

succeeding length is taken off. While a boy can lead the pipe around, the man should be there to keep it tramped.  
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### Neighbors Help Each Other Fill Silos.

Editor "The Farmer's Advocate":

My personal experience with silos and silage has been short, but I have watched the game all my life. The time of cutting the corn, in my estimation, is very important, as last winter, while visiting a lot of silos, I found the silage too dry, and in some cases moulded, from the effect of not enough moisture, either natural or unnatural, to properly heat it, the owners themselves admitting the mistake they were making. The corn should be just nicely in the dough stage, and not allowed to get flinty, as the object of any plant is to produce seed, and, therefore, the nutriment will be in the corn, and not evenly distributed through the stalks. The effect of frost on any plant lessens its feeding value. The wilting of the corn before filling, in my estimation, matters but little, so long as it does not lie on the ground long enough to cure.

A machine capable of handling from 15 to 20 tons per hour makes it much easier on men and machinery than a smaller size. A machine blowing from 10 to 16 tons per hour, 35 or 40 feet, requires some power, say about 15 horse-power, or more makes it better. The wagons used for hauling should have racks just as flat as a floor.

The men and teams required for filling depends on length of haul. Four pitchers in the field, and an extra man or two at the silo, with teams enough to keep the machine supplied, say from four to six, will fill a 14 x 40-foot silo in 10 hours, if they are not afraid to exert themselves. Three men in silo should be enough, providing they use some sacks on the end of pipe to distribute the corn evenly about silo. The neighbors change work and help each other, as in threshing, and hire all we can, beside. Two men, with engine and blower, cost us \$13 per day. Sprinkling is only necessary where corn has become too dry. Refilling is only a matter of getting as much in the silo as possible, which is very important. After the silo is filled for the last time, a lot of chaff should be blown on, and sprinkle well with water to prevent air from going down in silage; 8 or 12 inches will rot, anyway, so it might better be chaff than corn. In this vicinity, we consider \$1.00 per ton will grow the corn and put it in the silo ready to feed, counting \$5.00 an acre for rent of land, plowing, cultivating and filling. I might say I prefer corn planted in squares 3 or 3½ feet apart, with not more than four stalks in every hill to corn drilled. Early and late cultivation counts when filling time comes.

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In preparing for a dry season, the real problem is to construct a seed-bed, in which a great deal of moisture can be stored, and then cover it with an earth mulch that will hold the moisture there for the growth of the crop.

## THE DAIRY.

### Dairy Farm Investigation.—III.

#### WINTER FEEDING.

In last week's issue the methods of summer feeding were given at some length, and it is the purpose of this, the last instalment of the article, to discuss the methods of winter feeding and the special means and appliances for the handling of the milk from the time it is drawn until it reaches the consumer. It will be seen from the rations given that the owners of the respective herds visited feed quite liberally, and that silage forms the most important winter feed. Corn and clover or alfalfa constitute the roughage on most dairy farms, and as stated in one of the previous articles, corn and alfalfa make the best balanced roughage ration. The system of numbering each dairy in order, which was followed in giving the summer feeding, is again used for the winter rations. The following is the feed and the amount for an animal in each herd each day during the winter months:

Herd Number 1.—Silage, 20 pounds, twice each day, with 1 pound of mixed grain for every 3 pounds of milk given by the cows, and all the alfalfa hay the cows will eat. The mixed grain consists of 2 parts of bran to 1 of oats, with 50

pounds of oil meal to ½ ton of the mixture. A little corn meal is fed on very cold days to keep up the animal heat.

Number 2.—Alfalfa and clover hay, and all the silage the cows will take, together with mixed grain twice per day.

Number 3.—This herd is fed all the clover hay in winter that they will eat, together with all the silage they will clean up. Mixed grain is fed also to keep up the milk supply. The owner of this herd does not believe in forcing the cows, but favors liberal feeding to keep them producing a fair quantity of milk.

Number 4.—No silage is fed in this herd. Roots (mangels and turnips) are used in its stead. Corn is cut from time to time throughout the winter along with hay and straw. This cut feed, along with the chop and mangels, is fed three times per day during the winter. The chop consists of oats, corn, shorts and bran mixed, just half as much of the latter as of any of the other three, which are in equal quantity. Three quarts of meal are given at a feed, and long hay is fed twice per day; this making in all five feeds per day for these cows. What is lost by not having silage seems to be made up with other material.

Number 5.—Each cow in this herd receives 8 pounds of rolled oats and bran mixed per day, and about 30 pounds of silage at a feed twice per day. Alfalfa and clover hay are fed cut, the proprietor believing that the cows will eat more when it is fed this way, and the more they eat the higher are the returns.

Number 6.—Clover hay and silage are fed on this farm, together with turnips and mangels. Very few turnips are fed, because there is difficulty in keeping the milk from being tainted. The meal ration is made up of bran, shorts and oats, about 4 pounds each at a feed.

Number 7.—Hay is fed on this farm at noon, and silage with cut straw and hay, a bushel each morning and evening, with about 10 pounds of brewer's grains twice a day.

Number 8.—Forty pounds of silage and 8 quarts of brewer's grains fed in two feeds, one-half in the morning, the remainder at night after milking in each case, and a liberal feed of clover hay at noon constitutes the ration fed to this herd in winter.

Number 9.—Hay is fed at noon, and 28 pounds of silage and 10 pounds of brewer's grains are fed night and morning.

Number 10.—A bushel of silage and 20 pounds of brewer's grains, one-half in the morning, the remainder in the evening, with clover hay at noon, is the ration of each cow in this herd in winter.

Number 11.—A bushel of silage at a feed twice per day, and 4 quarts of chop, consisting of a mixture of oats and barley, fed with it, and good clover hay at noon, is fed to the dairy cows in this herd.

Number 12.—This is a very well cared for herd. In the morning previous to milking alfalfa is fed. After milking each cow gets ½ bushel of silage and about 20 pounds of mangels fed whole, and 4 quarts of mixed grain—oats, barley and bran. Alfalfa hay and silage are fed again at noon, and in the evening the morning feed is repeated.

Number 13.—Each cow in this herd receives 1 bushel of silage per day and 6 quarts of bran and chop mixed, in the proportion of two of the former to one of the latter, and hay three times daily. The silage and concentrates are fed in two feeds.

Number 14.—Cows in this herd get 1 bushel of silage and 8 quarts of chop, of a mixture of bran, oats and barley, divided into two feeds. Hay is fed three times daily.

Number 15.—Bran, oat and barley chop is used as concentrate in this herd; 10 to 12 pounds per day being fed together with 1 bushel of silage. Hay is fed at noon.

Number 16.—This herd is fed highly, getting 1 bushel of silage and 4 quarts of chop and bran twice per day, with hay at noon and roots after milking.

Number 17.—Four quarts of bran and shorts at a feed three times a day, with hay at noon, and 1 bushel of silage morning and evening make a good ration for cows in this herd.

Number 18.—Cows get 1 bushel of silage among three twice daily, and 2 quarts of oat chop twice per day, and all the hay they will take. A peculiar incident was noted by this dairyman in the feeding of silage. In his herd of 25 cows he noticed a falling off of over 100 pounds of milk a day when changing from old silage, which has been used for summer feeding, to new silage, in the fall.

Number 19.—Silage is fed a little heavier in this herd than Number 18, the cows getting one bushel a day. The grain ration consists of 3 quarts of oat chop twice a day, and the cows get hay morning and evening.

Number 20.—Hay is fed in this herd three times a day, with ½ bushel of silage and 8 quarts of chop.

Number 21.—Silage is fed in this herd three

times daily, ½ bushel at a feed. Clover hay is fed twice a day, as is also chop, about 4 quarts at a feed.

Not considering the fact that silage and clover hay are the most common feeds used, perhaps the most noticeable feature is the amount of bran and oats being fed. In every herd visited either one of these, and in most cases both of them, are found holding the prominent place in the concentrate ration. Bran is a most excellent feed for the dairy cow, being slightly laxative, giving bulk to the ration and providing the crude protein and phosphorus so vital to the formation of milk. For dairy cows there is no better single grain than oats. They give better returns where fed alone than does bran, and the dairymen who are feeding these two grains are not far astray in their concentrate ration for the production of milk.

Another feature of the feeding of these herds in winter is the absence of cut straw and hay with the silage. It is generally conceded that cattle will do better if fed on a mixture of cut roughage than if it is fed whole. Very few of these dairymen are practicing it, but those who do are of the opinion that their cows will eat more of the feed, and that it is more easily digested thus, giving them larger returns at the pail. Some very good rations are to be found amongst the foregoing list. True, some of the rations are better than others; some are a trifle light, while others may seem a little too heavy. There is quite a variation in the amount of silage fed, some feeding as high as two bushels a day, while others feed as low as three-quarters of a bushel. As a general rule, where the silage ration is light other roughage is fed more abundantly.

Roots do not seem to hold a very prominent place in dairy farming, but the few who grow mangels claim that they are very valuable to feed in conjunction with the silage, clover and concentrate ration. Their worst drawback seems to be the expense of production. Corn can be worked faster and much more easily, and when cut and in the silo is ready prepared for feeding.

#### CURRYING CATTLE.

Nearly all these dairymen practice cleaning their cattle in the winter. The scarcity of labor is all that keeps those who do not from giving the cattle a regular and thorough cleaning every day. There are few better means of employing spare time in winter than following this practice. One of the men called on stated that his cows fell off five quarts each per week when currying was neglected. In a large herd this loss would amount to considerable, and, as labor is generally more plentiful in winter than in summer, it can very profitably be used for this purpose.

#### SPECIAL CARE GIVEN MILK.

All the dairies visited which were producing milk for city trade had a separate dairy house or building in which the utensils were cleaned and kept, and in which the milk was kept. None of these buildings were very expensive, but many of them were handy, and all were in a clean and sanitary condition. Many were cooled by ice, while in many others the milk was cooled by water, either in cans, or by water running over coolers. These coolers seem to have solved this difficulty, and ice does not appear to be so essential as was once believed. Of course, where certified milk is produced, the use of ice is imperative. In order to scald the utensils and properly sterilize them, an engine is necessary. Only two or three of these dairies were fitted with this appliance. There is no other method of dairy sterilization as effective as steam, and, to keep the bacterial content down to the necessary limit of certified milk, steam is just as important as ice.

The washing of cows' udders before milking is a very good practice. This was done in only one herd seen, and the milk from each cow was taken and cooled immediately upon being milked, the milkers also washing their hands after each cow, and using special milking stools, which are scrubbed twice a day when the dairy rooms are washed out.

Where the milk was being sold wholesale, many cooled it in cans, and this was the method followed by those sending the milk to the powder factory. No special milk houses or dairy buildings were in use on these latter farms, the milk cans being kept in large covered troughs through which cold water was running. The retailers and a few of the wholesalers had very commendable special dairy buildings, and, on the whole, the milk was being handled in a very sanitary way.

The dairy business is one of the progressive branches of our agriculture, and, judging from the information gained through this investigation, it is a very profitable business, worthy of the best brains of those engaged in agricultural work, and, to get the most out of it requires attention to the small details, as well as a wide knowledge of methods of feeding, stabling, and general care of cows, as well as the methods of handling and disposing of the dairy products.

[Note.—A further discussion of dairy methods by readers of "The Farmer's Advocate" is invited.—Editor.]