

Preparing the Seed-bed.

In the preparation of the seed-bed, we should have in view, first, the needs of the seeds while germinating; and second, the needs of the young plants during the first period of their growth. Seeds, in germinating, require three things: (1) Moisture, to dissolve the plant-food stored up in the seed, and carry it to those parts of the young plant where it is needed for growth; (2) air, that the young plant may breathe, for breathing is as necessary to plants as to animals; (3) heat, to start and maintain the vital processes. After germination has taken place and the young plant has reached the surface, its great needs are heat and moisture. In preparing the seed-bed, then, our aim should be to meet these needs as far as possible, to so prepare the ground that, no matter what the weather may be, our seed will be properly supplied with moisture, and to leave our ground in such a condition that it will conserve the moisture of the soil for the use of the young plant during the first period of growth.

There is in the soil a movement of water like that of the oil in the wick of a lamp. This movement acts to keep moisture evenly distributed through the soil, and if there should be more water in one part of the soil than in another, a movement will take place from the moist to the dry section, till the amount of water in each part becomes equal. Hence, when the surface layers of soil become dry through evaporation, water will move up from the lower moist layers to equalize the conditions of moisture. This water is in turn evaporated, and more moves up to take its place, and thus, when surface evaporation is taking place, there is a constant movement of water from the lower soil to the upper, and from there out into the air, to be lost. If we are to control conditions of moisture in the soil, it is, first of all, important that we should know how to check this. The movement of which we have been speaking takes place through the pores of the soil, is greatest where these pores are smallest, and may cease altogether when the pores become very large. It is this fact that enables us to control the movement of soil moisture. We may, by stirring the soil, so enlarge the pores that this movement will not take place, and thus, by providing a mulch of loose soil, where the water cannot move, we can keep the moisture of the soil at any depth we please.

The rains of fall, and the pressure of the snow during the winter, act together to compact the land which has been plowed the fall before. The pores are made small and close, and the soil in the spring is in such condition that water may be constantly drawn from the lower layers to the surface, to be lost by evaporation. It is important, since we wish to save all our moisture, that this should be stopped, and for this it is good practice to run over all our land with a harrow as soon as possible, to break the surface and check evaporation. When we come to prepare the land for the seed, we should aim to cultivate and pulverize the land thoroughly, to the depth at which we wish to plant our seed, but no deeper. Then, the seed should be sown with the drill, the shoes of the drill being set so as to go through the loose soil on top, and leave the seed lying on the firm moist soil beneath. In this way we believe the best and most reliable conditions for germination are obtained. The seed, lying on the firm moist land, which has never been disturbed, is sure of a supply of moisture. Over it is a covering of loose, dry earth, which prevents the escape of moisture, allows air to reach the seed, and gives a warm, dry surface for the sun to warm. Seeds planted under these conditions will germinate properly even if no rain should fall, and the young plants will not suffer from drouth.

We do not believe in spring plowing, where we can avoid it, nor in cultivating to a depth greater than that at which we intend to plant our seed, because seed planted in ground so prepared finds itself cut off from the soil moisture below by a layer of dry, open soil, and must depend altogether on rain for its moisture. For the same reason we do not believe in broadcasting seed. Where seed is broadcasted it is simply thrown on the surface and mixed up with the loose surface layer. It will germinate all right if it gets rain, but it too depends altogether on the rain.

Spring cultivation is of little use, except as a direct preparation for the seed, and the aim should be to give the seed the best conditions for germinating quickly and surely. Cultivate with any implement we choose, to the depth at which we wish to sow the seed, lay the seed on the firm, moist ground beneath with a drill, and we have a seed-bed that will defy drouth, and give reliable germination under almost all conditions. D.

H. Hanmer, Brant Co., Ont.: I consider that the "Farmer's Advocate" in its weekly form, with the class of reading matter it contains, makes one of the best if not the best agricultural journal of the day.

Where Turkestan Alfalfa Comes From.

The following letter from Prof. N. E. Hansen, M.S., a distinguished graduate of the Iowa Agricultural College, now Horticulturist at the South Dakota Agricultural College, throws considerable light on the origin of this hardy variety of alfalfa, and also illustrates one way in which an up-to-date department of agriculture may serve the taxpayers who keep it up. It will only be a short time when Manitoba and the N.-W. T. farmers will be growing this valuable forage plant from seed derived from the imported seed, depending also, of course, on the progress made in soil inoculation, and knowledge of conditions suitable to Turkestan alfalfa:

Your inquiry concerning Turkestan alfalfa was laid aside under the stress of numerous horticultural inquiries. The United States Department of Agriculture has published a circular on the first reports of trials of the 18,000 pounds of alfalfa seed which I secured for Honorable James Wilson, Secretary of Agriculture, in Central Asia in 1897-8. Some seed was sent out in too small lots, so it has been difficult to trace them. Enough, however, has been determined to establish the fact of the superior hardness and drouth resistance of this form of alfalfa above the common alfalfa. The Russian botanists call it a distinct form or variety of the common alfalfa, calling it *Medicago Sativa Turkestanica*. The seed proved so promising that the Department of Agriculture made a second importation two years ago, and it is being given a more thorough trial. Turkestan alfalfa is, as I look upon it, a geographical form of the species, really the same species, but in the course of ages having been adapted to the extreme dry climate east of the Caspian Sea. I secured seed from eight different sources in Central Asia, Western China, and Southern Siberia. In fact, the main object of my preliminary trip of over 2,000 miles in Northern Turkestan, Western China and Southern Siberia was to trace the northern limit of this species, which appeared to be near Kopal, Siberia. Thirteen hundred miles were traversed by wagon, and 700 miles in sleigh, in the endeavor to reach Omsk on the Siberia railway on the way home.

The trouble at present is that some seedmen have taken advantage of the close resemblance of Turkestan alfalfa to common alfalfa, and have substituted one for the other. Common alfalfa was brought to Spain, probably from Arabia and vicinity; thence to South America by the Spaniards; thence to California and other parts of the United States. Turkestan alfalfa is from a region much farther eastward than the original home of common alfalfa, and is adapted to a colder or a drier region. It should be borne in mind the eight sources of seed, varying from the cotton belt to 40° below zero F. Of the northern sort only a small lot was obtained, but it ought to do well in the Canadian Northwest. "N. C. HANSEN."

Marketing Farm Produce.

It is in the handling of his products as much as in their production that the skill of the farmer is brought into play. Not only must he find the best market, but he should also prepare his goods in such a way that they satisfy the highest trade where they are sold. It is the taste of the consumer that must regulate the class of goods that will bring the highest prices, and it will always be found easier to cater to an established demand than to try to build up a trade in a class of goods not generally asked for. Appearance and quality go a long way in a good market, and without the former the latter counts for but little. A clean, neat package is always an attraction, and will often sell a line of goods that otherwise would not command a good price. Merchants are guided by the same things as their customers, and regulate their prices according to the price at which they can sell their goods.

Take an example from the dressed-poultry industry, which lately has developed so rapidly, and where a demand has been created for a special quality of fowl. Properly fatted chickens shaped in a shaping board will fetch 5c. per pound higher than farm chickens marketed in the ordinary way. The cost of production is but little increased, and really the only hope of profit lies in conforming with the demands of the best market. Again, butter properly made (and why should not everyone be able to make it properly) and put up in attractive prints, with the name of the farm on the wrapper if necessary, will soon make a ready market for itself, and will bring a price far in advance of that ordinarily manufactured and marketed. With the various classes of live stock again the same principle holds good: An animal of superior merit, properly fitted, can always find a good market and bring a paying profit for the producer. Good, clean grain or seed, that is known to be what it is, can always be sold at a good figure. Everything that is raised on the farm to-day can be made to carry a trade mark

just as indelible as are those used in other industries.

It is the skill of the producer that counts, and the goods he produces will easily find markets. The cost is not increased except in so far as a person must think as he works, and the more this is practiced the greater does the pleasure of the work become, and the more interest is taken in the resulting product. It pays to become an expert in whatever you undertake. An expert in the skillful producing and marketing of farm produce in whatever line has as high a price accordingly as specialists in other walks of life. B.

"The Third Power."

We are in receipt of a book entitled, "The Third Power; or Farmers to the Front," by Mr. J. A. Everitt, President of the American Society of Equity of North America. "The Third Power" has evidently been written as an exponent or promoter of the American Society of Equity, which has been instituted with the ostensible object of stimulating farmers to combine for their mutual protection and advancement, and thus elevate the agricultural classes, or the "third power" in the trio of Capital, Labor and Land, to a position from which they may be able to regulate the markets, oppose other trusts and combines, govern transportation rates on railway, etc., and dictate to governments regarding legislation favorable to agricultural interests. Although equity for farmers is especially demanded, the plan aims at equity for all, the truism being taken as established that "the country cannot prosper unless the farmers prosper, and the farmers cannot prosper without benefiting all other classes." The undertaking which is being attempted by the Society of Equity is truly stupendous, and probably will never be realized.

Wood Ashes and Barn Manure.

Can you tell me through your columns what is the detrimental effect on wood ashes when mixed with barnyard manure; also, if it is possible to get both on the same land this spring without loss in fertilizing material? "GLENGARRY."

Whenever lime or wood ashes are mixed with farmyard manure, some of the ammonia contained in the manure is liberated. If the two are brought into contact with one another in the soil, the ammonia is absorbed and no loss of nitrogen occurs; but if they are mixed before applying to the soil, the ammonia will pass off into the air and nitrogen is lost. This point can be readily proved by filling an ordinary pail with manure mixed with lime or wood ashes. A little while after mixing there will be quite a noticeable smell of ammonia coming from the pail.

If the barnyard manure is plowed down, the ashes can be applied as a top dressing without any danger of loss of fertilizing material. If the manure is applied as a top dressing, it should be thoroughly incorporated with the ground before the ashes are applied.

Average wood ashes contain about 6 to 8 per cent. of potash, 1 to 2 per cent. of phosphoric acid, and about 40 per cent. of lime. They are, therefore, a direct fertilizer, containing a large amount of potash in a form very readily available to plants. In addition to this, the lime improves the physical condition of the soil by binding together sandy soils and making clays more open and friable. It also tends to liberate potash from the insoluble constituents of the soil and bring it into a soluble condition. Wood ashes are thus both a direct and an indirect fertilizer. Leached ashes are poorer in potash, but otherwise act the same as unleached ashes.

The crops that are most in need of potash are the legumes and roots. Ashes sown at the rate of 20 to 30 bushels per acre on young clover, or ground being prepared for potatoes, usually give striking results in the increased yield of the crop. If used along with farmyard manure, they should give good returns when applied on manure. They do not benefit cereal crops, such as wheat or barley, so much as the legumes and roots, and, therefore, should be reserved for these latter crops. As the potash in wood ashes is very soluble, ashes should not be plowed down, but applied as a top dressing, and should be spread evenly over the ground, as too much in one place will destroy vegetation. I strongly advise those farmers who have a pile of wood ashes for use this spring to apply them at the rate of about 25 bushels per acre to young clover, or on the potato ground. In wood ashes the farmer has a manure rich in potash, readily available to the plant. Advantage should be taken of this to apply it to those crops most in need of this particular constituent, and thus secure a maximum return for its use.

R. HARCOURT.

Ontario Agricultural College.

A report from the Essex Co., Ont., district indicates that the fruit trees, particularly peaches and plums, have been considerably injured by the long, severe cold of the past winter, but the real extent of the damage may not prove as serious as now apprehended.