

around the field, thereby preventing the horses from tramping so much on the plowed land, when turning. The plow should be put into such a shape that it will run at the desired depth and turn a furrow the required breadth without being compelled to do so by pressure on its handles. A perfect plow, drawn by a good team, should turn a good furrow without any guidance from the plowman, excepting, of course, when obstacles are met or the surface is uneven.

Potato Culture.

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The work of potato-growing, as I was called to practice it when a boy, was very different from our present methods of growing this important crop. In fact, there seemed to be no method used then (except that suggested by the different phases of the moon). Nearly all the tillage was done by hand, which gave the greatest labor.

In the years following these, when growing potatoes more extensively for the market, I found it important to adopt better tillage and more labor-saving methods than formerly in managing this work, which was considered the heaviest and most disagreeable on the farm.

But as there were at that time no farmers' institutes or clubs, or scarcely an agricultural paper by which to learn of such improvements as some might already have adopted for this special branch of farm work, I was left to invent and adopt such improvements for myself as best I could, and I was the more prompted to this by calling to mind the many days of back-aching work I had done with a heavy, dull hoe, in dressing even the small potato patch of other days.

I shall attempt to describe in this paper the more important modes of tillage and management by which the crop is grown in Western New York.

There is a general belief that a sandy or gravelly soil is the best; but if a strong clay loam or a heavy soil is to be used, and proper tillage is given it to keep the soil in a light, friable condition while the crop is growing, the chance for the larger yield might, I think, be in favor of the latter; and for quality of tubers, quite as good as that of the former. When planted as the first crop on new land, whatever the soil may be, it can be depended upon as about the best and most reliable potato ground to be had. And next to this an old and tough turf lot will be found most advantageous; both of these should be plowed in the fall previous. The winter's frost will help to settle and subdue the turf, so that in the spring a thorough stroke of tillage will put such ground in good order for the seed.

Then for planting, such varieties should be selected as are known to do best in that locality, for each variety has its favorite locality to grow in. But great care should be taken that the best of their vitality has not been wasted in a premature growth of sprouts. To this end the potatoes for seed can usually be kept better in pits or buried, than in cellars; the time of their sprouting can there be retarded if necessary, and when planted, they will start with a more vigorous growth than those from the cellar.

The safest way of cutting the seed is to do it just at the time of planting, but if cut before, it should be spread, say, a foot deep on a barn floor with plaster thrown over it, and frequently turned with the shovel until used.

Having a strong, rich soil, we find that with us

two or three eyes on a piece, and one piece in the hill, is sufficient, and their product is of a more uniform market size than where a larger amount of seed was used. In this connection I can say, from experience and carefully tested experiments, that a piece of potato of a given size will give a better gauge of the right amount of seed for a hill than any given number of its eyes would be, and that nature will assist so far in regulating this that the few eyes of the stem end piece will, in growing, show about as full a product both of tops and of tubers as are produced from the many eyes of the seed end piece.

I cut my seed mostly with a machine, gauged to cut all the seed of a uniform length off the potato.

As to the best season for planting, I would say that nearly all the extensive planters here have practiced for some years planting quite late, usually from the first to the twentieth of June. But I should be decidedly in favor of planting at least one-half my crop as early as I could put it in. In marking out for planting we do not usually furrow out deep enough. It will pay the planter to provide himself with a good tool for this work, one making a number of marks at a time, because then so many more of the spaces will be just of one gauge, and one with an indicator, so that the space between going and returning of the marker may also be of the same gauge, and with teeth working to the desired depth for planting. As to the space, I prefer to have two and a half feet one way by three feet the other. Then, for my closest and best work, I go by this narrowest gauge.

It is nearly the universal practice of planters here to check-row for potatoes, and of course mark the land out each way, making the second trench marks as deep as they desire to plant the seed. Here we come to a point at which many experienced farmers will unwittingly make a blunder that will cause them much unnecessary annoyance in properly tilling the crop through these seasons. Of course we design from the first to so plan this work as to do it all with horse tillage, and have it show good clean tillage, too. To do this we must have straight rows, and these of a uniform gauge, so that the tools can do a full stroke of work all the way. The only way of accomplishing this, after doing good marking out each way, is to cross these last made marks in dropping, and following the rows indicated by the first marking. In this way each piece will be left in a line each way; whereas, if dropped along the line of these trenches, some of the seed will drop short of the cross-mark and some will over-reach it, so that when the plants come up they will stand zig-zag one way of the field.

Next in order will be to cover the seed. For this many different devices and tools are used, some which the planter makes for himself, or by utilizing such other tools as he may have, or with an implement made especially for this work, but nearly all is done by horse, instead of hand-work, and mostly at the rate of six to eight acres a day.

One important point about this work will be to throw a good high ridge of earth over the seed, covering them much deeper than you would design to have them planted. Then, dragging these ridges down once or twice before the potatoes come up will reduce them sufficiently to leave a clean bed of fresh earth for the potatoes to come up in, and will most effectually dispose of the first crop of weeds, which would otherwise be left growing with the potatoes. Dragging them again after the plants are three or four inches above the ground will destroy another crop of foul growth, which by this time will

have commenced to germinate in the surface soil, and be equal to a first hoeing.

After this the potatoes will so pre-occupy the hills that no more weeds will grow in them for the season, and any good course of tillage after this will keep the spaces clean between the hills and rows. The spring-tooth corn cultivator makes one of the best of tools to do the tilling with, and it should be used as often as once in a week or ten days until the tops are nearly of full size and commence to blossom. After this use the hinge-winged shovel plow, run it, like the cultivator, first one way across the field and then the other. Gauge the wings to hill up much or little, as desired.

Continue this work even after blossoming (regardless of any "old wives'" sayings to the contrary), until the potatoes are well grown in the hills. This gives the best possible condition for the development of the crop.

In harvesting the crop most of the planters use one or another of the many tools got up for the purpose. Although we do not as yet have a perfect potato digger, still the days of digging them by hand have nearly past.

One or two sets of bushel boxes will be found of great convenience in handling the harvested crop, and, whether going to the market or into the cellar, they can be handled with less bruising and more speed than in any other way.

Smut.

This disease, due to a fungoid growth, has done very serious injuries in both the Old and New World. Although very widely spread, it seems to be more injurious in some districts than in others. Some localities of Ontario have suffered from it largely last year, while others have entirely escaped. In the North-West more damage has been done last season than we have ever known it to do in Ontario.

There are several distinct species of smut, two of which affect the wheat. The more injurious of these, hard smut (*Tilletia caries*) does not destroy the covering of the grain, but reduces the substance inclosed by it to a black, disagreeably smelling powder, which is very injurious to the milling properties of the wheat. The presence of this species cannot be easily detected in the growing wheat-field. The other species, termed loose smut (*Ustilago carbo*) destroys the grain entirely and can readily be observed and prevented from further spreading by removing the affected plants.

In Bulletin No. 3 of the Experimental Farm at Ottawa, Mr. James Fletcher, in speaking of the remedies for these varieties of smut, says:—

Of a great many remedies which have been tried with more or less success, I select the three following as being in my opinion the best both for efficiency and convenience. The first and second I have myself frequently tried with manifest success. The third is given on the authority of Mr. Worthington G. Smith.

1. SULPHATE OF COPPER, also called Blue-stone or Blue Vitriol.—This substance can usually be procured in any part of Canada from druggists or general-store keepers, at about 10 cents per lb., so that the cost of treating seed with the strongest solution recommended below, would not exceed 2½ cents per bushel. The different methods of applying this substance to the grain vary slightly; but the differences are merely with regard to the extent to which it is deemed advisable to wet the seed. Some advise soaking the grain; but it would appear from the results of many experiments that this is not necessary. Mr. Worthington G. Smith advises the following: "1 lb. of bluestone dissolved in five quarts of boiling water is sufficient for a sack of four imperial bushels. The wheat is soaked for ten minutes, or the ten pints of solution may be poured over till all is absorbed." Mr. S. A. Bedford of Moosomin, N. W. T., who has had