

FARMERS' SERVICE DEPARTMENT

All inquiries on farm subjects will be given careful and prompt attention.
 Edited by J. E. WAGGONER
 Address: I H C SERVICE BUREAU
 HARVESTER BUILDING CHICAGO

GUMBO SOILS

O. J. Berger, of Eudora, Kansas, writes: "I am on gumbo land, and it is not very well drained. I am told this land would improve if properly drained, and some say it can't be tiled, for a paste forms around the tile and the water can't get through it. How would concrete tile do? Can you give me any information on this subject?"

What we usually refer to as gumbo soil is a very heavy type of soil. In some localities it is very dark in color, while in other places it is slightly grayish in color. In the state of Iowa the gumbo soils are very dark and usually very heavy, while in parts of Kansas, also other parts of Iowa, the gumbo is of a light color, often of a reddish cast.

One of the first steps to take in attempting to handle gumbo land is to see that it is well drained. The very close grained, finely textured gumbo soils of Iowa have been drained suc-



Proper Treatment for Gumbo Soil

cessfully both by using open ditches and by using tile drain. In fact, some of the gumbo soils that have been tiled drained often sell as high as \$200 per acre. The experience in handling the heavy, sticky soils indicates that it is not necessary to place the tile, as one would naturally think, close together and as shallow as first consideration might indicate. The experience of farmers in the heavy, waxy soils of Iowa shows that the tile lines are often placed ten to twelve rods apart, which is ample distance even in some other types of soil. The best way to settle this matter, inasmuch as these soils vary considerably, is to put in as many lines of tile as you can conveniently and watch the effect, or use only one tile line and note the distance it drains on either side. This would take but a short time for the effect can usually be noticed on close observation.

It is highly important that you have a good outlet in attempting to use tile. After the land is well drained, the next important step is that of tillage. It has been found that for all kinds of conditions fall plowing is the best for gumbo soils. The action of freezing and thawing during the winter months renders the seed bed much more friable and reduces the clods in a way that cannot be accomplished by mechanical means. Care should be exercised not to plow or to cultivate this type of soil when it is unusually wet for it puddles very quickly, forming clods which can be reduced only by freezing and thawing.

One of the objectionable features of gumbo soil is the tendency to shrink when drying out, thus injuring the crop materially. The time that this occurs is usually during the summer months. This objection may be overcome by surface tillage, using the spring-tooth, peg-tooth or disk harrows, together with cultivators, or any other means of maintaining a surface mulch to a depth of three or four inches.

Gumbo soils when well drained and in a good state of cultivation, which may be maintained as stated above, give splendid yields; in fact, better than some other kinds of soils in the corn belt. A frequent application of stable manure is also beneficial to these soils, inasmuch as it supplies vegetable matter, thus rendering the soil lighter and putting it in a better physical condition.

Some claim that the cement tile are more porous and thus permit a freer movement of the water than the clay tile, but in reality there is very little difference. As far as the pores of the tile becoming filled is concerned, one would probably fill up about as quickly as the other. A large percentage of the water that enters the tile goes through the joints and does not soak directly through the tile. You will find that well vitrified tile or carefully made cement tile will serve your purpose satisfactorily. In cases where the trouble from alkali is exceptionally severe, it may be best to use the clay tile in preference to the cement.

Yours very truly,
 I H C SERVICE BUREAU.

SILAGE

A farmers' institute not long ago the question was asked: How many housewives have silos? You can very easily guess the nature of the replies to this question, for none of those present had much of an idea what a silo really is. After a short explanation it was agreed that nearly everyone present in reality had a silo of some kind. Some of these were used for saving fruits, corn, and others for preserving cabbage for future use. We don't really speak of these as silos, but the effect on the saving of these beds when placed in jars is the same as it is with corn when stored in the silo; in other words, silage is green corn preserved by storing in an air-tight structure.

There probably are very few farmer boys that do not remember some rainy day or evening when all hands got busy preparing the cabbage to fill the kraut jar. Probably no thought was given the subject because it was a yearly task, and no one realized that in effect the saving of the cabbage by making it into kraut is the same as making corn silage. It undoubtedly served a good purpose in keeping the family in a healthy condition during the winter months when other green food was not available. The same is true of silage, which affords a succulent and nourishing feed for the livestock.

There may be a question as to whether all stock will eat the sour corn silage, but give them a chance and this thought will be quickly dispelled, for all stock eat silage very greedily, and the returns in the form of milk and meat will amply pay for all the trouble and expense.

Yours very truly,
 I H C SERVICE BUREAU.

VEGETABLE OILS

L. O. Miller, Bernardston, Mass., writes as follows: "Could you kindly give me some information about vegetable oils that are used as substitutes for linseed oil? Where, in your opinion, could soy beans and sunflowers be most profitably grown?"

There are various oils to adulterate linseed oil, but we are not aware of any oil that will take its place, or even add anything to its value. It seems that linseed oil is the only one that has ever been found that possesses the proper drying qualities to secure the results desired. Whatever is added to it seems merely to be a detriment.

Soy beans and sunflowers may be profitably grown under some conditions. There are a great many regions where they will grow satisfactorily, and we believe that the middle west or west would perhaps give the best returns, all things considered. In Colorado the Russian sunflower makes a wonderful growth. It is grown quite extensively for feeding chickens.

The soy bean is a crop that will stand a great deal of dry weather, hence is profitably grown on rather dry soils, although it responds to moisture as well perhaps as any other crop. It is grown extensively throughout the south; also some of the hardy varieties are found in the central section.

If you are thinking of coming west with a view to taking up such work as growing these crops, you can get information by addressing any of the state colleges in the west.

You may be able to obtain further information as to vegetable oils by addressing the Indian Refining Co., 17 Battery Place, New York, N. Y., or the Union Petroleum Co., 35 South Second street, Philadelphia, Pa.

Yours very truly,
 I H C SERVICE BUREAU.

LAND DRAINAGE A NECESSITY

Well Drained Soil Will Give Best Returns—Care Should be Exercised in Laying Tile Drains.

Reply to J. C. Tally, Stevenson, Ala. Drainage comes first. If the land needs it, and tile drainage is the modern and sensible way of draining. If the soil is low in humus, stable manure or vegetable matter must be added; if it is lacking in one or more of the elements of plant food, these must be supplied in commercial fertilizer, stable manure and legumes; if it is sour, an application of lime is necessary; if the soil is compact and there is a hard pan, deep plowing must be done. But if it needs drainage, stable manure, commercial fertilizer, vegetable matter, lime, and deep plowing will be of little avail.

There are many thousands of acres of land that are dry enough to induce farmers to try to farm them and are wet enough to soak all the profit out of cultivating them. Drainage on such soils is very urgent.

Drainage may be very simple or a very complex problem. It may require exact engineering so that every available inch of fall may be utilized or the location of the tile may be so apparent that the average practical farmer can easily locate it with the eye. Between

these two extremes there are cases requiring varying degrees of skill.

If it is a complicated proposition the services of a reputable engineer should be secured; if there are merely wet spots in your field, or if your field is wet with plenty of fall, you should be able to locate and lay your tile with no difficulty by following the methods outlined in the Uniontown, Alabama, Canebrake Experiment Station bulletins, Numbers 3, 5, 6, and 10. Be sure that no mistake is made in tilting your land. Tilling land is expensive and should be done right.

Yours very truly,
 I H C SERVICE BUREAU.

HARVESTING ALFALFA

Reply to John McGeary, Canehill, Arkansas

"Can you tell me when to cut alfalfa so as not to injure the succeeding crop? When is the best time to harvest red clover for hay?"

The usual practice is to cut alfalfa when about one-tenth of the plants are in bloom, and if cut at this stage there will not be so much danger of injuring the next crop as if permitted to stand longer. From the standpoint of feeding value it will not depreciate to any extent until the field is practically in full bloom.

Red clover should be harvested when the plants are in bloom. If cut before this time it will be difficult to cure because of the amount of moisture clover contains when green, while on the other hand, if permitted to stand too long, the leaves will break off when curing, also the stems will become more fibrous and coarse, thus decreasing the quality of the hay.

GRASSES FOR WET LANDS

D. McWhinnie, of Hearcletch, Alberta, writes as follows: "I have a flat of about 100 acres or so. About half of that is covered with water in the spring, which dries out about the middle of May so that one can work the land. I had thought that I could grow hay on it if I could get the grass started. Can you tell me the best kind of hay, and the best way to get this land started in grass?"

If this land can be drained, the best thing to do is to drain it either by using open ditches or tile, otherwise it is a rather difficult proposition to handle. The water standing on the soil will kill out most of the tame grasses. Canadian blue grass and Kentucky blue grass are grown to some extent in parts of Canada for pasture purposes. Very few of the tame grasses will do so well on soils that are wet. The wild grasses, as a rule, grow very well on wet land. The grasses that do best on wet land are red top, fowl-meadow grass, combined with alsike clover. Timothy will do fairly well, and may be started by simply sowing the seed without any cultivation. We have had no experience, however, with these grasses in your section, and this is only a suggestion on our part.

The amount of seed to be sown depends on the kind of seed used. If the red-top, re-cleaned seed is used, two or three pounds per acre will be sufficient, while if the ordinary seed is grown, twelve to fifteen pounds of alsike clover seed per acre should be mixed with this.

FARM CROPS

Stable Manure Supplies Many Plant Food Elements and Adds Humus to the Soil—Calcium Should be Applied

Howard Eldridge, Porterville, New York, writes as follows: "I am a farmer living in Erie county, New York. The soil raises very good crops in everything excepting wheat and oats. The average yield of this grain for the past few years has been fifteen or twenty bushels to the acre, as compared to fifty bushels to an acre a few years ago. How can this land be improved?"

The principal plant food elements are nitrogen, phosphorus, potassium, and calcium. These are necessary for the production of crops. If any one of these elements is deficient, it will mean that the crop production will be lessened. Continuous cropping without rotation, combined with poor cultivation, is bound to result in decreased yields.

The nitrogen can be replenished by growing leguminous crops, such as clovers, cowpeas, soy beans, vetches, etc. Also, by applying stable manure, or plowing under a legume as a green manuring crop. By doing this you not only supply nitrogen to your soil, but you improve its physical condition by adding vegetable matter.

Very few soils require potassium. This is especially so of sandy soils, although if the soil is not in good physical condition, the potassium may not be available, but if you supply the vegetable matter either in the form of green manure or stable manure, it will tend to make the potassium available.

It may be necessary to supply phosphorus in the form of a commercial fertilizer, which may be done by using finely ground phosphate rock, providing the soil is in the proper physical condition. The phosphate rock will cost you only about half as much and contains practically twice as much phosphorus as acid phosphate. The best way of handling rock phosphate is to spread it in the stables with the bedding or to scatter it on the manure pile. The decaying of the stable manure will tend to render the phosphorus available.

The other principle element, which is especially important if you expect

to grow leguminous crops such as clover and alfalfa, is calcium. This may be supplied by the use of finely ground limestone rock. The need of calcium is shown by the presence of horse sorrel, and the failure of legumes to grow.

There is another way of determining the acidity of the soil or the lack of calcium by the use of litmus paper, which may be purchased at any drug store. Place the moist soil around the litmus paper for ten or fifteen minutes. If the blue paper is turned to a pinkish or reddish color, it will indicate that your soil requires lime. Finely ground limestone may be applied at the rate of from one to eight tons to the acre.



depending upon how badly your soil needs calcium, but the usual application varies from one to four tons.

The other factors which enter into crop production are the selecting of good seed and the preparing of the soil. It is possible that the seed that you are using has become somewhat run out and needs to be replaced by pure seed. Combine with this the preparation of a good seed bed—which is very important in order to obtain a satisfactory yield of small grain.

Yours very truly,
 I H C SERVICE BUREAU.

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