

ACCEPTABILITY OF GRAPE WINERY POMACE AS A CATTLE FEED

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SUMMARY

Whole grape pomace, which is a winery waste by-product, was readily accepted at levels up to 13.6 kg (30 lb) fresh or 4.1 kg on a dry basis per head per day by cows on good-quality Pensacola bahiagrass (Paspalum notatum) pastures. Yearling heifers preferred "white grape hulls" but readily consumed "blue hulls" and "fermented blue hulls." A limitation was the irregular supply of fresh pomace during a short grape harvesting season.

INTRODUCTION

Increased commercial grape production in Florida with three wineries in operation, and several others planned, has made a winery waste by-product available for utilization. Grape pomace consists of skins, seed, pulp and residual solids. It varies in yield from 20 to 50% and in composition according to type of grape, degree of extraction and content of lignified stems. Previous research with dried grape pomace in California showed low digestibility of dry matter (24.3%) and protein (9.9%) apparently due to a high fiber and tannins content. When mixed into a steer finishing ration at a 20% level to replace barley, there was no effect upon gains or carcass composition but the steers consumed 15% more ration and required 14% more feed per pound of gain. The net energy values in megacalories/100 lb were estimated to be 34 for maintenance and 18.5 for gain which are very low being about half that for dehydrated alfalfa pellets. Research by a prominent wine company in New York revealed that after removal of seeds for oil and extraction of sugars and tartrates, the remaining solid winery waste would have no value as livestock feed, limited value as fertilizer and its most valuable use as a soil conditioner.

OBJECTIVE

This study was conducted to determine the acceptability by cattle of fresh winery waste derived from the processing of muscadine grapes in North Central Florida.

PROCEDURE

Fresh pomace was obtained from hand-harvested muscadine grapes which had been extracted for juice by crushing and cold pressing. The pomace contained skins, seeds, pulp and a very small content of stems. The dry matter content varied from 25 to 40% depending on the degree of pressing; consequently, it had very good handling qualities without liquid seepage. Because

of the seasonal harvesting of grapes, pomace was available for only six weeks and only on three to five days each week; therefore, a continuous supply of a uniform volume of pomace would not be experienced until these wineries reach design capacity (1982-83).

In 1980, limited quantities of fresh whole muscadine grape pomace described as "white hulls", "blue hulls" and "fermented blue hulls" was offered 68 Angus and Brahman heifers (340 kg) being fed 2.7 kg (6 lb) of a 20% protein-energy supplement plus grass hay ad libitum. The pomace was offered alone in a separate feeder and mixed at a 50% level with the protein supplement.

In 1981, fresh whole muscadine grape pomace from bronze and blue grapes was obtained at a commercial winery and offered ad libitum alone and mixed with whole oats to grazing yearling heifers (400 kg) and mature cows (480 kg).

RESULTS AND DISCUSSION

The average composition of the grape pomace obtained from both bronze and blue muscadine grapes was 35% dry matter and on a dry matter basis: 5% ash, 11% crude protein, 6% lipids, .35% calcium, .4% phosphorus and .1% magnesium. Of interest is a 5% tannins content which likely decreases utilization of protein. Much of the nutritional value was in the seeds which were fed whole in this study.

In 1980, limited quantities of cold pressed grape pomace was provided from university research on red and white wine production. Heifers in dry-lot readily consumed the offerings of 1.4 kg per head per day at the first and subsequent feedings for one week. Preference was shown for a 50:50 mixture of 20% protein supplement and pomace and, when fed alone, for white hulls over blue hulls. The fresh pomace quickly deteriorated and was rejected after 12 hours in the feeder.

In 1981, 90.8 kg (200 lb) of fresh whole muscadine grape pomace was mixed with 15.9 kg (35 lb) whole oats and offered ad libitum in troughs to 35 yearling heifers grazing Pensacola bahiagrass pastures. Of the 107 kg of grape pomace-oats mixture offered at 4:00 p.m., 33 kg (73 lb) had been consumed by 8:00 a.m. the next morning at which time the pomace had deteriorated enough in quality to be inedible. On the second day, 45.4 kg (100 lb) of fresh pomace was fed alone in one trough and 45.4 kg pomace was mixed with 15.9 kg whole oats in a second trough. All of the mixture and 40 kg of the pomace fed alone was consumed within 20 hours.

Fresh whole pomace was offered daily during a 5-day period to 42 grazing Angus cows at the following levels per head per day: 4.54 kg (10 lb) on days 1 and 2; 6.8 kg (15 lb) on day 3; 13.6 kg (30 lb) on day 4 and 6.8 kg (15 lb) on day 5. All of the pomace was consumed within two hours each day thereby indicating that it was highly palatable to them in the fresh state.

From a practical viewpoint, winery waste must be removed immediately to prevent the breeding of flies and vinegar bacteria. One means of utilizing winery waste could be as a feed for yearling stocker steers confined to a small acreage to be plowed and utilized for a grain or vegetable crop, thereby, benefitting from the accumulation of manure. The cattle would have to

be located close to the winery to minimize hauling and labor costs but the time expended would be less than for distribution of the winery waste on land as fertilizer and soil conditioner. Stockpiling pomace for feeding on days when grapes were not being pressed was not studied because of the high cost of preservatives, labor of handling and ensiling facilities.