

Ensilage in Kansas.

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While the system of ensilage has been practiced for centuries, it is true nevertheless that many are ignorant of the terms that must be used in discussing it. Ensilage is the name for the process of preserving any succulent food in an air tight-pit or vat. Silage is the term used to designate the material so treated and the silo is the receptacle.

The practice of storing grain in air tight-pits is an old one. It was a common practice among the Romans to dig a deep trench in a dry soil, place in the bottom of this a layer of chaff or cut straw, beneath the grain. The grain was always stored in the ear and when thus stored kept for a great length of time. In Egypt where it never rains the process of storing grain was a simple one. On account of noxious insects it was necessary to store beneath the ground. A deep narrow vat was built which was filled from the top and emptied from the bottom. This practice has proved successful only in a dry climate.

The practice of preserving succulent materials is a more modern idea.

The Italians have had for some time a practice of preserving green leaves in casks and using them in winter.

The Hungarians have a similar process in making what they call sour hay.

At about 1840 the Germans preserved green fodder in underground pits.

It became a general practice and the best methods were decided upon.

They agreed that when the silos were lined with wood, the silage well tramped and then weighted with eighteen inches of earth the best results were obtained.

In France and England we have evidence that fermented fodder was used extensively previous to 1870.

By that time it had passed through the experimental stages and had become recognised as ^{having} decided advantages over dry fodder.

The introduction of the ensilage system into this country is due more than any other one cause to a book written by M. Auguste Isfarte,

a gentleman farmer of France. His book was translated and published in New York in 1878. and had a very wide sale.

There was little that was new in his book although some of the most enthusiastic of his followers claimed that he was the inventor of the system. Since that time the practice has grown rapidly till now silos are to be found in all parts of the country.

As nearly all crops can be preserved in this way the topic of ensilage crops is confined to the most practical. Every country and every section has its most favored crops.

In this section of the country where corn is so universally a success we need not look for any better ensilage crop. Its abundant foliage, the succulent stalk, the nutritious grain, the enormous amount that can be grown on a small area and the comparative certainty of a crop make it for us a preeminent ensilage crop.

But corn is not alone by any means. Leguminous plants as a class make

a most excellent silage. Small grain and grasses are also good but only a comparatively small bulk can be grown on the land without a corresponding high feeding value.

In many cases waste products that would be useless if dried can be successfully stored as silage and saved. As examples of this, Wet-tops, that are cut off when the bolls are stored, or corn husks and pea pods from a canning factory.

It is the expensive process of harvesting that is the most weighty argument against it. Probably the principle reason why every well regulated farm has not a silo is because the farmer feels that the expense of filling it would exceed the profit he would derive therefrom.

While it must be admitted that the immediate cost is considerable by the introduction of new methods each year

this item is diminishing. We must look to the ingenious Yankee for a solution of this difficulty. The present methods are considerably less expensive than the old ones.

It used to be thought

that the crop should be put in before it was wilted. This has been quite thoroughly disproved. It was also thought that the silo should be filled rapidly. In like manner we have learned that the best results are obtained when the silo is filled slowly and fermentation is allowed to proceed as the silo is filled.

The expense of harvesting the ensilage crop comes all at once and when the bill is footed it does seem large. But it should be remembered that the real expense is little, if any more than when the fodder is shocked in the field and hauled in winter if the farmer counts his own labor worth anything.

Who has not passed over a field of corn harvested in the usual manner and not noticed the best portions of the leaves broken off by the wind and destroyed.

This is the most valuable fodder constituent of the plant and are also the portion most easily wasted. In handling fodder in winter especially if the weather is dry what quantities of the choicest leaves are broken off and carried away by the wind.

By ensilaging the crop all this is saved and furnished to the stock in winter as good as the day it was standing in the field.

The perfume of new mown hay has become proverbial. What causes this perfume? Surely something is coming from the grass besides the water that is lacking in winter when the hay is dry and unpalatable. Now if this hay were ensilaged all this could be saved and given to the brute when his system craves something succulent. What is true of hay is true of fodder of all kinds that can be ensilaged.

When field cured fodder is fed the animals eat but little of the stalk. In this part that is rejected there is much nutriment. as shown by the greediness with which they eat it when it is green.

Now when the fodder is silo cured they eat much more. Moreover some of the harder portions are rendered more digestible by fermentation and so the feeding value of ensilage is superior to that of fodder.

To obtain sweet silage is the aim of every owner of a silo. This is possible

only when the corn is thoroughly set on the cob and the plant well matured.

The maximum amount of sugar is then developed in the plant and much of it is left when fermentation is stopped. To this end the corn should be planted far enough apart that it can grow vigorously and yield a considerable amount of corn.

The subject of fermentation is an intricate one which I could not treat without going beyond my knowledge of chemistry.

The sugar of the silage is acted upon by genus or ferments and changed into acetic acid. The process involves the production of heat and Carbon Dioxide.

When this heat causes the mass to rise to a temperature of 132° Fahr. the ferments are killed and the fermentation stops.

The Carbon Dioxide settles to the bottom driving out the air and thus prevents the recommencing of fermentation when the mass cools again. Hence the necessity for an airtight silo is evident in order to hold this Carbon Dioxide.

The form of the silo is an evolution from a simple hole in the ground

Silos of all kinds and materials have been built but now we have passed beyond the experimental stage. The massive stone silos have passed out of date. They were too cold and there was great difficulty in getting the walls so smooth that no air could come between it and the silage.

The silo met with most often now is the wooden one or a stone one lined with lumber. It is predicted on good authority that the silo of the future will be a round iron tank.

The wooden silo must be thoroughly saturated with some preserving preparation or else there will soon be a rebuilding necessary. Coal tar is the preservative generally used. Sains must not be spared to provide against lateral pressure which is considerable.

Silage has proved its value when fed to any kind of stock the Kansas farmer can keep with profit. As far as I can learn horses always thrive on it when a little grain is added. They have the sleek coat characteristic of a horse on pasture. Prof Cook says he

never saw horses do better than when fed ensilage with a quart of oats twice daily

As a feed for swine. Every farmer has fed green corn to his hogs and ^{has} seen them thrive on it. Silage is this same material fed at a time when they are enabled to get a greater good out of the grain fed with it.

I believe that it has been extensively fed to cattle with success. Many of our most prominent cattle feeders have their silos which yield them annually handsome profits on their investments.

In our climate it is essential that the silage be fed in a shed to prevent it from freezing but to a farsighted feeder a shed is almost as essential to successful feeding as corn. It has all the advantages of the soiling system of the eastern states without a corresponding inconvenience

Young and growing stock of all kinds are helped along by feeding it.

In the dairy it has great usefulness. The old countries have made a success of winter dairying by

The use of root crops. Root crops have never been much of a success in America and especially in Kansas. To make a success of winter dairying here requires too much grain. "Dairying is the child of grazing," as is shown by the sections celebrated for their butter.

Soass is preeminently the great butter maker. Eusilage when needed most, that is in winter, will do much toward solving the problem of successful winter dairying. It increases the flow of milk in some cases as much as 25%, as has been proven by men who sell their milk by the quart and take advantage of this increase.

It is evident that our present extravagant methods of farming cannot long be continued without impoverishing our soil to such an extent that farming will become unprofitable. When we raise corn and sell it to large feeders who dump the manure which should go on to our farms into the river we may well enquire "Where are we going to land?" The immense quantities of this our staple cereal which

are shipped eastward surely represent so much value robbed from our farms and from those who have them after us.

The wise farmer will arrange so as to send only the finished product to market and so the waste may go back where it came from and aid in keeping up the fertility of the soil. Oftentimes the value of the manure which has accumulated in the feed lot is entirely overlooked in balancing up the profits netted from the cattle we feed. Not only do we get more manure when we feed silage rather than corn fodder but it is far more useful bulk for bulk. It being cut, the waste is more easily scattered and covered by the plow. It does not heat as readily as the other and drive out the most valuable manure materials.

As was said before corn is the preeminent silage crop. So we who are situated in the great corn belt are specially favored. We can grow the rank growing leafy southern varieties for ensilage and some northern variety for the grain. Combining these with

Kansas cattle would give us a quality of beef celebrated across the Atlantic.

The most enthusiastic advocates of the silo must remember that we can get no more out of the silo than we put in.

The system is not advocated as a cure for all the ills that farmers are heir to, but can be used most successfully to supplement the other operations on a well regulated farm.

In a year of short crops when we must get the most we can out of what we raise that it is of greatest value.

It cannot be undertaken by a single small farmer with great success. but when several farmers combine with machinery all labor can be looked for the greatest profits.