

Apple Pomace For Dairy Cows

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A truck load of apple pomace on the Ivan Compton farm, Wenatchee.

Washington ranks first among all states in the production of apples. The annual crop of this State is approximately thirty-one and one-half million bushels. Most of the better grade apples are marketed for eating apples or used for canning. It is estimated that about ten per cent of the annual crop is utilized in the production of vinegar and other by-products. Apple pomace is a by-product of apple canneries and of vinegar factories and large quantities are produced annually in this State. Apple pomace from the canneries contains a greater percentage of cores and peelings than that from the vinegar factories. Dairy-men in the vicinity of factories producing apple pomace have fed this material to their cows with very good results. There are, however, large quantities of this feed that are not utilized.

Apple pomace may be stored in a silo, bin or in a pile. Since the wet pomace has a high water content it is very heavy and it is sometimes necessary to put additional hoops around the silo near the bottom to hold the pressure. Bins for storing apple pomace should be strongly built and those that have been constructed for some other purpose should be reinforced before being filled with apple pomace. Stored in this way apple pomace will keep over a period of several months with little loss from spoilage except where air has access to the pomace. When stored in piles, a layer of pomace spoils on the outside of the pile forming a crust that tends to exclude air from the interior thus preserving all but a few inches on the outside.

Some trouble has been experienced from box nails and other metal objects in the apple pomace. In some plants this difficulty is eliminated by floating the apples through a trough of water allowing the metal to sink. In some plants the pomace is run over a magnetized roller to extract metals. Where no such precautions are taken, metal in the pomace may be a menace to cattle. Some dairymen shave off rather thin layers of the pomace with a sharp shovel. Metal will cause dark spots in the pomace and can thus be detected and removed before feeding.

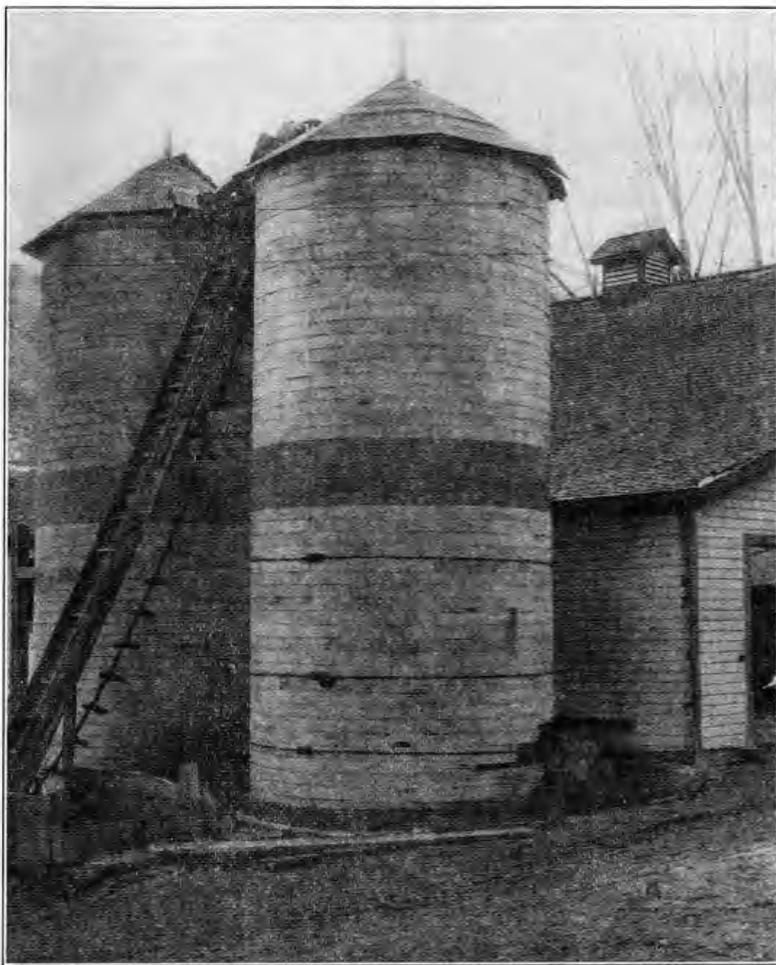
Odors from this feed may be readily absorbed by milk if it is allowed to stand in the barn for some time after milking. It is advisable to feed the apple pomace after milking and to remove the milk promptly from the milking barn.

Various experiments have shown that apple pomace is approximately equal to good corn silage in feeding value for dairy cows. The pomace is much heavier than silage and it is advisable to weigh a few feeds so that the feeder will know how much he is feeding. Cows will readily consume from 20 to 40 pounds per day and when fed with feeds that will properly balance the ration may be expected to give good results.

Some dairymen in the vicinity of factories that have a by-product of apple pomace are using large amounts of this material. Because of the high water content of the wet pomace, it is not economical to ship this material long distances. To overcome this disadvantage driers have been installed at some factories in the State and dried apple pomace is now available in limited amounts.

The State College of Washington conducted digestion and feeding experiments with dried apple pomace. The results of these experiments are reported in detail in Washington Agricultural Experiment Station Bulletin No. 270. In the digestion experiments the dry matter of the dried apple pomace proved to be 72 per cent digestible. In the feeding experiments with milking cows the dried apple pomace was soaked with water and fed in comparison with soaked beet pulp. The cows when fed the apple pomace produced approximately 93.5 per cent as much milk as when fed the beet pulp. The results of these experiments indicate that dried apple pomace furnishes a palatable feed of only slightly less feed value than dried beet pulp. It may be fed dry as a part of the concentrate mixture or may be soaked in two and a half times its own weight of water. Fed in the latter manner it may take the place of succulent feeds and may be fed at the rate of from twenty to forty pounds per day.

Apples contain on an average about 18 per cent dry matter, about 16.5 per cent of total digestible nutrients, but less than one-half of one per cent of digestible crude protein. They are almost twice as high in both dry matter and total digestible nutrients as mangels. It has long been the opinion of many farmers that apples will "dry up" the cows. In many cases where such unfavorable results are observed from feeding apples, the trouble is due to



This picture, also taken on the Compton farm, shows the method of filling silos with apple pomace by means of an endless belt conveyor.

overfeeding of this palatable and succulent feed. Apples are very low in protein and should be fed in conjunction with alfalfa hay or other protein rich feed.

Windfall and cull apples have been fed to the milking herd at the State College with excellent results and no bad effects whatever have been experienced. Each cow was fed from 25 to 35 pounds of these apples per day and the cows relished them and maintained their normal milk flow. A considerable part of the vast amount of imperfect apples that annually go to waste might be used to an advantage as a feed for dairy cows. However, the dairyman should bear in mind that the amount fed should be limited and should be fed only as the succulent portion of a properly balanced ration.

Table 1. Approximate digestible nutrient content of apple pomace and some similar feeds.

	Digestible Crude Protein Per Cent	Total Digestible Nutrients Per Cent
Dried Apple Pomace	1.4	70.7
*Dried Beet Pulp	4.6	71.6
*Corn Silage (mature)	1.1	17.7
*Mangels	0.8	7.4
*Apple Pomace (not dried)	1.2	18.6
*Apples	0.4	16.4

* From Feeds and Feeding by Henry and Morrison.

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