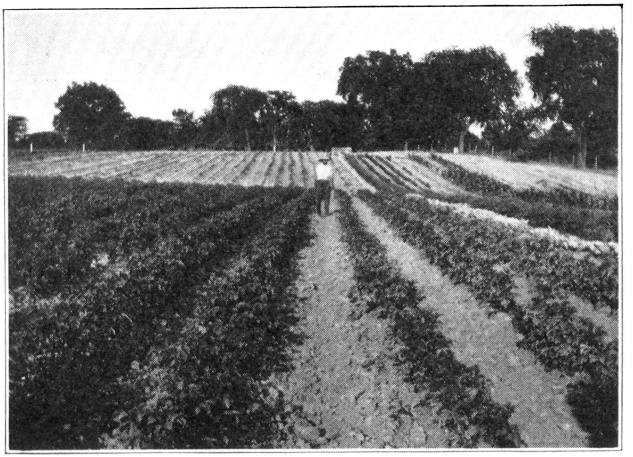
POTATO GROWING CLUB

Boys' and Girls' Club Circular 5

COLUMBIA, MO. MARCH, 1923



The potatoes on the left were fertilized with a 2-12-2 fertilizer at the rate of 400 pounds per acre. Those on the right were not fertilized but received the same treatment in every other way.

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE AND THE UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

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CONTENTS

Potato Growing Club

This club is concerned with the raising of potatoes and if early potatoes are to be grown the club should be organized by March 1. If late potatoes are to be grown the club should be organized by June 1. The club year ends November 1.

THE REQUIREMENTS

1. Produce economically, as large a yield as possible, on plots varying in size from one-tenth to one acre of ground.

2. Demonstrate the best cultural methods for potatoes in your locality: (a) By using the best seed obtainable; (b) By giving proper seed treatment; (c) By showing best methods of planting, cultivating, controlling insects, and harvesting.

3. (a) Make an exhibit at the local or county fair of 32 potatoes grown by members; (b) Judge potatoes and recognize the varieties adapted to Missouri conditions; (c) Champion* of each club growing early potatoes should send exhibits to Boys' and Girls' Club Exhibit at the State Fair. Champion of each club growing late potatoes should also send exhibit to the Junior Farmers' Week, Columbia, Missouri.

4. Keep records of the methods and cost of growing the potatoes and the yield and value of the crop. Under this section economy of production shall be considered in awarding prizes.

5. Write a story on growing the potatoes and the work of the club.

In addition to championship prizes there may be separate prizes for any part of the work such as a prize for the best peck exhibit of potatoes at the local show.

MEETINGS SUGGESTED

To be a standard club there must be at least six meetings at which officers preside, but there may be more than six if the club

*In awarding championship prizes each of the five divisions of the club's activities should be given equal weight. For example 20 points will be given to each of the following five items: (1) Yield, (2) Culture, (3) Exhibit and Judging, (4) Record, (5) Story. Total 100 points.

NOTE.—This circular was prepared by E. M. Page, Extension Assistant Professor of Horticulture in collaboration with Mrs. J. K. Fyfer, Special Assistant in Boys' and Girls' Club Work.

members and the leader so desire. Before each meeting every club member should study the subject to be discussed. Beginning on page 5, under Numbers I, II, III, etc., will be found short discussions of the subjects suggested. Meetings should be held regularly and all members should be present at each meeting.

I. Organization and Discussion of Varieties of Potatoes, Soils and Fertilizers.

II. Seed Treatment, Seed Cutting, Preparation of Soil, Drilling Fertilizer and Planting the Potatoes.

III. Discuss Cultivation, Hoeing, Spraying and Dusting. Examine Record Books.—Demonstration of mixing and using sprays.

IV. Discuss Late Cultivation, Harvesting, Grading, Early Marketing, Storage and Keeping Records.

V. Plans for Local Exhibit and Judging Contest.

VI. Local Exhibit and Judging Contest—Program and Record Book.

RECORD BOOK

Great importance must be attached to keeping careful records of club work in order to get the most out of the club work and to find out the success of the experiment. Don't fail to record all meetings and every step taken in raising the potato crop. Keep the records up-to-date as some important facts may be forgotten.

Fig. 2.—Effect of date of planting on yield of early potatoes; each bag shows the yield of marketable potatoes from 100 hills.

March 27 April 15 May 5

I. Organization

The Local Leader should explain the plans for the club year. Officers should be elected; president, vice-president, and secretary. Committees should be appointed to make a constitution and a program for the club year and also to choose a club name and club motto.

After the business part of the program the Club Leader should discuss the varieties of potatoes adapted to Missouri conditions. The club members should decide which variety they wish to grow and where to get the seed. Samples of desirable seed of the best varieties should be provided for the club members to examine. Soils and fertilizers should also be discussed so that both seed and fertilizer can be obtained in time for planting. If the members decide to order together, a committee might be appointed to do the buying. If this seems too much for one meeting a second meeting could be held soon to finish the discussion. Club members and leader can decide on this.

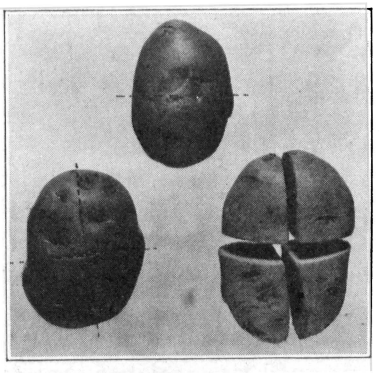

Fig. 3.—Early Ohio potatoes showing typical shape for this variety. Notice method of cutting for seed.

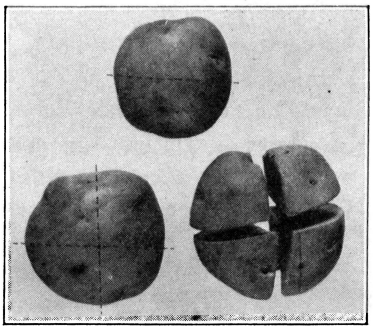

Fig. 4.—Typical Irish Cobbler potatoes. Potatoes as small as an egg should be planted whole.

VARIETIES OF POTATOES

Early Varieties.—It is recommended for the Boys' and Girls' Clubs of Missouri growing early potatoes that only one of two varieties be grown: (a) Early Ohio; (b) Irish Cobbler.

These should be planted as soon after March 15 as the weather will permit.

Early Ohio.—This is a good early variety and is grown extensively throughout the state. The best shaped tubers are rather

long, slightly wider than they are thick and carry their width well out to the ends leaving each end rather blunt. They are smooth in appearance with shallow eyes and the color of the skin is light pink. When rain follows a very dry period, during the growing season, second growth "knobs" may be formed on Early Ohio potatoes. The color is brighter in potatoes that are not mature but any of them lose some of their color after they have been dug a few weeks. The vines of the Early Ohio grow erect and attain an average height of 15 to 16 inches. The blossoms have white petals.

Irish Cobbler.—This is another excellent variety of early potatoes for Missouri conditions and is rapidly increasing in popularity in this state. The tubers are short and blocky or rounded in shape with rather deep eyes. When grown in heavy or tight soil they have a tendency to be somewhat rough in shape with the eyes deepened. The skin is smooth and white. The best shaped Irish Cobblers are about as wide as they are long and slightly flattened with fairly square corners.

In the fields the vines are inclined to spread out more and although they make slightly more growth, the vines do not stand up as high as the Early Ohio. The leaves are slightly larger and darker green and the flowers have a pale lilac or purplish colored petals.

The table qualities of both varieties are very good.

Late Varieties.—In some sections of the state late potatoes are grown as a commercial crop and in these sections Late Potato Clubs have been quite successful.

The same general plan is used for these clubs as for the Early Potato Clubs but the planting is not done until about July 1.

The variety of potato selected should be one of a good late sort grown in your community. Some good late varieties are: (a) Rural New Yorker; (b) Green Mountain; (c) Real Irish; (d) Burbank; (e) Peachblow.

It is best to obtain the seed early in the spring and put them in cold storage until about two weeks before planting time. If cold storage is not available they may be spread out on a barn floor or in a loft to prevent too much sprouting.

SOURCES OF SEED

Success in raising any crop depends largely on seed selection. As a general thing seed potatoes obtained from northern sections give the best results. Minnesota, Wisconsin, Nebraska and Michi-

gan are now producing "certified" seed potatoes of standard varieties which are true to name, of good type, and practically free from serious disease. Such seed is far more valuable to the potato grower than ordinary seed potatoes found on the market.

Another method of obtaining seed of both early and late potatoes is the fall home grown crop. The regular crop of late potatoes

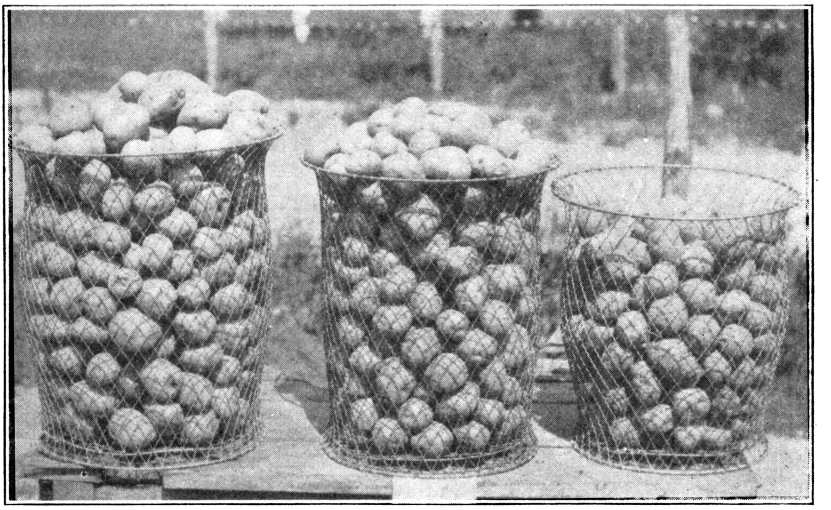

Fig. 5.—Yield of No. 1 potatoes from 100 hills each of three different strains of Irish Cobbler. The best strain yielded 64 per cent more than the poorest.

will provide seed for the late crop but if seed for the early crop is to be grown it must be an early variety grown especially for seed.

Early potatoes grown from the fall home grown seed are quite successful, but usually it is cheaper to buy good northern seed because early potatoes are harder to grow as a late crop and do not always yield well.

In selecting seed potatoes, pick out tubers that are medium sized, smooth, regular and free from disease. About 75 pounds will be required to plant one-tenth of an acre.

SOILS

The quantity or yield of potatoes is influenced largely by the soil in which they are grown. A soil rich in decaying vegetable matter and which does not bake or run together is most desirable.

If there is no danger of washing, land intended for potatoes should be manured and plowed under in the fall. Clover sod is also

very good but should be turned under in the fall to allow the sod to decay before potatoes are planted.

FERTILIZERS

When rotted manure or clover sod can not be obtained soybeans or cowpeas are sometimes grown in the fall and turned under for potatoes. The yield of potatoes will usually be still further greatly increased by the use of commercial fertilizer at the rate of 250 to 400 pounds per acre.

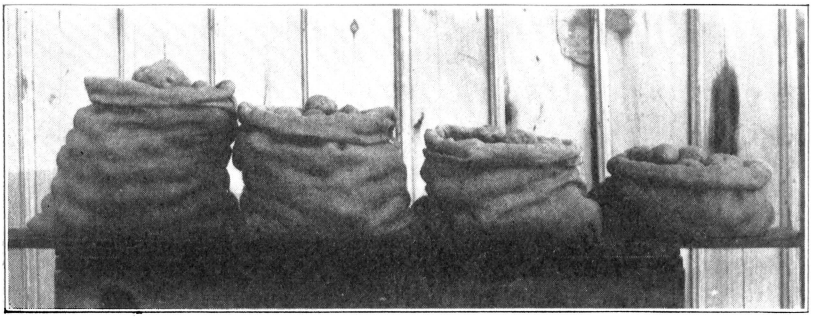

Fig. 6.—Yield from 100 hills of early potatoes from use of each of following amounts of 2-12-2 complete fertilizer:
400 lbs. 200 lbs. 100 lbs. no fertilizer

On very rich soil acid phosphate may be used with good results. This is a commercial fertilizer which adds only phosphorus to the soil. If no green manure or stable manure was used then the commercial fertilizer used should be a *complete* fertilizer containing nitrogen, phosphorus and potassium and should be used at the rate of about 400 pounds per acre. A 2-14-2 fertilizer, which is one containing 2 per cent nitrogen, 14 per cent phosphorus and 2 per cent potash, is a good one for potatoes A 3-12-4 fertilizer is also good, especially for poorer soils.

RECORD BOOK

There is so much to tell about the first meeting, that care must be taken lest you forget some of the interesting things. Write about the meeting just as soon as it is over. Make a record of the number of members, officers elected, and committees appointed.

Tell the variety of seed selected, the place from which you obtained the seed, the amount of seed you ordered for your patch, the cost of the seed, the kind of soil in your patch, the fertilizers used and their cost.

II. Seed Treatment, Seed Cutting, Preparation of Soil, Drilling Fertilizer and Planting Potatoes.

The meeting which deals with these subjects should not be later than March 15 for the early potato clubs, nor June 25 for the late potato clubs, as the potatoes should be planted as soon after these dates as possible. This is the time to ask any questions that will help you to understand the work better or that will explain anything you are in doubt about.

SEED TREATMENT

Seed treatment is for the purpose of killing disease germs that are carried on the surface of the potatoes. The most common ones

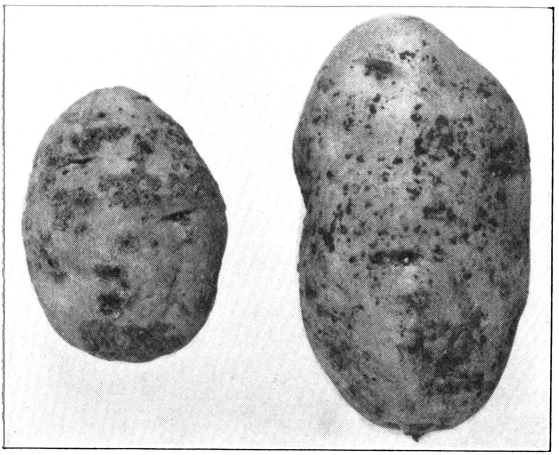

Fig. 7.—(Left) Common scab reduces the value and quality of the potato crop. (Right) Black scab (or Rhizoctonia). The black spots are disease spores which cause Dry Stem-Rot and Little Potato Disease in the field. Seed treatment prevents injury from both kinds of scab.

carried there are Common Scab and Black Scab (*Rhizoctonia*). Two methods of treatment are given below:

Corrosive Sublimate Method.—The best method of seed treatment is the corrosive sublimate treatment. Dissolve 1 ounce of corrosive sublimate (bichloride of mercury) in a pint of warm water in a glass jar (break the glass jar and destroy it afterwards) and pour it into eight gallons of water in a **wooden** barrel or a **wooden** tub. CAUTION.—Corrosive sublimate is deadly **poison.**

Wood is used because the solution will ruin a metal tub and at the same time the solution would be weakened and worthless. Do not afterwards use the tub or barrel for watering stock.

Put the potatoes in the solution either loose or in a sack an let them soak for 1½ hours. Then take them out and let them dr before cutting. Pour the solution out where nothing can get it an rinse the barrel thoroughly.

Formaldehyde Method.—A dip which is less poisonous but no as effective against disease is made by dissolving ¼ pint of com mercial formalin (40 per cent formaldehyde) in eight gallons o water. Soak the potatoes for about two hours.

Fig. 8.—Seed treatment or dipping in corrosive sublimate solution kills all disease germs on the skin of the potatoes.

SEED CUTTING

The size of the seed piece is very important, much more so than the shape or the number of eyes it carries. Seed pieces should be about the size of a small hen egg or weigh about 1¼ ounces. One good eye is enough although more will do no harm. Large potatoes should first be split lengthwise, then the halves cut crosswise into pieces containing at least one good eye and weighing about 1¼ ounces. The illustration shows methods of cutting large tubers.

Do not plant very small pieces, thin sections or peelings for seed purposes. The yield will be about in proportion to the weight of the seed used up to 1¼-ounce pieces. Potatoes should be planted

PREPARATION OF THE SOIL

Thorough plowing and harrowing of the land before planting is quite important. It will make hoeing and cultivating easier and

Fig. 9.—Three steps in preparing potato land: (Above) Spreading heavy coat of manure in fall; (Center) Breaking deeply in late fall; (Below) Disking into fine condition before planting, early spring.

if the soil is mellow and without clods or hard ridges the potatoes have a much better chance to grow and produce good yields.

Land that does not wash badly can be plowed in the fall and left rough through the winter. The freezing and thawing will help to break up clods and leave the land loose and in fine shape to cultivate. The lighter sandy soils need not be plowed again in the spring but can be harrowed down and planted. Some of the heavier soils such as clay loams will have to be replowed in the spring and then harrowed down.

Fall plowing is best when clover or alfalfa sod is to be turned under. The land should be left rough through the winter and the sod will usually keep it from washing. Very early in the spring it should be disked down and replowed and then disked again before harrowing. This will pulverize the sod and put the soil in good shape for planting. If you do not have clover or alfalfa sod land for potatoes a wagon load of manure should be scattered on each one-tenth acre. If the manure is coarse it should be scattered in the fall and turned under and the land treated as described for clover sod. If rotted manure is used it should be scattered over the land after it has been plowed the last time and worked into the soil by disking and harrowing. The last harrowing should be just before planting time.

FERTILIZING AND PLANTING

When planting time comes shallow furrows should be opened with a one-horse plow, a single shovel or a cultivator with the teeth close together. A wheel hoe, with a turning plow attachment or even a common hoe can be used in making the furrows if it is not convenient to use a horse plow or cultivator. The furrows should be about 3 or 4 inches deep and 3 feet apart. If acid phosphate or other commercial fertilizer is to be used it can be drilled or scattered by hand in the open furrows and mixed with the soil by running a cultivator through the rows. The seed pieces should be dropped or planted and covered immediately without allowing the soil in the furrow to dry out. Use fairly large seed pieces as already described, and plant only one in a place spacing them about 15 inches apart.

Covering the seed pieces is done by throwing a low ridge over them with a small plow or hoe. When the ridge is first made the seed pieces should be covered about 5 or 6 inches deep.

About two weeks after planting the ridges are worked down by raking or by dragging the field crosswise with a spike-tooth harrow again just before the sprouts come through, the ridges are raked or dragged lengthwise using either a hand rake or spike-tooth harrow. These two draggings or rakings leave the seed pieces at the proper depth of about 3 or 3½ inches and put the soil in fine mellow condition for young plants. Another advantage is that all weeds and grass that have started are killed by the dragging and this makes hoeing much easier.

At this meeting the Club Leader or club members should demonstrate methods of seed treatment, seed cutting, fertilizing and planting.

RECORD BOOK

Items for the Record Book now are: What kind of seed treatment did you use and how was it done? How were the seed cut? How did you prepare the soil? How did you plant and fertilize your potatoes? Be sure to keep a careful account of the time spent in doing the work and the cost and amounts of materials used.

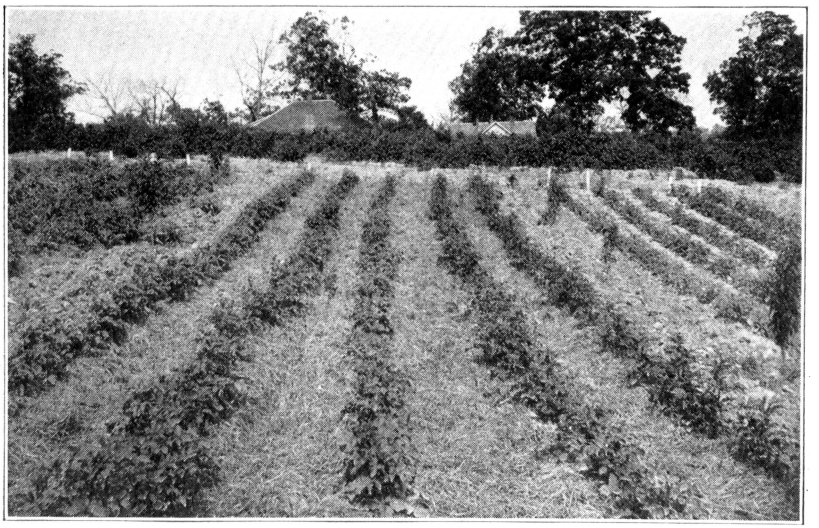

Fig. 10.—Straw mulch 6 or 8 inches deep on late potatoes saves moisture and keeps down weeds. For the late crops, potatoes should be planted shallow (1 or 2 inches deep) and straw put on immediately. No cultivation is necessary.

III. Cultivation and Hoeing, Spraying and Dusting

The third regular meeting should be held after the potatoes are up or about the time they are sprouting.

CULTIVATION AND HOEING

After the plants are up, it is necessary to make several cultivations between the rows. In the field a two-horse cultivator is an excellent tool for this work. The shovels or teeth next to the row should be set to run very shallow. If the first one or two cultivations are carefully made they will save a great deal of hoeing. The soil should be worked often enough to keep it fairly loose and to prevent weeds and grass from starting. After a rain when the soil begins to dry out on top, it is a good plan to go through with the cultivator before the ground cracks or "bakes". The ordinary one-horse cultivator with from five to twelve shovels is also a good tool for cultivating potatoes. The same principles must be followed; that is, cultivation close to the plants must be very shallow while the first one or two cultivations out in the middle may be fairly deep. After the first one or two times over the patch, all the cultivating should be shallow to prevent tearing up the slender white roots that feed close to the surface of the soil. At the later

Fig. 11.—Two-horse riding cultivator throwing up low ridge as it cultivates. Frequent cultivation is very important. Early cultivations should be deep and fairly close to the plants, later the teeth should run very shallow and in the middle only.

cultivations it is a good plan to draw the dirt toward the row to form a low ridge.

When no horse cultivator is available the work can be done by hand, using a rake before the plants are up and a wheel hoe or common hoe to keep the weeds and grass from starting and to keep the soil loose after the plants start to grow. Late cultivation will be taken up at a later meeting.

SPRAYING AND DUSTING

Spraying for Beetles.—Some means of spraying or dusting must be provided for killing the Colorado potato beetles or "potato bugs", as they are called. These are the worst insect pests we have on potatoes in Missouri but are fairly easy to control. The adult beetles live over winter and come out early in the spring to lay eggs on the young potato plants. In a few days the small larvae hatch out and begin feeding on the leaves. If they are very numerous and no spray is used they may soon remove all of the leaves and cause a serious set-back to the plant. These beetles and the larvae are biting insects and can therefore be killed by a stomach poison. Such a poison can be applied to the plant by spraying or by dusting. Spraying is the most common method and probably the most satisfactory.

Fig. 12.—Colorado potato beetles—young and old.

Arsenate of lead is one of the best poisons to use and for a liquid spray should be mixed at the rate of 1½ pounds of powdered arsenate of lead to 50 gallons of water. In small amounts ½ ounce or one heaping tablespoonful to a gallon of water gives the same strength. A little water should first be added to the powder and stirred until it makes a thin smooth paste. This paste can then be stirred into the required amount of water and the solution is ready for use.

The first spray should be applied when the first set of the small red larvae are just hatching. If spraying is done thoroughly at this time it will kill practically all of the early hatching of bugs for the spray sticks to the leaves until washed off by the rain. Most any type of sprayer can be used. The one-quart hand atomizer outfit is the smallest style for the garden. A more effective outfit is the three-gallon pressure tank sprayer. For the larger patches ranging from ¼ acre up to 4 or 5 acres the wheelbarrow sprayer is perhaps the best. A barrel spray can be used for the potatoes if it is mounted in a wagon. The larger commercial growers use special power spray outfits which spray from three to six rows at a time.

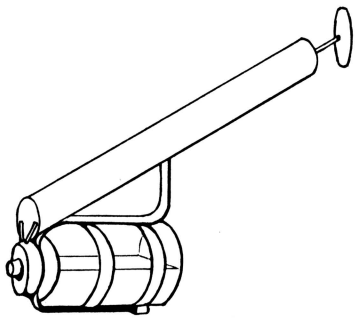

Fig. 13.—A small glass sprayer suitable for small garden.

Fig. 14.—Three-gallon pressure sprayer for spraying small patches of potatoes and gardens.

With a good duster or dust gun a mixture of 1 part powdered arsenate of lead, and 15 parts of air-slaked or hydrated lime will be quite effective in killing the beetles. A mixture of 1 part of paris green to 20 parts of lime is also effective. If no duster is available the mixture can be applied by shaking it on the plants through a cheesecloth bag. The dust sticks to the plants better if applied when the dew is on.

Spraying With Bordeaux Mixture.—Quite often in all parts of the state potato plants may be affected by a condition known as tip-

burn or hopper-burn. This trouble causes the edges of the leaves to curl up and turn brown. The disease is due to the presence of small, green, hopping insects known as leaf hoppers which suck the sap from the leaves. It takes only a very few of the leaf hoppers to start the disease and in hot, dry weather it is very trouble-

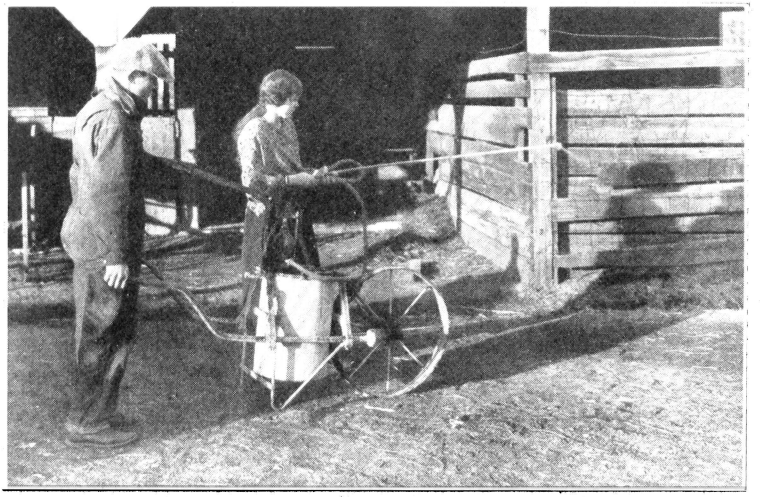

Fig. 15.—Ready for the "bugs". The wheel-barrow sprayer is suitable for any liquid spray on fields up to 4 or 5 acres in size.

Fig. 16.—Traction power sprayer, spraying three rows at once with three nozzles to each row, one from above and one starting upward from each side.

some. The leaf hoppers themselves are only about one-eighth of an inch long and have blunt heads with white eyes. The body is

Fig. 17.—Bellows type dusters for applying dust mixtures on potatoes or other garden crops.

slender and the pale, green wings almost come to a point giving the insect a wedge-shaped appearance.

Fig. 18.—Hopperburn (or tipburn), showing the appearance of affected vines in the field and a close-up view of affected leaves. The leaves curl up at the edges and turn brown.

Spraying with bordeaux mixture will control this trouble as well as the Early Blight which sometimes affects the plants. The first spray of bordeaux mixture should be put on when the plants are about 6 or 8 inches high. It can be mixed with the arsenate of lead for the second "bug" spray and both put on together. Thorough spraying is most important for this mixture. Be sure to spray the under surface of the leaves as well as the upper.

Bordeaux mixture can be purchased ready mixed or can be made as follows: Dissolve one pound of copper sulphate in six gallons of water. Slake one pound of stone lime to a paste by adding water slowly, and stirring; then add water up to six gallons. These

two solutions should be poured together in equal amounts and stirred, when needed. This makes a 4-4-50 mixture which means it is at the rate of 4 pounds of copper sulphate, and 4 pounds of lime to 50 gallons of water. After the two solutions, copper sulphate and lime, are poured together the bordeaux mixture should be used at once. If allowed to stand a day or two it is practically worthless.

If there are any potato beetles present at the time bordeaux is to be applied the arsenate of lead should be added in the same proportion as if mixed with water; that is, add ½ ounce of arsenate of lead to each gallon of bordeaux mixture. By doing this both sprays are applied at one operation.

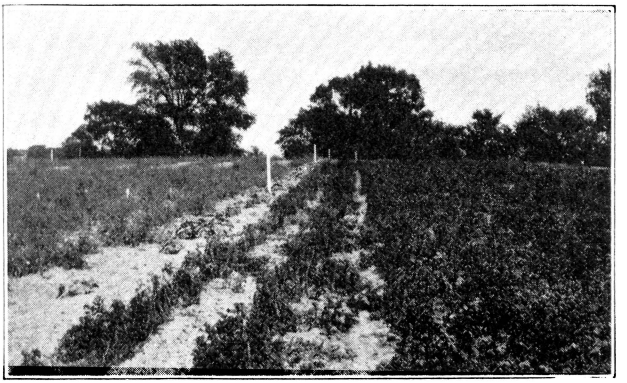

Fig. 19.—Potato vines on the right kept green and vigorous by spraying with bordeaux mixture while the unsprayed vines on the left are suffering from hopper-burn or tipburn.

Demonstration in mixing and using sprays might be given at this meeting.

RECORD BOOK

In watching the plants develop, also watch the Record Book and write down what you notice about insects or diseases that appear and when they appeared, what you did to overcome them, and whether it was successful. Any unusual effects of the weather on the plants should also be recorded. How tall are your vines? Do they stand erect or spread out? What color are the blossoms and when did they appear? Of course the dates of the different cultivations and hoeings and the time used should be recorded as well as all information about spraying or dusting for insects and diseases.

IV. Late Cultivation, Harvesting, Grading, Early Marketing, Storage

LATE CULTIVATION

The usual cultivation is continued until about the time the potatoes bloom, when they are "laid by". At this last cultivation, as in the previous ones, the dirt is drawn toward the row and forms a low ridge. For this purpose a wing shovel attached to the back of a one-horse cultivator is very good. There are also special "sweeps" made to use on two-horse cultivators for this work. In small patches the same thing can be done by hand, using a rake or hoe to draw the earth toward the plants. Even after the crop has been "laid by" if the soil becomes very dry or starts to bake, very shallow cultivation through the middles may be beneficial.

HARVESTING

The most rapid growth in the potato tubers comes after blooming and continues until the vines are practically dead. For this reason the highest yield will be obtained by putting off digging until most of the vines are dead. It often happens that potatoes bring a much higher price early in the season than they do later and if the crop is to be sold at once it may pay to dig before they are fully matured. If this is done they must be handled carefully to prevent skinning and bruising.

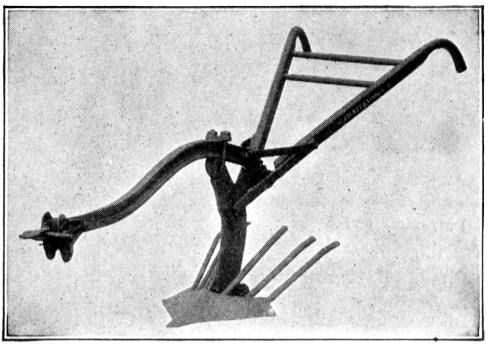

Fig. 20.—Ordinary two-horse potato digger.

Digging can be done with a potato digger or an ordinary two-horse turning plow. There are several types of diggers. The large "elevator digger" is pulled by four horses or a tractor and is only practical for large fields. The ordinary two-horse potato digger is shaped something like a lister plow with iron prongs or fingers extending back from each side of the short moldboards. These iron fingers help to separate the potatoes from the soil so they can be picked up more easily. For small patches a flat-tined spading fork

is good. If potatoes are allowed to dry for an hour or so before picking them up most of the dirt will separate easily. The skin of the potatoes will be hardened some by this drying and will not peel off so badly in handling. This is especially important if the potatoes are being dug before they are fully matured. Baskets, boxes or buckets can be used in picking up the potatoes. These are preferable to sacks, unless the crop is mature and the skin of the potatoes somewhat toughened.

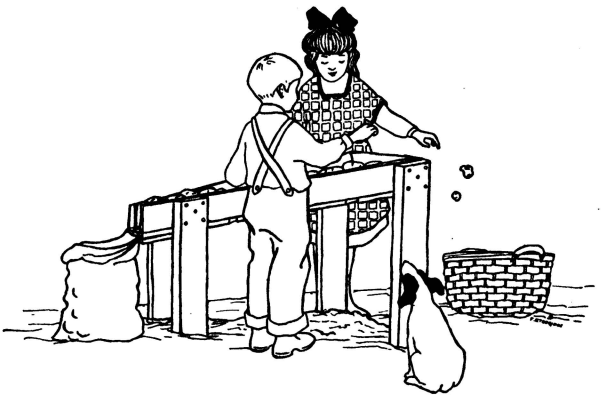

Fig. 21.—Grading potatoes on a home-made sorting table.

GRADING

All potatoes should be graded. This can be done in the field or they can be hauled to some convenient shed or building. The grading should always be done before the potatoes are stored or disposed of. Grading means sorting the potatoes and throwing out all dirt and small or damaged tubers which do not meet the requirements of the grade. The United States Department of Agriculture has established grades which, briefly stated, are as follows:

U. S. No. 1 consists of potatoes of the same variety which are not badly misshapen, are free from dirt, trash, and frost injury or soft rot, and not more than 6 per cent of them by weight are damaged by any means such as sunburn, second growth, growth cracks, cuts, bruises, diseases, insects, or rots. The diameter of potatoes of round varieties (such as Irish Cobbler) shall not be less than 1⅞ inches and of potatoes of long varieties (such as Early Ohio) not less than 1¾ inches. Not more than 5 per cent of the potatoes by weight can be smaller than this.

U. S. No. 1 Small consists of potatoes ranging from 1½ inches to 1⅞ inches in diameter but meeting all other requirements of U. S. No. 1. Not more than 25 per cent of the potatoes by weight can vary from this size, and not more than ⅕ of this amount or only 5 per cent can be below 1½ inches in diameter.

U. S. No. 2 consists of potatoes of the same variety which are free from freezing injury and soft rot and not seriously damaged by sunburn, cuts, diseases, insects, rots or other means. (By "seriously damaged" is meant when more than 10 per cent of the potatoes must be wasted in paring due to damage.) The diameter of potatoes of this grade shall be not less than 1½ inches with not more than 5 per cent by weight under this size. In addition to this not more than 6 per cent by weight can be below other requirements.

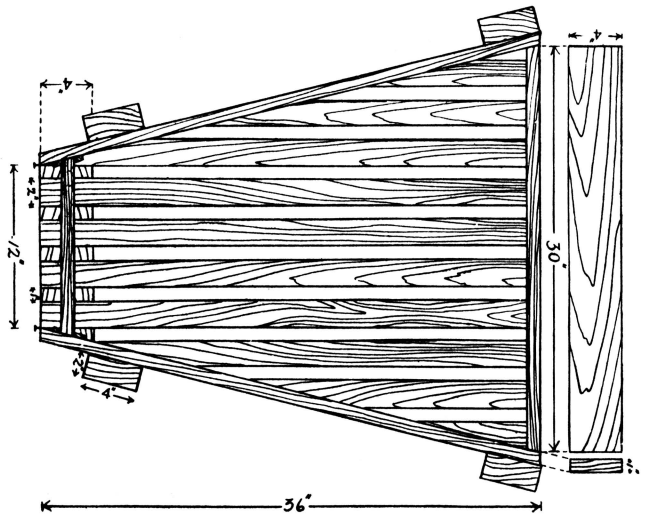

Fig. 22.—Plan for making potato sorting table.

Grading can be done on a sorting table which can be made on the farm. It should be set on legs of convenient height. One end of the table is higher and wider than the other. Four-inch boards can be used in making the sides. The main platform of the table where the potatoes are dumped to be sorted should be made of narrow boards placed on edge about one inch apart to allow the dirt to fall through. The narrow end of the table should have an "end gate" which can be removed as soon as all the small and damaged potatoes are picked out, and the good ones can be rolled right off the table into sacks. The "end gate" must not be more than

10 or 12 inches long. Nails can be placed to hold the mouth of the sack open.

EARLY MARKETING

In digging potatoes for early market remember that the yield is sure to be lower when digging is done before the vines die. Be sure you have a place to sell them at a fair price. It sometimes happens that it is desirable to clear the land for another crop, such as soybeans or cowpeas to plow under, and this may be one reason for digging early.

It is better to market "new" potatoes in baskets or boxes for the skin is so tender it will be rubbed off if sacks are used.

STORAGE

When potatoes are to be stored for future use they should be left in the ground as long as possible without starting to rot. If the weather is hot and damp, however, they cannot be left long. Fall crop potatoes must be dug before hard freezing. A cool outdoor cellar is an excellent place to store potatoes. The temperature should be kept between 36° and 40° if possible. This is not usually possible for the early crop of potatoes which is dug any time from July to September. For this reason the early crop may not keep through the winter and should be used as rapidly as convenient. The fall crop can be kept nicely throughout the winter in a cellar or cool basement. They must be kept in the dark and can be put in bins, boxes or sacks. If there is a furnace in the basement a storage or cold room should be partitioned off from the rest of the basement. It will be useful in storing all kinds of vegetables, fruits and canned goods.

RECORD BOOK

Be sure to keep the Record Book up-to-date. Tell the kinds of cultivations and the dates they were made, also the time required for the work. Measure accurately the size of your patch before you begin to dig the potatoes. Record the date you started digging, the date you finished, how much time it took and what tools you used.

Did you grade your potatoes? What grade did you make; U. S. No. 1 or what other? Be sure to record the total yield and if possible the weight of culls and the weight of graded potatoes.

If you sell all or a part of the crop keep a record of the money received and the estimated value of those kept for use at home. The kind of storage you use and how long the potatoes are kept should also be a part of the record.

V. Plans for Local Exhibit and Judging Contest

The club members should make plans now for their Achievement Day with an exhibit, judging contest, program and ribbons or awards to be given.

POTATOES FOR EXHIBITION

The one who grows the best potatoes does not always win the prize because very often he may not exhibit his best potatoes. In selecting potatoes to show select those of medium size rather than very large ones. After looking over your potatoes decide on the best type for that variety and then select the 32 tubers of this type which are most uniform in size, shape, color, etc., and which are smooth with shallow eyes and free from cuts, scab or other blemishes. They should be carefully washed using a sponge or soft cloth, then dried in the shade and wrapped separately in paper and stored in a cool dark place until time for the exhibit.

JUDGING

The judging contest should be based on ability to tell different varieties of potatoes and to place the exhibits of the same variety in order with the best one first and give reasons for placing that way.

The following score card is suggested as a guide for use in judging exhibits of potatoes. It may be used in scoring the exhibits if there is doubt as to the placing. No place is allowed for identification because the presence of one or more potatoes of another variety will entirely disqualify an exhibit.

SCORE CARD

General uniformity	20
Shape, correct for variety	20
Size, correct for variety	10
Quality of flesh	5
Skin; color, brightness, and texture	10
Eyes; depth and number	5
Freedom from mechanical injury	10
Freedom from diseases	20
Total points	100

Explanation of Terms of Score Card.—General uniformity will include uniformity as to shape, size and color, brightness and texture of skin, and depth and number of eyes.

Shape.—The most desirable shapes for the variety should be considered and the exhibit scored accordingly. In general it is very desirable that potatoes present a blocky appearance carrying their width out to the ends. Pointed ends indicate weakness and running out. Second growth "knobs" are very objectionable.

Size of potatoes should be medium but will vary some with the variety.

Quality of Flesh can only be estimated. The potatoes should be firm and, in keen competition when it is necessary to cut open a sample, should show flesh of even, white color without streaks.

Skin.—Under this item should be considered color, brightness, smoothness, the presence of (enlarged breathing pores), skin "checks", etc.

Eyes should be fairly shallow and few in number. Eyes that protrude may indicate weakness, however.

Mechanical Injury includes cuts, bruises, and breaks in the skin due to rough handling, etc.

Diseases include common scab, russet scab (caused by Rhizoctonia) black scab (caused by Rhizoctonia) and Fusarium wilt, (indicated by a dark ring near the outer edge when the potato is cut across.) Any form of rot or decay should also be scored off here.

Demonstrations of various grades and any diseases of potatoes might be shown at this meeting.

RECORD BOOK

State all plans you have made for the local exhibit. Who is going to help at this exhibit besides the regular members?

VI. Local Exhibit and Contest

For the Local Exhibit and Contest an interesting club program should be held at which the regular officers preside. Among the numbers on the program by different members of the club might

Fig. 23.—The Oakville Late Potato Club, Oakville, St. Louis County, Mo. Boys who won the different prizes are wearing the ribbons. The two winning pecks of potatoes are shown.

be, Story of Our Club (giving the date of the organization, officers, local leader, number of members, meetings, etc.). How I Grew my Potatoes, might be told by one member. Seed Treatment of Potatoes (telling the method of mixing solution and dipping seed with the purpose of the treatment) would be another interesting number. Other numbers may be used as these are only suggestions and a variety of numbers will make the program more interesting.

A carefully prepared program and an attractive exhibit will mean much to you as club members and will do much good in your community.

If you give a demonstration make it an interesting, lively one with no tiresome pauses. Arrange that each demonstrator, if there is more than one, is either doing or saying something.

the meeting one to be remembered because of its general worth and high standard.

RECORD BOOK

Give the full program and tell all the interesting facts about the exhibit, the premiums, the visitors, etc. This book should be given to the Local Leader when completed.

In writing the Story of the Club Year, you should give everything you have done in growing your crop and in making the club a success.

POINTS TO BE REMEMBERED

1. Plow land for early potatoes in late fall or early winter, turning under legume crop or coat of manure if possible.
2. Put soil in best possible shape before planting.
3. Use about 400 pounds of high grade fertilizer if possible for an acre patch.
4. Plant a variety adapted to your locality and soil.
5. Plant before April 1 for spring crop and about July 1 for fall crop.
6. Use best seed obtainable.
7. Treat seed with disinfectant before cutting.
8. Use seed pieces weighing 1 to 2 ounces.
9. Cultivate thoroughly by raking or dragging before the plants are up and by frequent shallow cultivations thereafter until blooming.
10. Prevent disease and insect injury by frequent spraying.

SUGGESTIONS FOR ROLL CALL

1. Give a variety of potato.
2. Name a disease of potatoes; next member tell what is used to control it.
3. Name an insect that injures potatoes; next member tell what is used to control it.
4. How many times have you sprayed?
5. How many times have you cultivated?
6. Give a point to consider in judging potatoes.

SUGGESTIONS FOR CLUB DEMONSTRATIONS

1. Cutting seed
2. Seed treatment
3. Mixing and using sprays
4. Planting
5. Grading
6. Diseases of potatoes

SUGGESTIONS FOR PUBLIC DEMONSTRATIONS

1. Judging Potatoes
2. Seed Treatment—Explanation

Publications of the Missouri College of Agriculture Relating to Potato Growing and Now Available for Distribution:

Seed Potatoes for Better Yields, Experiment Station Circular 106.

Potato Culture for Missouri, Extension Service Circular 64.

Control of Some Important Garden and Truck Crop Insects, Extension Service Circular 15.

Spraying Irish Potatoes, Experiment Station Bulletin 198.

For free copy address Missouri College of Agriculture, Columbia, Missouri.

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