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## SOILS NEED LIME.

Soil Tests Show Some Minnesota Soils Deficient in Limestone.

It has been believed by authorities for a long time that the soils in Minnesota contain plenty of limestone, which, it is hardly necessary to state, is absolutely essential for plant growth. An abundance of limestone prevents the soil from becoming acid; and an acid soil restricts the growth of farm crops. The growth of alfalfa and clover, or any of the legumes, is rendered impossible when the soil is acid, as the nitrogen-gathering bacteria which live on their roots and contribute to the plant's growth cannot live in an acid soil.

The results of soil analyses at the Minnesota station would indicate that of all of the soils in Minnesota containing plenty of limestone. There is plenty of evidence to prove this contention. During the past week twenty-two samples of soil were tested, of which fourteen were acid. The majority of the fourteen acid samples were extremely acid. This does not mean that the same percentage of Minnesota soils are acid, but it does mean, with other proof which we have, that there is considerable soil in the state whose productiveness could be improved by liberal applications of limestone.

Minnesota soils must contain limestone if they are to be productive. The use of lime to improve the soil is as old as agriculture, itself. History tells us that the Greeks used much lime and ashes—lime is the principal ingredient—before the Christian era. Roman writers speak often of lime; and in England, several centuries ago, the farmers removed chalk from the sub-soil to be used, as a fertilizer, for the lime which it contained. In the United States much liming is done in the eastern and east central portions. Maryland, Pennsylvania, New York, the New England states, Illinois, Indiana, and Ohio perhaps lead the use of limestone.

The Illinois Experiment Station has completed a soil survey of many counties to determine the exact character of the various types of soil and learn the exact lime requirements of the acid types. Minnesota should have the acid soils within her borders located so that lime can be added and the productivity of her fields and pastures can be raised. No better service can be rendered the people of the state. This should be accompanied by a soil survey, so the types or areas of soil of certain formation could be mapped and studied from this standpoint.

There are many sources of limestone in this state where lime can be economically purchased to be used as fertilizer. It is generally not very expensive, the price ranging from \$1 to \$4 per ton. In the improvement of the soil, there are five principles to be observed—the control of water, principally by drainage; ample humus in the soil; good tillage; fertilizers; and an adequate supply of lime to make the soil sweet and free from acid. The last principle should not be forgotten.

Any farmer who believes his soil is acid or sour may have a sample tested free of charge by sending it to me. W. H. Frazier, assistant professor of soils, Minnesota Agricultural College, St. Paul.

## TOPICS TO DISCUSS.

O. M. Olson, in charge of the Farmers' Club movement in the state, has prepared the following outlined topics for discussion during the month of August:

**Saving Clover Seed**—Outline: Clover seed as a source of profit; the price next spring and the probable price next spring; which crop to save for seed; when and how to harvest; curing and threshing. The references are Minnesota Extension Bulletin No. 6, and Farmers' Institute Annual, No. 21.

**The County Fair**—Outline: Should the county fair be supported? How can we secure for it the best support? What can we gain by attending and exhibiting at a county fair? The value of a clean county fair to the family; the time to prepare for a county fair.

**The Farm Papers**—Outline: The farmer of today a student; necessity of open conviction and willingness to receive advice of others; the opportunity of farm papers to compare views of different persons; the interest of farmers to the whole family; the subscription price a secondary consideration.

These and other topics of interest this time of the year, such as silos, plowing, fall feeding, seed corn, and grain stacking, may be discussed to the benefit of the community.—Ray P. Speer, Minn. Agricultural College.

## COVER CROP NEEDED.

Rainy Weather Causing Young Trees to Grow Excessive Wood.

"The enterprising orchardist who is clean-cultivating his orchard or who has grown truck crops among his trees in the early part of the season, faces danger this year unless he uses some desirable cover crop in the later part of the season," says K. A. Kirkpatrick, horticultural specialist, University Farm, St. Paul. "The rainy weather at the present time," he says, "is causing the young trees to make an excessive wood growth. Unless protracted dry spell should come on soon, these trees will enter the winter in a very bad condition to withstand cold. The results will be more or less aggravated winter injury and the consequent permanent weakening of the tree."

To obviate this difficulty, Mr. Kirkpatrick believes, it is desirable that cultivated orchards should have a cover crop sown on them. Several plants are used for this purpose. Among them are millet, almost any of the ordinary small grains, buckwheat, peas, soy beans and vetch. The latter three are usually preferred when the soil is excessively light and there is a desire to build up the nitrogen content. That condition is not very prevalent in this section, the orchards rather tending to the opposite condition.

Probably the best cover crop is oats. This should be sown very thick in the orchard, probably at the rate of three bushels to the acre. The time to do this is about the first or middle of August. The oats will come up in a few days and make a thick, rank growth until freezing weather. By so doing it takes away moisture from the trees and causes them to ripen up their wood in early preparation for the winter. This practice also gains another object; the growth of oats is left on the orchard through the winter and helps to catch and retain the snow. This acts as a blanket to the soil and prevents deep freezing which augments the winter injury. In the spring this growth is worked into the soil by the disk or cultivator and helps to keep a good supply of humus present in the orchard. If your orchard has been cultivated, this plan should be followed this season.

## SEASONAL NOTES.

Attention Attracted to Things of Immediate Interest on Farm.

If there is a shortage of pasturage, it may be necessary to confine the cattle in the barnyard or barn for a while and carry green feed to them. If this is done, the pasture will be able to secure a start which will enable it to furnish plenty of feed later in the season. Among the crops which can be used profitably as green soiling crops are fall rye, oats and peas, millet, and corn. If no provision has been made for a soiling crop, it is probable that green corn will be the only resource.

The weeds that are growing along the fence-rows and out-of-way places will soon go to seed. If it is desired to make the place look tidy and neat, and keep the weeds from obtaining a more determined hold, they should be cut at the earliest opportunity. A mower will undoubtedly cut nearly all of them. A scythe will be found necessary only to cut the weeds under the fences and in the corners.

Now is the time to think of conserving moisture for the crop next year. If the stubble fields are disced as soon as the grain is cut and capillarity is broken, it will be much more difficult for the tons of water stored in the ground by summer rains to evaporate. It will also be found that plowing can be done more easily, and at less expense to horse flesh.

Rape sown at the rate of two pounds to the acre in the corn field when the last plowing has been done, or even later, will often furnish a wealth of fall feed for sheep, swine, and cattle other than milch cows. Such a plan is especially good if "hogging off" corn is considered. Lambs will eat the rape and not waste any of the corn, and will produce meat at a minimum expense. It will be advisable to snap or husk the corn before any other animals are turned into the field.

It will soon be necessary to decide if the grain is to be threshed in the shock or stacked. When the grain is stacked the straw is always in better condition for feeding, than it is when threshed in the shock. It has also been found that the labor needed to care for the crop can be used to better advantage if the grain is stacked. When a person has joined a "ring" of threshers, his work may be dragged along indefinitely for a month or more, and it is almost impossible to plan the early fall work with any degree of success.

## SORE SHOULDERS.

Care Should Be Shown By Drivers in Purchase of Horse Collars.

If indifferent and careless drivers were compelled to endure a fractional part of the suffering borne by horses with sore shoulders, it is certain that much better care would be taken of the horses of the country. It is certain that a man would pull few loads, if he had a pair of sore shoulders.

In nearly every instance, the sore shoulders of the work horse can be traced to an improperly fitted collar or hame, or, still worse, to poor care of the collar which may fit the horse. The collar worn by the horse should have a bearing surface that is smooth and pliable, and that fits the shape of the shoulder accurately. Over this collar the hame should be adjusted so as to properly locate the draft of the load. If, in addition, the collar and the shoulders of the horse are cared for, the chances of sore shoulders have been reduced to a minimum. Care should be observed in the use of sweat pads. They should be used only when the horse loses flesh and the neck shrinks. In that case another collar may be advisable.

A collar, to fit accurately, should conform to the shape of the shoulder and should be neither too large nor too small. The opening at the bottom of the collar between the collar and the neck should admit the flat of the hand, and no more. The collar should fit the sides of the neck without pinching. A new collar may be fitted the first time by soaking the face of it in water. It should never be used generally on any other horse.

The draft of the tug should lie about one-third way up on the front of the collar, and, in every case, the hames should fit the collar when buckled snugly. The mane of the horse should not be permitted to work in under the collar, and accumulations of sweat on the collar should be removed carefully each morning. In the case of sore shoulders, the owner should always remember that "an ounce of prevention is worth a pound of cure."—O. M. Olson, Extension Division, Minnesota Agricultural College.

## VALUE OF SILAGE.

\* \* \* \* \*  
\* The Missouri Farmers' Bulletin \*  
\*—which speaks for Minnesota as \*  
\* well as Missouri—sums up the \*  
\* worth of silage as follows: \*  
\* Silage keeps young stock thrifty \*  
\* and growing all winter. \*  
\* It produces fat beef more cheaply \*  
\* than does dry feed. \*  
\* It enables cows to produce milk \*  
\* and butter more economically. \*  
\* Silage is more conveniently \*  
\* handled than dry fodder. \*  
\* Waste of corn stalks is prevented, \*  
\* saving one-third the food value of the entire crop. \*  
\* When silage is fed, the corn stalks \*  
\* do not bother in the manure. \*  
\* Feed that would not otherwise \*  
\* be eaten will be made palatable \*  
\* by the silo. \*  
\* A larger number of animals may \*  
\* be maintained on a given number \*  
\* of acres. \*  
\* It enables the farmer to preserve \*  
\* food which matures at a rainy \*  
\* time of the year, when drying \*  
\* would be almost impossible. \*  
\* It is the most economical method \*  
\* of supplying feed to the stock \*  
\* during the hot, dry periods in \*  
\* summer when the pasture is short. \*  
\* \* \* \* \*

## POTATO MACHINES.

Experience of Successful Potato Grower Is Given Regarding Diggers.

Now that the potato harvesting season is approaching, there will be a demand in many sections of the state for potato diggers. In determining the machine to be purchased, many perplexing problems will arise.

There are several kinds of diggers that have proved successful in Minnesota. Many of these diggers have a sacker, though the sacker has not been successful generally. It requires an extra man and two extra horses, which is much more expensive. There is an attachment that drops the potatoes in piles containing about one and one-half bushels that is a success. If the ground is clean and the potatoes are ripe, a potato scoop can be used in scooping the tubers into a basket. If the potatoes are green, the skin will be rubbed off.

There is no digger that has a sorter which will grade the potatoes as they are dug. The only successful way of sorting potatoes is by screening them in the warehouse, a method by which many potatoes can be graded in a day. A digger with high wheels is superior to one with low wheels as they have a better lift when the machine is driven over wet or soft ground. Low wheels are liable to load up and clog.—C. E. Brown, Extension Division, Minnesota Agricultural College.

## NOW OWNS FORGE.

Certain Owner of Broken Sickle-bar Stops One of Farm Leaks.

A certain man, busy with a large field of oats that was ripening fast, broke his sickle-bar and was compelled to stop work until he had repaired it. It was only a little break, but the owner of the grain had to drive to town, over seven miles away, to have it fixed.

When he reached town he found the blacksmith busy with a dozen other breaks of a similar nature,—though they were not all sickle-bars,—and the repair was not made until early the next day. When the binder was started again, nearly 36 hours had intervened. As a result, before the grain had all been cut, much of it had crinkled. Not only was some of the grain lost, but the bundles were so "wooly" and matted together that well-standing shocks were out of the question. Fortunately, there was little rain, or there would have been danger of growing grain in the shock. The damage was sufficient, as it was.

"John," said this man to his son one evening, when the chores had been finished, "I think it would be a good thing to put in one of those emergency forges in the machine shed. If we had only owned one of those little \$6 forges we were talking about this spring, we could have fixed that sickle-bar that broke, when we were cutting the oats, in about three hours. If that had been done, the oats would have been cut in good shape. Not only that, but we wouldn't have had the trouble during haying and corn cultivating time."

Now, a forge has been put in, and the little breaks in machinery that delayed work so much before are fixed up in a very few hours. The forge has been paid for many times over, and many of the neighbors are putting in forges. One of the leaks on that farm has been stopped.—Ray P. Speer, Minnesota Agricultural College.

## CLOVER SEED SCARCE.

Probable High Price Should Induce Farmers to Save Seed Crop.

The severe drouth last summer and the hard winter which followed it so injured the clover fields of the Northwest that clover seed will be scarce next season, and will undoubtedly demand as high a price as it did this spring. Some paid as high as \$25 for 100 pounds of clover seed this spring, which was a very profitable price to the one who was fortunate to have some for sale.

Anyone who has a good field of clover will obtain a profit by cutting it for seed, if he is certain that the heads are well filled. An ordinary crop of clover will yield from one to two bushels per acre, and it is not uncommon in Minnesota to obtain four or five bushels per acre. Figured at about \$15 a bushel, it can be seen what a tidy profit may be obtained, even when a very common crop has been harvested. It will pay the farmer to look over his second growth of clover early this fall before he decides to use it for anything else, and see how well the heads are filling.

A crop of clover seed may be harvested in several ways. Some persons use a common grain binder with a flax dump attachment, which leaves the clover in gavels. Others use a self-rake reaper. Where only a small crop is to be cut, it may be advisable to use a common mower and roll the swath out of the way before making the next round. If a team is permitted to walk on the clover, especially if it is dry when cut, many of the heads will be knocked off and the seed will be lost.

Another method of cutting clover for seed is to use a mower with a clover dump attachment. This attachment consists of several long fingers turned in the form of a mold-board on a plow. These fingers roll the swath out of the way, so that a team can pass along the next time without trampling on the clover. It is often advantageous to cut clover for seed when it is damp with dew or light rain. If it is very wet, it tangles up and becomes hard to handle, but when it is moist the scattering of seed is avoided.

It is advisable to hull the clover seed as soon as the straw is thoroughly dry. If it is found impossible to do this, the clover may be stacked. If it is stacked outside, the stack must be covered with canvas, boards, or slough hay, as it will not shed water. If a huller cannot be secured, much of the seed can be threshed out with a threshing machine equipped with a sharp cylinder and concave teeth. It is practically impossible to secure all the seed, however, unless a huller is employed.—O. M. Olson, Extension Division, Minn. Agricultural College.

## DANGER OF SPITTING

"Ninety-five per cent. of our consumption," says the North Carolina State Board of Health, "comes from careless spitting, coughing and sneezing," particularly on the part of the consumptive, but also from people who are apparently healthy. "Spit is frequently laden with deadly disease germs, particularly that of consumptives.

"When one coughs, spits, or sneezes, a great multitude of tiny drops of spit are violently expelled from the mouth and nose. The largest of these drops can be readily seen. A large number of smaller droplets can be found if a mirror or piece of glass is held before the face when coughing or sneezing. A tremendous quantity of still smaller droplets are discharged in the form of an invisible spray or mist, which floats about in the air for some time. Scientists have found that when a man coughs, spits, or sneezes in a large hall or room where the air is quiet, these tiny, invisible germladen droplets will float in the air for a distance of 25 to 100 feet. These tiny droplets, in the form of mist or spray, may be breathed in by other people, or they may settle on objects with which they come into intimate contact, such as food and clothing. Viewed in this light, such conduct is at least impolite. Furthermore, it is dangerous to the public at large to have careless people actually coughing, sneezing and spitting germ-laden matter into their faces even if it is invisible and in the form of fine mist."

## AUTO VS. DRAFT HORSE.

Breeding of Heavy Horses More Promising Than Ever Before.

Never in the history of the draft horse has the future appeared so promising to breeders as now, despite the statements of a leading speaker at the annual meeting of the State Veterinarians' Association at Minneapolis several weeks ago that the automobile and auto-truck were driving it out of business. There is no reason, in the light of statistics, why the doom of the draft horse should be spelled by the auto.

Though the enormous number of auto-trucks, in the cities might lead one to believe that they were crowding the draft horse out of business, actual figures do not prove it. Statistics in the office of the Minnesota Stallion registration board show that the number of sires used in this state for horse-breeding has increased from 3,544, May 1, 1910, to 4,445, May 1, 1912. During the same period the number of registered draft sires has increased 35 per cent, there now being over 1,450 in Minnesota. This is an excellent guide to conditions of the industry in this state and throughout the country.

Never in the history of the Chicago and St. Louis markets, the two largest ones in the United States, has the demand been so keen or the prices so high for high class horses of all types, especially the superior draft type. Statistics from the U. S. Bureau of Animal Industry show that the number of horses in this country has increased from 13,500,000 to 21,500,000 in the past decade. The value of all horses in this country has increased from \$45 to \$115 in the same period. This has occurred despite the increase in the use of automobiles.

First class draft horses have been almost prohibitive in price this year, because of the great demand for them, and a team of drafters has often sold as high as \$800 to \$1,000. The demand for high class saddle and carriage horses in the Eastern cities has been so great that their prices have been almost prohibitive to many who can afford automobiles.

All this should be very encouraging to persons in the United States interested in horse-breeding. When horses have increased at so rapid a rate the last two years, and prices have kept soaring in spite of the increase, there is no reason to believe that the automobile will ever drive them out of business. Instead of the automobile causing a scarcity of horses, it would be more reasonable to say that the scarcity of horses has caused the temporary advent of the automobile and auto-truck.

Farmers in Minnesota need not fear to grow more horses. If they are large, sound, and servicable, they will always demand the highest prices. The horse industry is founded on a permanent basis, and has no reason to conflict with the automobile industry in any way.—Joseph Montgomery, Secretary of Minnesota Stallion Registration Board.