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Agricultural Experiment
STATION.

AGRICULTURAL COLLEGE _____

8 APR 1935

BULLETIN NO. 9.

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DEPARTMENT OF AGRICULTURE:

Silos and Silage.

FEBRUARY, 1891.

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PORTLAND, OREGON:
SCHWAB BROS. PRINTING AND LITHO. CO.
1891

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SILOS AND SILAGE.

H. T. FRENCH.

In response to numerous inquiries, regarding the use of the silo in storing food for stock, the following report of work done in this line at the experiment station, has been prepared:

A small silo was built in the barn on the station farm, in 1889. It consisted of a portion of the lower floor, 10x12 feet, partitioned off with 2x6 studding, placed twelve inches apart, and extending to the upper floor, 10 feet above. On the side next the side of the barn the studs were 16 inches apart. The floor of the silo was made on the ground, eighteen inches below the barn floor, making the silo 11½ feet deep. The studding was boarded inside with common rough lumber running across the studs. Tarred building paper was placed on this, lapping enough to break joints. Then a covering of matched flooring running up and down was put over the paper, making a smooth and air tight wall. A coat of hot gas tar and resin was put on the last covering, to protect the lumber from the hot juices of the silage. The tar and resin was used, in the proportion of one pound of resin to one gallon of tar. This portion of the silo has been filled the third time, and there is no sign of decay in the lumber. There was no floor in the silo when filled the first time, simply the ground covered with two or three inches of pounded gravel. This worked all right, until the rats found out the merits of silage, and began explorations. A cement bottom has since been put in, to protect the silo from these rodents.

Many use plank floors and are much pleased with them; observing the same precautions that are taken in the construction of the walls,—namely, to keep out the air and vermin, and to make it strong enough to support the great weight of the green silage.

In the fall of 1889 the silo was partially filled with corn of several varieties, grown on the experimental plats and on the farm. About fifteen tons were available for silage, hence the silo was only partially filled. The filling was delayed by the cutter not arriving on time. On account of this delay the corn was very badly frostbitten, so much so that when cut the leaves were dry and brittle. Notwithstanding this condition of the fodder, it made excellent feed, none being refused by the stock. The silo was filled the first week in October.

After filling the silo tarred paper was spread over the top, and loose boards laid over this, with about half of a cord of fir wood placed on the boards to hold them in position, and press them down in a measure. There was comparatively little weight, and even this may be dispensed with, as many have determined in practice.

When the silo was opened January 1st, 1890, there was a few inches of poor silage on the top. This was removed to the manure pile and feeding begun. All of the covering was removed from the top, which is thought to be the best method, as there is no loss when a layer is taken off every day or two for feeding.

There were no animals on the farm that had ever been fed on silage, yet some of them ate it at once, and all soon became very fond of it. It is best to feed only a little of the silage at first, as in the case of any new kind of food, animals have to learn to eat it. The animals were given one feed each day for a few days; but later two feeds were given, constituting the main ration. A small ration of bran was given to cows giving milk. Better results are realized, if there is one feed of dry material given each day, or the animals are given the privilege of the straw stack. I believe straw can be utilized very satisfactorily when fed in this way.

Some digestive experiments in feeding silage were carried on by the chemist of the station, the results of which were published in Bulletin No. 6.

All of the cattle, consisting of ten head, were fed on the silage, until the middle of March, when the supply gave out. In May, 1890, five or six tons of mixed clover and grass, cut from the college lawn,

were placed in the silo. This was covered with a layer three inches thick of green rye which had been run through the feed cutter. The clover and grass was not cut with the feed cutter. The silo was covered as before, except there was no paper placed over the material. The feeding of the clover silage was begun July first. The animals were very fond of it, and the cows gave more milk than when running in the pasture. This is one of the strong points in favor of the silo in this State; i. e., by its use the supply of succulent food can be kept up during the dry season. Dairy products bring a better price at this time than earlier in the season, and the pastures invariably fail during these dry months. The practice of feeding silage at this season has been successfully followed by many, who are engaged in the dairy business. At a Farmers' Institute, held at McMinnville, Col. T. Cornelius said that "he had fed his dairy stock on silage the year round, and found it more profitable than to pasture stock."

The clover silage was fed as long as it lasted, with very satisfactory results.

Last fall we enlarged the silo on the station farm, by building it ten feet higher, in just the same manner that the lower portion was built. This addition has not proven an entire success, from the fact that the wall next the side of the barn was not strong enough to hold the pressure. No injury was done to the building, yet the silage was slightly damaged, owing to the entrance of air at the corners, where the walls sprung apart. In building a silo of this height, 2x10 should be used for studding, placed not more than sixteen inches apart; then there is little danger and no loss.

Forty tons of corn, by actual weight, were put up the first week in October. There was no paper used in covering the top. The boards were used as before, and a few sticks of wood thrown on to hold them in place.

The silo was opened December 1st, showing very little loss, indeed not more than two or three inches. This supply of silage will last our stock until May 15th, giving them all they will eat, in addition to what they get at the straw stack. Eleven head of grown cattle are being fed during this time, besides four calves from 4 to 8 months old.

The silage is of excellent quality and very nutritious, as shown by the condition of the animals. The cows giving milk have had a small ration of bran and shorts. A Jersey bull has been fed on silage, almost exclusively, and has maintained his condition, which is not poor by any means. There was a large proportion of grain grown with the fodder, making the silage of high feeding value. Three varieties of dent corn constituted the larger portion of silage. A number of varieties were grown in small plats. The Pride of the North was the principal variety grown. Another variety called Hibbard corn was grown, giving good results. This is probably a cross between flint corn and some variety of dent. It is medium in size and in date of ripening. A variety of dent corn was obtained from the southern part of Michigan, which promises to mature successfully, and it produces a larger growth than the other varieties mentioned.

During the coming season a trial will be made of putting up green rye, peas and vetches for feed during the dry weather of July and August. If this proves successful, then the same silo can be used to serve a double purpose,—that of summer feeding, and again filled with corn for winter feeding.

There is no doubt that corn is the most satisfactory crop to grow for the principal supply of silage. Wheat, oats, peas, rye and numerous other crops have been grown for silage with more or less satisfaction.

As regards the construction of the silo, there is little to be said; for it has been fully explained, in agricultural journals and in station reports, both by illustrations and printed details. In case such details are not understood, any information in our power will be cheerfully granted upon application. It is sufficient to say that there is nothing about the construction of the silo which cannot be mastered by the average farmer, or at most with the assistance of a carpenter.

There is one point in favor of the construction of silos in this valley, over that in sections where a much lower temperature prevails in winter. No double wall is necessary to keep the frost from entering. The outside covering of the silo may be cheap, and when built in the barn, only the inner coverings are needed.

We would recommend that the floor of the silo extend to the ground

when possible, and that cement be used instead of wood. The cost is not great, and the durability is much in its favor.

The cost of the silo can be safely placed at one dollar per ton of storage capacity, and in many cases this can be very materially reduced. The silo should be well built, at all events, for it is among the permanent improvements of the farm, and its success will be largely gauged by the thoroughness of the work.

In portions of this State, the silo becomes of double importance, in providing a comparatively cheap storage capacity for food that otherwise could not be cured for stock. Corn fodder and the grain as well, when stored in the ordinary way, will not keep during the damp weather which prevails in winter; but when placed in the silo they keep perfectly, and are in the very best condition for handling, and for economical feeding.

For cutting the corn fodder there are many good improved machines. We used the Ross cutter, No. 11 A. This size is too small for a large silo; but for a small farm it does the work very satisfactorily. The power used has been a small portable engine hired for the purpose. The station is about to purchase a tread power for this work. This power can be placed in the barn, and used during stormy weather, in cutting straw and hay, or for grinding food. The cutter is gauged so that it will cut the corn fodder and ears into pieces about an inch long. On the whole, the work at the station in storing food in this manner has been a success, and we believe will prove successful throughout the valley, and in other parts of the State where corn, or some suitable forage plant, can be grown with a reasonable degree of certainty.

While corn does not mature here quite as readily and as certainly as in the Eastern States, yet it will reach the stage for making good silage with little difficulty. Corn for ensilage should be planted in rich ground, in drills three and one-half or four feet apart. If the stalks are about one foot apart in the drill, on strong soil, they will produce an average of one good sized ear to the stalk. Corn planted in this way will yield from eight to fifteen tons per acre.

We have failed to meet with a single man, who has tried the use of the silo, and is not highly gratified with his success. The following extract, from a paper written on this subject, by Col. T. Cornelius, one of the most successful farmers in the Willamette valley, speaks in the strongest terms of the merits of the silo:

“My experience with the silo is something like this: In the summer of 1888 I built a silo, which holds almost 225 tons, filled with green corn, and was so well pleased with the result that the following year I built three other silos and filled them with green corn, clover, oats and wheat, all of which made good feed. This year I put up one thousand tons, corn, clover and oats, mostly corn. I am well pleased with the result—would not undertake to keep any considerable number of stock on a farm without a silo, and believe farming lands in this State, especially for stock or dairy farming, is worth at least twenty-five per cent. more with the aid of the silo than without it, as any of our valley lands may be made to support one cow per acre with the silo, while without the silo it requires above four acres to support one cow, and any land reasonably near to transportation in the Willamette valley that will support one cow per acre is well worth fifty dollars per acre for stock farming, while land that will only support one cow to four acres, is only worth ten dollars per acre.”

This statement, coming from a man who has worked out the merits of the method from a practical stand point, is worthy of careful consideration.

That the State of Oregon should meet her demands for dairy products, is putting it mildly. She ought to export such products rather than import them, and the silo will assist in a large measure in bringing this about.