

done thereon. One ton will usually be a sufficient quantity to manipulate at one time, to insure thorough mixing. Sweep the floor clean; empty part of the phosphate fertilizer and spread it level on the floor; on this put part of the potash, then the remainder of the phosphate and of the potash. If the nitrogen, either in the form of nitrate of soda or sulphate of ammonia, is to be mixed with the rest, empty it out by itself on the floor, and, with the aid of the wooden post and the back of the shovel reduce the lumps, for both of these materials are apt to become caked in the sacks. When the material has been reduced to sufficient fineness, spread it over the heap. Then take the shovel and turn the heap first to one side and then to the other. After doing this a couple of times, the whole heap may be put through a sieve, any lumps remaining on the sieve being thrown to one side, and afterwards reduced and added to the heap, which may then be turned a couple of times. It is not always necessary to use the sieve but it is usually a great aid to thorough mixing.

After completing the operation in this way fill the material into the empty sacks and proceed with the next batch.

#### PRECAUTIONS IN MIXING

Never mix sulphate of ammonia with basic slag or quick-lime, for the free lime contained in the latter materials will enter into chemical combination with the sulphate part of the former, thus setting free the ammonia as a gas.

Never mix acid sulphate with quick-lime, since the lime, by combining with the available phosphoric acid, will revert the latter to the insoluble form.

Never allow a mixture containing nitrate of soda and acid phosphate to remain for a very lengthened period in sacks, or the latter will rot away.

The potash salts may be mixed with all other fertilizers, but a mixture of basic slag (Thomas' Phosphate Powder) with kainit ought to be applied at once, as the mixture will soon become as hard as cement.

#### What Dry Farming Is

An exchange describes dry farming as follows: Farm operation under limited rainfall; conservation of soil moisture; conservation of soil fertility; growing drouth resistant plants; farming where irrigation is impossible or impracticable; systematic tillage; common sense farming; practical application of scientific principles to agriculture; the science of agriculture.

The basic principles of dry farming are claimed to be two in number:

1. Conservation of moisture and fertility.
2. Rational, systematic cultivation.

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We would be pleased to hear reports from any farmer who has had experience in pasturing green flax or in using it as hay.

#### Alfalfa Growing

For the past few years farmers of the Northwest have manifested great interest in alfalfa growing. This interest has been brought about by two factors which are of vital importance to the farmer: scarcity of forage for stock and the declining fertility of the soil. Recognizing the great economic importance of this peer of forage crops the farmers have sought to supply the deficiency of forage and at the same time build up their worn-out soil by trials in growing alfalfa which have in many instances proven a failure.

The many factors which enter into successful



R. W. IRWIN, DIGGING POTATOES.

alfalfa growing, especially in the semi-arid west, make it imperative that a thorough study of the nature and requirements of the crop be made before attempting to grow it. Should these essential factors be disregarded the attempt to grow alfalfa will prove disappointing, and will result in sure failure.

Conclusions drawn from the best results in alfalfa growing at the Edgeley experiment station, and the experience of successful growers of the crop, lead to the following observations: Alfalfa will do well on nearly all well drained soils, but it thrives best on a rich sandy loam, with a permeable subsoil. The old saying, "that alfalfa will not stand wet feet," is very true, as many have found to their sorrow in attempting to grow it upon wet, soggy land. Alfalfa will stand some flooding, while the plants are in the dormant state, but sheets of ice invariably kill out the crop. Hence the desirability of making the proper selection of fields intended for alfalfa.

Land intended for alfalfa growing must be thoroughly prepared by good, reasonably deep plowing and harrowing, and should be practically free from weeds. It is a waste of time and money to attempt to grow alfalfa upon poor weedy land, as the young plants are very tender and a poor stand is usually the result. It is an excellent plan to prepare the land the year previous to sowing the alfalfa by growing a cultivated crop such as corn or potatoes, the latter preferred. Here is where the good plowing and

thorough tillage should be practiced. By thoroughly cultivating the land many of the weeds are destroyed and a large amount of moisture is stored in the soil to be utilized by the young alfalfa plants. Upon old land, a liberal application of well rotted manure before planting the cultivated crop will prove very beneficial in stimulating vigorous growth, while the plants are young. Before sowing the alfalfa the following spring the land should be double disced by lapping half and then thoroughly harrowed. It is highly important that the soil be put in the best possible physical condition before sowing the seed.

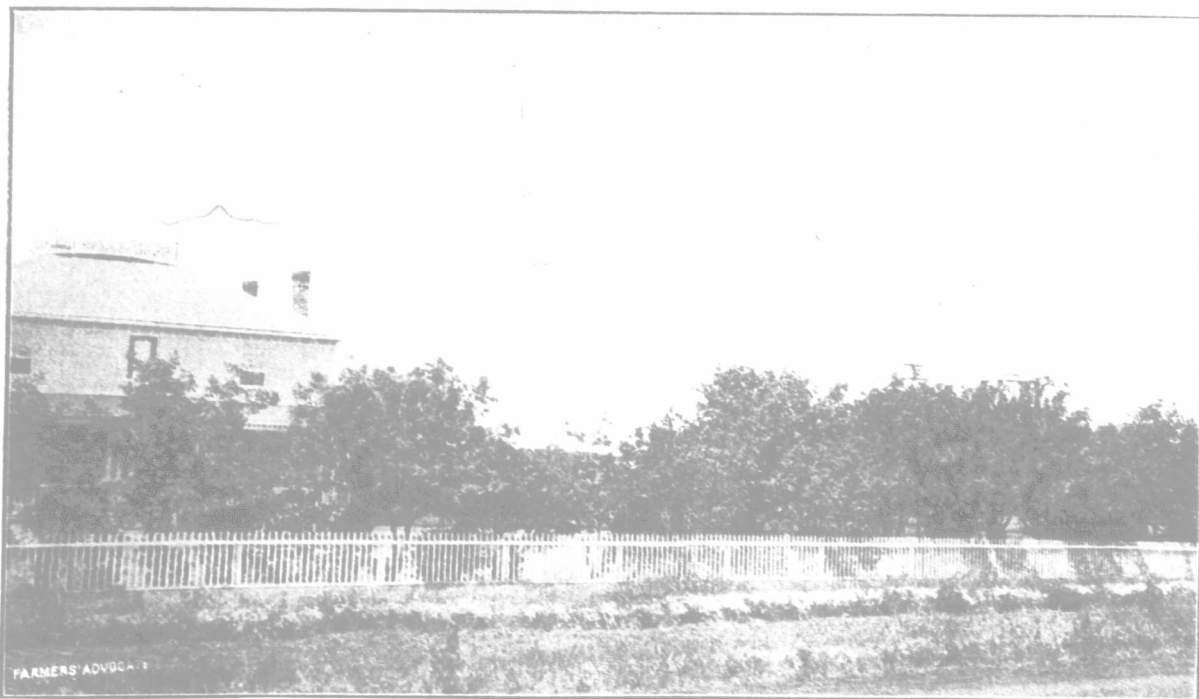
Alfalfa should be sown in the spring after the danger of heavy frost is past. In the drier sections, better stands are generally obtained when medium early seeding is practiced. Usually, better stands are obtained by sowing the seed broadcast and lightly harrowing the ground after sowing. More seed will be required for broadcasting than when a drill is used. Eighteen to twenty pounds of good seed is the usual amount of seed used when sown broadcast. Twelve to fifteen pounds of seed will be sufficient if sown with a drill. There are various makes of cheap hand seeders on the market which are very practical for sowing the seed broadcast. The seed may be sown with a common grain drill, with the discs set to sow as shallow as possible. When a grain drill is used the seed may be mixed with ground meal, using one-third of seed to two-thirds of the meal or ground barley, then sowing the resultant mixture at the rate of three and a half to four and one-half pecks per acre. Should sufficient moisture not be present in the soil for rapid germination of the seed it is best to defer planting to a more favorable time; or if need be, until the next season.

The first year is largely spent by the alfalfa crop in establishing the plants in the soil, and full crops are not secured until the second or third season. During the first season it is advisable to mow the alfalfa once or twice, with the sickle bar of the mower run high, in order to keep down weeds and prevent them from going to seed. Young plants must not be cut too late in the fall of the first year, for if allowed to form at least five or six leaves before cold weather sets in they will withstand the rigors of winter much better.

If the weather conditions in the spring are especially favorable and plenty of moisture is present, a good stand of alfalfa may be secured on land that grew a cereal crop the previous season, but as the cost of seed is great it will not usually pay to take the risk. In this case it will be best to early fall plow the stubble land, sub-surface pack in the spring, thoroughly harrow, then use a planker or a tilting drag run flat to improve the physical condition of the soil before sowing the seed. Alfalfa should not be sown with a nurse crop as all the moisture and sunshine is needed by the young plant.

When manure is applied to the land it may not be necessary to resort to artificial inoculation of the soil, which in the major portion of the state appears necessary in order to obtain healthy growth of the alfalfa. Excellent results have been obtained at the Edgeley station by inoculating the land with soil taken from an old alfalfa field, where it was known that the bacteria were present in abundance. The soil was sown broadcast by hand at the rate of one, two and three hundred pounds per acre and harrowed at once. This was done at time of sowing the seed. One hundred pounds of dirt per acre gave as good results as a greater amount. If a manure spreader is used in scattering the manure, a small amount of the dirt may be sprinkled over each load before it is hauled to the field, thereby saving additional labor in scattering.

During the first season after the young alfalfa plants have attained a height of three or four inches, it is a good practice to harrow the field in order to loosen up the soil and conserve moisture. As the crop grows older, harrowing and disking may be continued at needed intervals when the soil becomes hard and dry. Disking not only splits the crown of the plant and causes it to branch more freely, but it also stimulates a more vigorous growth.—O. A. THOMPSON, Sub-Experiment Station, Edgeley, North Dakota.



AN OLD LAND MARK NEAR INDIAN HEAD

The illustration shows the buildings on the old Bell farm which originally comprised 60,000 acres. They were erected over 25 years ago. The house is cobble stone with cement outside. The round stone barn, only the top of which can be seen to the right of the picture, presents an attractive appearance.