 2. Dry Matter Intake and Milk Production

Ration	Dry matter intake Lbs/cwt/day	Ave. Daily Production (lbs)	Ave. Daily Solids- corrected milk (lbs)
Cottonseed Hulls	4.1	49.6	52.0
Hulls Plus Bagasse Pellet	4.1	48.5	54.5
Bagasse Pellets	3.9	47.8	56.2