

COOPERATIVE EXTENSION WORK
IN
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Irish Potato Club Instructions

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Acreage

The acreage for the Potato Club is one-eighth acre.

There are 43,560 square feet in an acre, or 5,445 square yards, or 605 square yards in one-eighth of an acre.

To give the town boy or girl an idea of the size of an eighth of an acre, will say that two 25x140-foot lots contain 7,000 square feet. At harvesting time the required amount may be measured off and harvested separately.

Soils

The Irish potato does well on a variety of soils; however, it has its peculiar soil requirements. Potatoes do best on a sandy or sandy loam soil which has good drainage, and well supplied with organic matter. They should mature early in this state. Where late varieties are planted, or early varieties planted late, or planted in a heavy, late soil, the hot weather is apt to catch them before the potatoes are formed.

For a fall crop of Irish potatoes, a rich bottom soil is desirable on account of a better moisture supply, and frequently on account of its natural protection from the severe hot sun and winds.

Organic Matter

The addition of organic matter to a soil will lighten, enrich and at the same time increase its capacity for catching and retaining moisture. A moist soil is cooler than a dry soil, which is an important factor in growing Irish potatoes during the warmer portions of the season.

The potato-growers of Colorado consider alfalfa sod soil the best potato ground. Where such soil is available no doubt it would give good results in this state. Sweet clover or pea stubble would be good. Potatoes following small grain have not given best results.

Repeated demonstrations have shown increased yields ranging from 25 per cent to 100 per cent on ground well supplied with organic matter as compared to the same kind of soil which was deficient in organic matter.

Fertilizing

No doubt barnyard manure is the most readily available fertilizer in this state. The rate of application will depend upon the supply and the section of the state. In the drier western portions, manure, as a rule, cannot be applied in as large amounts as in the eastern portions of the state. Twenty to twenty-five tons per acre may be applied in the eastern portion of the state, but probably about half that in the western portion.

Apply fresh manure only in the fall so as to give it an opportunity to rot during the winter. Rotted manure may be applied in the spring. The manure should be well distributed, and it would be well to disk it in order to pulverize it and mix it thoroughly with the soil before turning it under. Do not leave the manure broadcasted over the soil any longer than possible before at least disking the soil, as ammonia gas, which contains nitrogen, will escape.

The disking mentioned above will cause more rapid decomposition after the soil is broken. Sometimes a heavy application of manure is made and then the soil broken and the manure forms a layer, or kind of mulch, between the soil beneath and that turned. In this way the subsoil moisture rises to the manure layer and is checked. Plants whose roots are growing in the upper soil are cut off from the lower moisture supply and during dry weather the plants suffer from lack of moisture.

The opinion seems current that the application of barnyard manure causes potato scab. This is not true. The manure does not directly cause scabby potatoes, but may furnish organic matter as a medium upon which the fungi, already in the soil or that may be introduced on the seed, can grow.

An excessive application of lime, which may cause soils to become alkaline, should be avoided.

During the past several seasons, growers in Pontotoc, Okfuskee and Creek counties increased their potato yield very materially by adding cottonseed meal at the rate of 150 to 200 pounds per acre. The meal was distributed and mixed in the furrow just before planting the potatoes. Cottonseed meal is an organic fertilizer and contains nitrogen. Cottonseed meal also contains an appreciable amount of two other essential elements of food material, namely: phosphorus and potash.

Many of the counties in eastern Oklahoma are deficient in phosphorus and in several tests in eastern Oklahoma the addition of 300 pounds of phosphoric acid per acre has given profitable returns. This fertilizer was applied in the same way as the cottonseed meal spoken of above.

Preparation of Soil

As previously indicated, when the ground is manured in the fall, the ground should be disked and broken at once. Fall plowing is very valuable in growing Irish potatoes. In case of manured ground, fall plowing assists in the decomposition and conservation of the food elements of the manure. Where alfalfa or clover sod land is selected, fall plowing will assist in the decomposition of the sod.

Fall plowing for potatoes has all the advantages that any other fall plowing possesses, chiefly among these advantages may be mentioned: Increases the soil's capacity for catching and retaining moisture; improves the physical and chemical conditions of the soil; destroys insects and facilitates spring work.

The potato is a root crop, and the fall plowing will loosen and pulverize the soil for spring, which is desirable.

Where Irish potatoes are grown in a loose soil they will root much deeper than ordinarily supposed. Potatoes have been known to send their roots as deep as three feet into favorable soil. The importance of deep rooting is a vital factor in drouth-resistance.

The soil should not be disked nor harrowed before spring when broken in the fall as it will catch more moisture and the alternate freezing and thawing during the winter will improve it physically and chemically.

Probably the most common method of handling blowy soil is to list it in the opposite direction from the prevailing winds.

Small Potatoes for Seed

As a general rule, people are quick to say that small potatoes are not good for seed. In spite of the above statement, it is very common for people to plant small seed. This seems inconsistent and, no doubt, in many cases, is a bad practice, but not universally true.

In the first place it is well to bear in mind the relation of the potato tuber to the parent plant. The Irish potato tuber is an enlarged, underground stem, and is not the result of sexual reproduction. When the florist makes a cutting from a plant he expects a reproduction of the original plant; so, when the potato-grower takes the tuber and plants it, he expects a plant with the characteristics of the original so far as there is nourishment in the plant tuber to produce the plant.

Naturally, if the potato tuber planted, or piece of tuber, is too small, the young plant will suffer on account of lack of nourishment.

From the above it seems that the logical conclusion as to whether or not small potatoes are good for seed depends upon characteristics of the parent plant. If the small potatoes are from productive plants, or are small on account of adverse growing conditions, the seed should be good.

Where the potatoes are small on account of weak or diseased plants the small potatoes are not good for seed purposes.

Selecting Seed Potatoes

Even in comparatively small towns it is very often the case that dealers secure their seed potatoes from different sources. In this case there is an opportunity for selection to a certain extent. Pick good, uniform-sized potatoes as far as possible. Avoid diseased potatoes for seed purposes. Note the description of the most common disease described later so you can recognize it in choosing your seed potatoes.

Fall or second-crop potatoes offer the best opportunity for the raising and selection of home seed.

The selection should be carried on in the field at harvest time. Select potatoes from good, strong, healthy plants that are good yielders. In this way you will secure seed that possesses the same characteristics as its parent plant.

Certified Seed

Many potato growers, from a home and commercial standpoint, had sad experiences a few years ago with certain irrigated Irish potato seed. The irrigated seed germinated slowly and in hundreds of cases the yield did not equal the amount of seed planted. Many of the irrigated seed were sold as certified seed. A popular prejudice arose against certified seed as a result but is now being overcome. Experiments and demonstrations extending over a period of years in Oklahoma certainly prove the value of real certified seed for this state. As a rule the northern and western seed are freer of disease, germinate sooner, mature a week earlier, produce larger and more uniform sized potatoes and yield more than Oklahoma second crop seed.

Very frequently the average (non-certified) Irish potato seed received on the local market are poor and give poorer results than Oklahoma second crop seed.

The following results, secured in Okfuskee county, are probably an average and should be taken into consideration where practicable, in securing seed Irish potatoes:

Average yield of 4 lots of certified Bliss Triumph seed yielded 174 lbs. per plat or 62 bu. per acre.

Average yield of 2 lots of Oklahoma second crop seed yielded 126 lbs. per plat or 44 bu. per acre.

Average yield of 1 lot of Oklahoma local market seed yielded 115 lbs. per plat or 41 bu. per acre.

Repeated tests in this state have shown that certified seed out yielded second crop seed and second crop seed have out yielded the non-certified seed of the same variety secured on the local market.

Varieties

It is not an unusual thing in this state for unfavorable Irish potato weather to set in early in June; as a result the potato yield is cut short. In order to avoid this difficulty as far as possible it is advisable to plant only early varieties.

Three popular early varieties in this state, given in the order of popularity, are: Triumph (Bliss Triumph), Early Ohio and Irish Cobbler. Early Six Weeks and Early Rose are grown to some extent.

For commercial purposes, the Triumph is grown more extensively, probably on account of its earliness.

Early Ohio is very popular for the home garden. It is a better yielder and better quality than the Triumph, but about ten days later. The Triumph is a red-skinned variety, while the Early Ohio is a white-skinned variety. The Early Ohio holds up better for exhibit purposes than the Triumph.

Irish Cobbler—The Irish Cobbler is a white-skinned variety, later than the Triumph, a good yielder and of good quality. The Irish Cobbler matures later than the Triumph but as a rule furnishes edible sized potatoes as early as the Triumph. This variety is growing in popularity in Oklahoma, but is not always obtainable on the local markets. The Irish Cobbler holds up for exhibit purposes even better than the Early Ohio.

Cutting the Seed

The young plants are dependent on the nourishment stored up in the seed pieces.

The mistake of cutting the eyes out, or leaving a very small piece of the potato on each eye is very frequently made.

In examining an Irish potato it will be noted that at the stem end the eyes are very scarce, while at the opposite end, or the seed end, the eyes are numerous. Therefore, to insure the proper amount of eyes and at the same time leave approximately the same amount of potato to each piece, it is desirable to start cutting at the stem end.

Even in the case of high-priced seed, a piece of potato with two good eyes and weighing approximately 1 1-4 ounces, will give better results than a smaller piece.

Planting

Time.—In this latitude, Payne county, potatoes should be planted from the latter part of February to the first part of March. Early planting of an early variety in a favorable soil will give the plants an opportunity to make before the unfavorable weather begins.

Rate.—With the individual seed pieces, averaging one to one and a quarter ounces each, the rows 3 feet apart and seed pieces 14 inches apart, twelve to thirteen bushels of seed will be required to the acre. Numerous experiments have demonstrated that the above is a good rate for planting Irish potatoes.

Manner.—Potatoes may be planted deeper in a light soil than in a heavy soil. With a good sandy loam soil, four inches is about the proper depth. In order to hasten sprouting, especially in a soil inclined to be heavy, it is desirable to throw two light furrows over the seed pieces and leave the soil in this condition until the plants begin to appear above the surface. This will insure good drainage and at the same time cause the soil around the potatoes to warm up better and thus cause quicker sprouting. When the plants begin to appear, the slight ridges should be harrowed down, thus destroying any grass or weeds that may be growing, forming a soil mulch and establishing level culture.

Mulching

Potatoes when mulched immediately after planting are delayed in coming up from ten days to two weeks. It is a mistake to mulch the spring crop until after the potatoes have come up and after they have been cultivated about twice. The delay in coming up, on account of mulching immediately after planting, may enable the plants to escape late spring freezes.

Waste straw or hay from the top or bottom of the stack makes suitable material for mulching. A 4-inch layer is about the proper depth for the mulch. Experiments in Nebraska were carried on and demonstrated that where potatoes were properly mulched that the yield was increased as much as 40% over thoroughly cultivated potatoes. The average home potato patch, as a rule, is not kept thoroughly cultivated.

On a commercial scale, mulching is not practiced, but for a small area, where straw or waste hay is available, no doubt but that, under the average care, the potato yield will be materially increased.

Cultivation

The Irish potato is a cool-natured plant. By maintaining a soil mulch throughout the growing season, more moisture will be maintained. Thus the soil will be cooler and naturally the grass and weeds will be kept down. Remember that grass and weeds will rob the plants of moisture and food material. The potato needs a loose, open soil in which to develop to its best advantage. A cultivation should be given after each rain. The first cultivation can be deeper than the later ones. Bear in mind that as the plant grows the roots grow in length, and in cultivating do not destroy the roots. At the last two cultivations the soil should be thrown to the roots of the plant. The potato plant requires plenty of loose soil in which to produce the potatoes.

Thorough and frequent cultivation is a keynote in successful potato growing in Oklahoma.

Harvesting

There is a great loss from rot by harvesting potatoes improperly. Potatoes should be harvested when the plants are matured, as shown by the plants beginning to turn yellow. Do not wait until the vines are dead and dried up or the potatoes will be injured by heat in the ground and rot when harvested and stored.

In harvesting Irish potatoes do not leave them exposed to the sun. Handle them carefully in order to prevent bruising, and, if the sun is shining

while digging, pick them up immediately. Remove all cut or broken potatoes before storing.

A variety of harvesting tools may be used, such as a spading fork, a lister or a potato-digger.

Storing

Irish potatoes should be stored in a cool, dry place where the sun cannot shine on them. A dry cellar or cave is ideal, but many do not have such equipment. Until cold weather, Irish potatoes may be stored under the house, if well drained, and it does not have a solid foundation. A store-room or barn may be used as a storage place. On the approach of cold weather sufficient protection should be given to prevent them from freezing.

Second-Crop Potatoes

As a general rule about nine out of ten attempts to raise a fall or second crop of Irish potatoes are failures. The reason for these failures is usually due to the fact that the soil has not the proper amount of moisture in it and is too hot. With the exception of bottom ground, no spring crop should be grown on the soil intended for the second-crop potatoes.

Location.—Select a location protected from the hot winds as much as possible.

Irish Potato Requirements.—The Irish potato, for its best growth and development, requires cool, moist conditions. These conditions do not very frequently exist in July, the usual time for planting the second crop.

In order for the soil to meet these requirements it must be kept cultivated from spring on.

As soon as the soil is plowed, a soil mulch should be kept on the ground just as though a crop were growing. This may be done by means of a disk or section-tooth (spike-tooth) harrow.

By keeping up the above cultivation the soil will be moist and fairly cool when planting time comes.

Do not overlook cultivating after each rain. Keep a mulch on the soil at all times.

Seed.—Seed from the spring crop is frequently used. Potatoes from the previous year's crop which have been kept in cold storage as a general rule are preferable.

The Triumph (Bliss Triumph) is preferable to Ohio or Irish Cobbler for second-crop seed.

Sprouted Seed.—For the fall crop of Irish potatoes it is desirable to sprout the seed before planting. This may be done by spreading the seed out under a tree which shades the ground underneath. Cover the potatoes with straw or leaves and keep moist. About ten days under favorable conditions will be required to sprout the seed.

Planting and Cultivating.—The seed should be planted about the 10th to the 15th of July. The main differences between spring and fall crop planting are that in fall planting the seed should be planted thicker in the row and about two inches deeper.

The ground should be cultivated after each rain, even though the plants have not come up. A harrow is a good tool for cultivating previous to and just after the coming up of the potatoes. It is more important to practice thorough cultivation with the fall or second crop than the spring crop. Moisture is the principal limiting factor in growing the second crop.

Insects

Colorado Potato Beetle.—The Colorado potato beetle is the worst insect pest that the Irish potato has.

It is very important to destroy the beetles before they get a good start.

Hand-picking and dropping them in a can of kerosene oil is practical on a small scale.

On a large scale, spraying is the most practical plan.

When arsenate of lead is not obtainable, paris green can be used. Mix paris green at the rate of 1 pound to 40 pounds of air-slaked lime, or $\frac{1}{4}$ pound to 10 pounds lime for a small patch. This may be dusted on the plants with a cheesecloth sack early in the morning while the dew is on.

The paris green may be mixed into a paste and then dissolved in water and applied with a sprinkling can or spray machine. One pound of paris green is sufficient for 100 gallons of water, or about 2 ounces for 10 gallons of water.

Arsenate of Lead.—Where arsenate of lead is obtainable it is preferable to paris green, as it sticks better and is not so apt to burn the foliage. Arsenate of lead comes in both powder and paste. Where the paste is used, it requires twice as much as the powdered form.

Use 2 pounds of powdered arsenate of lead to 50 gallons of water, or 12 level teaspoonfuls (1 ounce) to 1 gallon of water, or use 1 pound of powdered arsenate of lead to 10 pounds of air-slaked lime. Watch the attack of insects carefully. A second spraying or dusting may be necessary.

Calcium Arsenate.—Calcium arsenate is becoming more common on the Oklahoma markets on account of boll weevil conditions and is cheaper than arsenate of lead and is effective in controlling the potato bug. Use $\frac{3}{4}$ as much calcium arsenate as is recommended in case of powdered arsenate of lead.

Potato Scab

Potato scab is a very common disease found on potatoes. Scabby potatoes should not be planted without treatment. A potato affected with scab is rough and pitted, and has a scabby appearance. Potatoes grown from such seed will be scabby, and the soil will become inoculated with the scab germs, and subsequently potatoes planted in the same place will become scabby. The formalin or corrosive sublimate treatment is effective against scab. The formalin treatment is preferable under average conditions on account of not being poisonous.

Formalin Treatment.—Add 1 pint of formalin to 30 gallons of water. Soak the potatoes in this solution for two hours.

Corrosive Sublimate Treatment.—Dissolve 4 ounces of mercuric chloride (corrosive sublimate) in 30 gallons of water. Soak the potatoes in this solution one and one-half hours. Either of the above solutions may be used for treating scabby potatoes. About 6 gallons will be required to soak a bushel of seed. In case corrosive sublimate solution is used, exercise care, as the solution is poisonous. Corrosive sublimate dissolves slowly in cold water and it is therefore advisable to dissolve the corrosive sublimate in one quart of hot water.

Some authorities have reported good results where seed were soaked only one half hour in either of the above solutions.

SELECTING AND JUDGING POTATOES FOR EXHIBITION PURPOSES

In selecting your club exhibit of Irish potatoes for the fairs, careful consideration should be given the following score card and explanation of same:

Score Card for Irish Potatoes

| | |
|-------------------------|------|
| Uniformity | 20% |
| Size (marketable) | 10% |
| Smoothness | 10% |
| Market condition | 30% |
| Trueness to type | 30% |
| Total | 100% |

Explanation of Score Card

Uniformity.—The most important characteristic of a potato exhibit, as seen from above, is uniformity. Uniformity refers to size, shape and color. In selecting your exhibit give special attention to uniformity.

Size (marketable).—The Oklahoma State Marketing Commission has adopted the following sizes for Grade 1 potatoes: "The minimum diameter of potatoes of the round varieties shall be $1\frac{1}{8}$ inches, and of potatoes of the long varieties a minimum diameter of $1\frac{3}{4}$ inches." In case an exhibit can be selected of uniformly larger potatoes there would be no objection.

Smoothness.—Potatoes for exhibition purposes should be smooth. In order to grow smooth potatoes, avoid gravelly or rocky soils.

Market Conditions.—There should be no signs of disease on a single potato. Remember that diseased potatoes are not so desirable for culinary use, may produce diseased crop next year, and again, may cause the disease to be scattered in your field or garden next year.

Freedom From Injury includes any mechanical or insect injury. There is a waste from a culinary standpoint in preparing injured potatoes. Injured potatoes will not keep well. The potatoes should be firm.

Trueness to Type.—The different specimens should be true to type and contain no mixture of varieties, numerous deep eyes detract from the culinary value.