

# Cane Molasses (Blackstrap) as a Livestock Feed

By the Departments of Animal Husbandry,  
Dairy Husbandry, and Poultry Husbandry

Molasses is classified as a carbonaceous concentrate. When used in livestock rations, therefore, it should be considered a substitute for feeds like corn. Molasses contains between 60 and 65 per cent of total digestible nutrients practically all of which is carbohydrates. Corn contains about 82 per cent of which about 7 per cent is protein. Considering then only the amount of total digestible nutrients in these two feeds, molasses is worth approximately 75 per cent as much as corn, pound for pound.

In actual feeding practices there are, however, other considerations besides the relative amounts of digestible nutrients contained in comparing the values of these two feeds, as for example (1) the amount of nitrogenous feed which must be combined with molasses or corn in order to furnish the necessary protein, (2) relative palatability, and (3) the labor required in feeding.

Since molasses contains even less protein than corn, it must be fed along with other feeds such as cottonseed meal or legume hays in order that the necessary protein be supplied. A small amount of molasses combined with feeds lacking in palatability will no doubt increase feed consumption. Experiment stations have in general failed to show that molasses will increase feed consumption when added to already palatable rations. In most cases substituting molasses for corn will increase the labor required in feeding, although this depends upon the season of the year and the manner in which fed.

## Method of Feeding

Usually the most satisfactory way to feed molasses is to mix with about an equal quantity of water and pour the diluted solution uniformly over the grain or roughage. Experiments, however, indicate that satisfactory results may be secured by pouring the undiluted molasses over the feed or self-feeding it.

A gallon of molasses weighs approximately 12 pounds, so it may be fed either by weight or measure. Like any other feed, molasses should be fed in small amounts to start with, and increases be made gradually.

#### **For Beef Cattle**

Molasses can be used as a substitute for part of the corn or as an appetizer in rations for cattle perhaps to better advantage than for any other class of livestock.

Molasses has a feeding value approximately equal to shelled corn, pound for pound, when fed in small amounts to fattening cattle. If the cost of molasses then is less than that of shelled corn, it may be used as a substitute for one-third to one-fourth of the corn in the ration for two-year-old steers on full feed. For yearling steers and calves best results will be secured if molasses is substituted for not more than one-fourth of the corn. Tests carried on at several experiment stations fail to show any advantage gained by adding moderate amounts of molasses to rations for calves, if the cost of molasses is greater than corn.

For stocker cattle and cows, molasses may be used on low grade roughages to get the cattle to consume more feed. One to three pounds of molasses per head daily, fed on low grade roughage, will usually get cattle to clean up feed with less waste. Molasses, being mildly laxative, may be beneficial in preventing impaction when large quantities of poor quality coarse roughage are fed. Unless a part of the roughage consists of legume hay, approximately 1 pound of nitrogenous concentrate such as cottonseed meal, linseed meal, tankage, or a combination of these or similar feeds, should be fed daily for each one thousand pounds live weight of cattle. Additional mineral should also be furnished. This may be done by self-feeding a mixture of equal parts finely ground limestone, special steamed bone meal and salt.

#### **Dairy Cattle**

Experimental studies and practical experience show that molasses may satisfactorily replace one-fourth to one-third of the ground corn or other carbohydrate feeds in the dairy ration when the price does not exceed that of corn. Good results are obtained when the carbohydrate concentrates in the ration consist of two parts corn and one part molasses or equal parts of corn, wheat and molasses. In all instances where poor quality hays, fodder, stover, straws or other low grade roughages are used in the roughage ration, curing and shredding, and sprinkling with molasses diluted with one or two parts of warm water, will increase palatability and

reduce waste. Usually not more than 2 to 3 pounds of molasses daily should be fed per 1000 pounds live weight.

Equally satisfactory results may be expected with cows in milk, dry cows or young stock.

#### For Horses and Mules

Molasses is satisfactory as a part of the ration for work horses and mules. As much as 9 pounds daily for average sized, mature animals, and proportionately less for smaller animals, has been fed. If large amounts are supplied, horses and mules tend to suffer more from heat and to sweat more profusely; therefore 5 pounds per head is suggested as a maximum daily allowance of molasses for horses and mules.

Molasses may also be fed to growing and breeding animals as well as work stock. If fed to brood mares in foal, as with all other feeds, great care should be observed not to feed to such excess as to cause digestive troubles.

Since molasses consists mostly of carbohydrates and contains little protein, fat, and crude fiber, these feed constituents must be supplied by other feeds in the ration.

The most practical and satisfactory methods of feeding molasses to horses and mules are:

1. Feed fresh molasses poured over the grain ration, either undiluted or diluted with warm water, especially in cold weather.
2. Feed in tight feed boxes, allowing a separate box for each animal.
3. If animals are fed in group, molasses may be mixed with cut hay or straw, which adds bulk and lessens the danger of the gluttonous eater getting enough more than its share to cause illness. It may also be fed either diluted or undiluted by pouring over silage, uncut hay or stover, but uncut hay and fodder absorb it less rapidly than when cut.

#### Sheep

Experiments indicate that when molasses is substituted for a part of the corn fed fattening lambs, that (1) feed consumption may be slightly increased, (2) there will be little if any difference in gains produced, and (3) slightly more feed will be required to produce each unit of gain. To make molasses feeding economical for fattening lambs, it must therefore be purchased for less than corn pound for pound.

Breeding ewes may be fed from  $\frac{1}{2}$  to  $\frac{2}{3}$  pound molasses daily with no ill effects. When bran is relatively low in price it may replace most of the oats in the ewe's ration. Diluted molasses

mixed with bran is a palatable feed that is slightly laxative. The danger of constipation which results from feeding low grade roughage may be materially lessened by the feeding of the above mixture, or molasses may be added to the low grade roughage, in which case additional protein must be supplied either with approximately 2 pounds of legume hay or 1/5 pound linseed meal, cottonseed meal or other nitrogenous concentrates.

### Hogs

A small amount of molasses has been mixed with other feeds and fed experimentally to hogs at the Missouri station. Observations made of such tests lead to the opinion that hogs do not relish a sweet feed and that the use of molasses in rations for fattening hogs is, therefore, limited.

In tests with 77-pound pigs fed in dry lot of 103, the Pennsylvania station obtained the following results: The pigs that were fed corn 92% and tankage 8% made an average daily gain of 1.10 pounds while similar pigs receiving corn 76%, molasses 16%, and tankage 8% gained .91 pound. Of the corn and tankage ration 395 pounds were consumed for each 100 pounds gain, as compared to 454 pounds of the corn-molasses-tankage ration for each 100 pound gain. Figuring corn worth 98c per bushel and tankage at \$2.50 per cwt. in this trial, molasses was only worth \$6.04 per ton. Other tests were conducted both in dry lot and on pasture with similar results.

Results of experiments at other stations were in general similar to those reported at Pennsylvania, namely that when molasses was used as a partial substitute for corn in rations for fattening hogs gains were produced more slowly and more feed was required per unit gain, and in every case molasses was much less valuable than corn.

Reports are not available where molasses has been used as a substitute for corn in feeding growing or breeding hogs. It is believed that hogs of these classes—that is, hogs that are not on full feed—might make better use of the molasses than was done when hogs were full fed, and that in such cases molasses might, if considerably cheaper pound for pound than corn, be used to make up perhaps one-third of the ration.

### Poultry

According to experiments at Ohio State University, Winter found that "cane molasses may be used to replace cereal grains pound per pound up to ten per cent of rations for growing chicks and laying hens".