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MISSISSIPPI AGRICULTURAL EXPERIMENT STATION.

BULLETIN No. 54.

MARCH, 1899.

IRISH POTATO CULTURE.

BY A. B. MCKAY.

The Irish potato is grown in every state in the Union. It is a staple in the markets the year round, and too many of us have grown to depend on our markets for a part, if not all, of the potatoes we consume. Here and there in this state is found a man, who, for twenty or more years past, has not failed to harvest a spring crop; and who seldom fails with his fall crop. Like every other vegetable, the Irish potato will succeed much better on some soils than on others; yet I venture the statement that there is scarcely a village garden or a farm worth living on, in the state of Mississippi, on which there is not a plot of land which, with the little necessary attention given, will not yield all the potatoes that can profitably be consumed on the place, and at less than half the price asked in the markets.

This bulletin is written not so much for the experienced grower as for the villager and the farmer who should grow their potatoes at home.

Under favorable conditions, two crops may be grown in this latitude each year. As the treatment of the first, or spring crop, differs somewhat from that of the second, or fall crop, we will discuss them separately, giving attention first to the

SPRING CROP.

A deep, loamy, warm, fertile soil is preferred. In the absence of such requisites the grower should choose one that nearest fills the description. A loamy soil, overlying a porous clay subsoil is better than the same soil over a gravel or sand bed. Light soils, that is, such as are easily moved by the plow are less difficult to cultivate and more conducive to an early harvest than are heavy, compact soils.

SOIL.

No matter what the character of the soil—light or heavy, poor or rich in necessary plant food—thorough drainage is essential to the best success with Irish potatoes. Shortly after a continued, heavy rainfall dig a hole in the ground about fifteen inches deep.

DRAINAGE.

The distance to which water will rise in this hole will show the distance below the surface of the ground beyond which the roots of plants will be as effectually submerged in water as if lowered beneath the surface in a tub filled with the same liquid. If the water level is gradually lowered, so that within twenty-four to thirty-six hours after rain has ceased, no water stands over the bottom of the hole, no artificial drainage is needed. If, on the other hand, water sinks much more slowly, open surface drains, properly placed, should remedy the trouble.

A properly drained soil warms quicker in the spring, retains water necessary for the development of plants longer, admits more air and gives far better results from plant food already in the soil, to say nothing of that added in fertilizers, than does a poorly drained soil.

The condition and character of the land must determine

the time and the method of plowing. If heavy and compact, stir as deeply as possible during the late fall or early winter, before the soil has become

PLOWING AND SUBSOILING. too wet to crumble nicely. Probably nothing connected with success in growing Irish potatoes is of greater importance than the matter of securing a deep,

mellow bed for the growth of roots. In the matter of drainage, deep plowing and subsoiling of close, compact soils aid materially. In the absence of any other pattern a Brinley plow, with the moldboard, or wing, removed, makes an excellent subsoil plow. If plowing is done at the time indicated, the turning plow may be set sufficiently deep to bring a little subsoil to the surface. (In this sense we use the term "subsoil" to mean that which lies immediately below the depth to which the turning plow has previously stirred the soil). The subsoiler should follow immediately behind the turning plow, cutting in the bottom of the open furrow to as great a depth as the strength of the team will permit. Soil inclined to become wet from excessive rainfall should be left in high, narrow ridges or rows, just the width intended for the potato rows. If the strips, or furrows, are so made that the soil broken by the turning plow will be left edged up rather than turned over, a better exposure will be given; and alternate freezing and thawing during the winter will do much to disintegrate the soil and render more plant food available. Left in this loose, open condition during the winter, the soil will warm up quicker in the spring, drainage will be better and planting may be done earlier than if the land had been harrowed down level. Deep sandy loam soils or soils overlying porous subsoil, may be plowed in broad flat beds during the fall; or, plowing may be deferred altogether until shortly before planting time. Possibly such soils will not be benefited by subsoiling.

With proper care given to preparation and cultivation, many soils will produce a good yield of potatoes without the aid of fertilizers; yet we seldom find one to which fertilizers, if intelligently applied, may not be added with

profitable results. It is not good economy to purchase fertilizers when the elements of the plant food sought may be collected at home and put in proper shape for the plant at a price less than that asked in the market. Fresh, dry

**FERTILIZERS
AND THEIR
APPLICATION.**

ashes, especially from hard wood, are rich in potash. Decayed leaves, black dirt from about old logs, the scrapings from old chip piles and from the fowl house, contain the elements needed; and when these materials have been thoroughly mixed together and have lain for some weeks in a pile, the resulting compost will be rich in available plant food. Some growers object to barnyard manure for the Irish potato; but, if it is spread on the soil a month or six weeks before planting time, or else composted with the materials named above in time to become well rotted before planting season, the objectionable features are, in a measure, remedied. In barnyard manure we have a complete fertilizer, that is, one that contains Nitrogen, Phosphoric Acid and Potash—the three elements of plant food lacking in most soils. Cottonseed is also a complete fertilizer, and gives good results with potatoes when used alone. Acid Phosphate in combination with cottonseed or with cottonseed meal gives the best results on the majority of loam soils in this State. In a limited territory, on soils similar to the poor sandy section near the Gulf Coast, a special fertilizer rich in potash might be best for the potato. Now, as to the amounts that may be profitably used to an acre of land, I would suggest about the following:

Compost, of the materials collected at home, made as indicated above, depending upon the composition of the heap, 30 to 75 wagon loads per acre.

Cottonseed used alone, 1500 to 2000 pounds per acre.
Cottonseed, 1500 lbs. and Acid Phosphate 750 lbs. = 2250 pounds per acre.

Cottonseed meal 750 lbs. and Acid Phosphate 750 lbs. = 1500 pounds per acre.

To any one of the last three amounts named above may be added from 200 lbs. to 500 lbs. of Kainit, where the fertilizers are to be applied to sandy lands.

As to the application of fertilizers. In the use of compost as indicated above, or where whole cottonseed is

used, something like half should be applied in the drill beneath the potatoes, several weeks before planting; the remainder at planting time, placing the fertilizer just above and to each side of the potatoes, after they have been partially covered. Where crushed cotton seed or cottonseed meal and acid phosphate are used, apply, say, two-thirds at planting time, half the amount over and half under the potatoes; the remaining third on each side of the row at the first working.

The time for planting will vary with the latitude, weather conditions and the soil. In the southern part of the State warm, sandy soils may be planted early in February. Throughout the middle and the northern portions, the time will range all the way from February 15th to March 10th. Nothing is gained by planting before we are reasonably sure that the worst winter weather is past.

It is well to cut seed potatoes a day or two before planting, so as to give the cut surfaces time to dry. In cutting see that each piece carries at least one eye, or bud. In size, each piece should

TIME AND METHOD OF PLANTING. be from about one fourth to one third that of a hen egg, or about one ounce in weight. Each piece should contain as much of the central portion of the tuber as possible. In no case should the heart of the potato be left, as is practice with some, for the table. Each piece contains necessary food for the sustenance of the plant until it is able to feed from the soil.

Planting should be done in freshly prepared land. Rows should be thirty to thirty-six inches apart; pieces of potato, one in a place, about one foot apart in the row. Depth of planting will depend upon circumstances.

In a loamy, well drained soil five inches deep, the surface harrowed down level, might be admissible; but on heavy soils, or with such as do not handle water readily, the rows should be nicely rounded and the depth should not exceed three to four inches.

With proper care in preparation of the soil and in planting, cultivation becomes simple and inexpensive. In land inclined to crust after hard rains, cultivation should be

more frequent than in loamy soils. It is advisable to run a light harrow over the rows just before the plants make their appearance, and again a week later, to assist them in coming up and to keep down grass and weeds. Shallow and frequent cultivation is best. The ground should not be stirred below the depth of three or four inches. The harrow mentioned and a Planet Jr. or any other good cultivator, are the only implements needed on light, well drained soils. The sweep is needed in keeping the rows properly rounded in heavy soils that refuse to rid themselves quickly of surplus water.

CULTIVATION. Under favorable conditions, plantings made March 1st, should mature potatoes sufficiently large for the table early in May. If carefully done, a few of the largest potatoes may be taken from the hills without injury to the vines or to the smaller potatoes that remain. With a small paddle or a carving fork, remove the soil that lies immediately over the potatoes; and after taking out such as are wanted (not disturbing the others), replace the dirt and firm it down. If wanted for market, the trucker frequently finds it to his interest to dig and ship before the potatoes are fully matured, the loss in yield being overbalanced by the difference of price in favor of early shipments. For first early shipments bushel crates are frequently preferred to the regular potato barrel. When the three-bushel barrel is selling at \$4.00 to \$4.50 I have seen the bushel crate sell at \$2.00. No matter what packages are used they should be clean, neatly made, and well ventilated. No blemished potatoes should be shipped. Grade carefully, making first and second sizes. Grading should be done as the potatoes are being picked up from the ground. Handle as little and as carefully as possible, and pack as the potatoes are being dug. They should be so well placed and settled down in each package that upon shaking after it is closed, scarcely a potato will change its position in the package. Where early marketing is not an object, digging should be deferred until the vines are pretty well wilted. Only those who grow potatoes for a series of years and on a large scale can afford a harvester. The most expeditious method of digging, with the average grower, is to run one turning-plow furrow on each side of the row as close to the plants as possible without throwing potatoes over and covering with dirt;

HARVESTING. Without injury to the vines or to the smaller potatoes that remain. With a small paddle or a carving fork, remove the soil that lies immediately over the potatoes; and after taking out such as are wanted (not disturbing the others), replace the dirt and firm it down. If wanted for market, the trucker frequently finds it to his interest to dig and ship before the potatoes are fully matured, the loss in yield being overbalanced by the difference of price in favor of early shipments. For first early shipments bushel crates are frequently preferred to the regular potato barrel. When the three-bushel barrel is selling at \$4.00 to \$4.50 I have seen the bushel crate sell at \$2.00. No matter what packages are used they should be clean, neatly made, and well ventilated. No blemished potatoes should be shipped. Grade carefully, making first and second sizes. Grading should be done as the potatoes are being picked up from the ground. Handle as little and as carefully as possible, and pack as the potatoes are being dug. They should be so well placed and settled down in each package that upon shaking after it is closed, scarcely a potato will change its position in the package. Where early marketing is not an object, digging should be deferred until the vines are pretty well wilted. Only those who grow potatoes for a series of years and on a large scale can afford a harvester. The most expeditious method of digging, with the average grower, is to run one turning-plow furrow on each side of the row as close to the plants as possible without throwing potatoes over and covering with dirt;

and then follow with potato forks raking the tubers out from the narrow strips left between the open furrows.

If exposed to the hot sun a few hours Irish potatoes will become blistered. To prevent this, dig on cloudy days or else arrange

KEEPING DUR- to remove to a shady place or cover
ING SUMMER. in some way shortly after they are dug. Several methods of keeping

potatoes during the hot summer months are practiced, and with varying success. Upon examination it will be found that, as a rule, those left in the field, scattered through the soil keep better than those that are carefully housed. Taking this lesson from nature we have tried the method of bedding the potatoes in the field, somewhat after the usual plan of bedding sweet potatoes for growing slips, and with good success. We are careful to see that the potatoes are covered to the depth of six or seven inches with dirt, and that the bed is well drained. We have practiced the same method of bedding the potatoes in the shade of spreading trees, and on the cellar floor. A cool, shady situation is better than the open field. We have had much better success with potatoes covered with soil than with those spread out in open air in the cellar, or under trees where we covered with leaves. In no event should the potatoes be piled or heaped together, so long as warm weather continues. If potatoes intended for the table are exposed to the light for any considerable length of time they will turn greenish in color and become unwholesome for food. If not spread in a dark place they should be covered with leaves, straw or dirt.

FALL CROP.

A cool, moist soil, rather than one that is hot and dry, is conducive to the best success with the second crop. What is termed "second bottom" land more nearly approaches these conditions than the high dryer hill sides. Land that was thoroughly prepared, highly fertilized and cultivated in some spring crops like onions and cabbage, is better than that broken and fertilized only a short time before planting. In order to retain a good amount of water the soil should be finely pulverized. If plowed and harrowed immediately after the spring crop is off it will be better than to wait until the approach of planting time. Large quantities of fresh barnyard manure, or any other

materials that will generate heat, are not advisable. If the land is rich in vegetable mould cottonseed meal and acid phosphate may be applied liberally.

August 1st, to 15th, is the time to plant. As the conditions for germination, or starting the buds, are less favorable during August than during March, it is usually best to start the buds into growth before planting. This requires two or three weeks time, and is easily done. Spread in a cool, shady place, cover three or four inches with sand or loamy soil, and keep well moistened but not wet. When the sprouts are from a quarter to a half an inch long, cut, let dry a few hours and plant. Pieces on which the eyes have not started may be left in the bed a few days longer. As the plants must depend on the substance in the piece of tuber for food until it is sufficiently developed to draw from the soil what it needs, it is best to cut in larger pieces than was advised for spring planting; but for the large quantity of seed potatoes necessary, it would doubtless be better, in the end, not to cut a potato that is smaller than a guinea egg. Cover immediately after potatoes are dropped. Rows, distance between hills in the row, and cultivation, is the same as was advised for spring planting. If well drained, plants will grow off better if the pieces are dropped in open furrows five or six inches below the general level, and not more than four inches of soils over them at first, but as we never know when a continued wet spell may happen between the time of planting and the date when the plants should be a few inches above the surface, and out of danger, we must take the risk of loosing all if we plant below the level in soil (like much of our richest potato soils are in Mississippi) that refuse to rid themselves quickly of surplus water. Harvest during latter part of November, or any time before freezing weather. Fall grown potatoes keep without any trouble. It is only necessary to take proper care in digging, and to store in barrels, boxes, or in piles, in a cool dark place, where they will not freeze.

As to varieties, a potato that succeeds in one latitude and soil is not, necessarily, a success in another. Among the varieties that seem to give the best results, so far as they have been tried in this State, I name, in order of value; Early Rose, Peerless, Red Triumph and Beauty of Hebron. The Triumph usually brings the highest price in the market; the Peerless is the latest and perhaps the best able potato of the four varieties named.