

# ONA REPORTS

*published in*

***THE FLORIDA CATTLEMAN AND LIVESTOCK JOURNAL***

**December-1995**

## **Using By-Product Feeds in Winter Supplementation Programs**

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Supplemental feeds are a significant cost to beef cattle ranches, and with lower cattle prices, cost-effective winter supplementation programs are critical. By-product feeds provide an opportunity to lower supplemental feeding cost. By-product feeds can be grouped into two categories: liquid feeds and dry feeds. Storage facilities, equipment, labor, and accessibility to cattle will influence decisions as to whether a liquid or dry feed is used. Liquid feeds are easily transported and stored, can be fed in open troughs or lick-wheels, may require less frequent feeding than dry feeds, and other feed ingredients may be mixed to provide additional protein, energy, and minerals. Dry feeds require bulk (20 ton) storage space, equipment to deliver the feed to cattle, adequate bunk space for all cattle to eat at once, but may be more appropriate than liquid feeds when higher levels of supplement are desired--such as with yearling or first-calf heifers. Some dry by-product feeds are bulky, and may not handle well in an auger system.

Approximately 500,000 tons of molasses are produced in Florida yearly. Many different molasses-based supplements are sold in Florida. Dry proteins such as feather meal and cottonseed meal, and energy sources such as fats and oils can be added to molasses-based supplements. Standard molasses (79.5° brix) averages seven percent crude protein and 72 percent TDN. Current delivered price for standard molasses is \$95.

Corn is not a by-product feed, but is included for price comparison. Current price of corn is \$140 per ton delivered to south Florida. Hominy, a by-product of the corn processing industry is similar in feeding value to corn, but may have a shorter storage life. Current delivered price is \$140.

The soybean hull is the coat of the soybean seed, and not the pod. Soybean hulls are high in fiber, but the fiber is very digestible, making them an excellent energy supplement. Due to the fiber, less digestive problems associated with acidosis are found, compared to that found with corn. Soybean hulls are palatable, and make a good weaning feed. At feeding rates of eight to 10 lbs. daily for yearling cattle, soybean hulls have a similar energy value to corn. Crude protein of soybean hulls ranges from 12 to 16 percent due to bits of soybean that are not completely cleaned from the hulls during processing. Soybean hulls are \$95 per ton delivered to south Florida.

Wheat middlings are a by-product of wheat flour production. Wheat midds are similar in energy value to soybean hulls and corn at feeding rates of eight to 10 lbs. per head daily, and are generally greater in crude protein (16 to 18 percent) than soybean hulls. Some ranchers report palatability with wheat midds, and digestive problems associated with overeating can occur. The current delivered price is \$100 to \$105.

Dry and wet citrus pulp has been used in Florida for years. Citrus pulp contains six to eight percent crude protein, and is similar in energy value to molasses on a dry matter basis. Current price for citrus pulp is \$95 to \$100 per ton delivered.

Acreage devoted to cotton production is increasing in the southeast, and whole cottonseed can be a cost-effective energy-protein supplement. Whole cottonseed is high in crude protein (22-24) percent, fat (22-24 percent), and TDN (94-96 percent). Palatability of whole cottonseed can be a problem until cattle develop a taste for it. Due to the presence of gossypol in unprocessed cottonseed, feeding levels should not exceed three to five lbs. daily for yearling cattle, and five to seven lbs. daily for cows. Corn, soybean hulls, wheat midds, or citrus pulp can be mixed with whole cottonseed to provide a winter supplement. Current delivered price for whole cottonseed is approximately \$120 per ton, but the price is expected to decline into the fall.

Broiler litter can be a cost-effective source of supplemental protein. Wide variation exists in the nutritive value of broiler litter (due to ash), so every load should be tested. "Good" litter averages 22-24 percent crude protein, 50 percent TDN, and 17-20 percent ash. Other energy feeds such as corn, soybean hulls, wheat midds or citrus pulp should be mixed with broiler litter to provide a complete supplement. Broiler litter can be purchased for about \$20 per ton in north-Florida, and \$40 per ton delivered to south Florida.