Circular No. 5 - Boys' Potato Clubs: How to Grow the Crop and Organization

J. C. Hogenson
Utah Agricultural College

EXPERIMENT STATION

CIRCULAR No. 5

EXTENSION DIVISION

Boys' Potato Clubs
How to Grow the Crop and Organization

BY

J. C. HOGENSON, M. S. A.
Agronomist, Extension Division.

FEBRUARY, 1912

Skelton Publishing Company
Salt Lake City
Utah Agricultural Experiment Station

BOARD OF TRUSTEES

LORENZO N. STOHL .................................................. Brigham
THOMAS SMART ........................................................ Logan
JOHN Q. ADAMS ...................................................... Logan
ELIZABETH C. McCUNE ............................................ Salt Lake City
J. W. N. WHITECOTTON ............................................ Provo
MATHONIHAH THOMAS .............................................. Salt Lake City
JOHN DERN ........................................................... Salt Lake City
JOHN C. SHARP ..................................................... Salt Lake City
J. A. HYDE ............................................................. Nephi
ANGUS T. WRIGHT ................................................. Ogden
J. M. PETERSON ..................................................... Richfield
C. S. TINGEY, Secretary of State, Ex-officio ......... Salt Lake City

OFFICERS OF THE BOARD

LORENZO N. STOHL .................................................. President
ELIZABETH C. McCUNE ............................................ Vice President
JOHN T. CAINE, JR ............................................... Recording Secretary and Auditor
JOHN L. COBURN .................................................... Financial Secretary
ALLAN M. FLEMING .................................................. Treasurer

EXPERIMENT STATION STAFF

J. A. WIDTSOE, Ph. D., President of the College
E. D. BALL, Ph. D. .................................................... Director and Entomologist
L. A. MERRILL, B. S .................................................. Agonomist (in charge of Arid Farms)
H. J. FREDERICK, D. V. M. ....................................... Veterinarian
JOHN T. CAINE, III, M. S. A ..................................... Animal Husbandman
ROBERT STEWART, Ph. D. ........................................ Chemist
S. H. GOODWIN, B. D ............................................ Economic Ornithologist
E. G. TITUS, Ph. D .................................................. Entomologist
L. D. BATECHLOER, Ph. D ........................................ Horticulturist
G. M. TURPIN, B. S ................................................ Poultrymann
F. S. HARRIS, Ph. D ................................................ Agronomist
F. L. WEST, Ph. D ..................................................... Meteorologist
J. E. GREAVES, Ph. D ............................................. Associate Chemist
W. E. CARROLL, M. S ........................................... Associate Animal Husbandman
C. T. HIRST, B. S .................................................. Assistant Chemist
A. B. BALLANTYNE, B. S ......................................... Assistant Horticulturist
A. E. BOWMAN, B. S ................................................ Assistant Agronomist
L. M. WINSOR, B. S ................................................ Assistant Irrigation Engineer
F. FROERER, B. S .................................................. Assistant Animal Husbandman
M. A. NELSON, B. S ................................................ Assistant Entomologist
W. L. QUAYLE, B. S ................................................ Assistant Chemist
WILLARD GARDNER ................................................... Clerk and Librarian

IN CHARGE OF CO-OPERATIVE INVESTIGATIONS

With U. S. Department of Agriculture
W. W. McLAUGHLIN, B. S ......................................... Irrigation Engineer
C. F. BROWN, B. S .................................................. Drainage Engineer
P. V. CARDON, B. S ................................................ Assistant Agronomist
R. A. HART, B. A .................................................... Assistant Drainage Engineer
Boys' Potato Clubs

The object of the organization is to encourage, interest and instruct its members in agriculture, and particularly in the best methods of growing potatoes. "Efficiency" is the motto of the clubs. Efficiency in any good work is true and profitable education. To do good things intelligently and with cheerful spirit entitles the member to the highest degree of approval.

GROWING POTATOES FOR THE CONTEST.

Introduction.

In the preparation of this bulletin the writer has attempted to give suggestions concerning the important points which should be observed in order to produce a good crop of potatoes. The steps are taken up in logical order, just as the grower will proceed with the work.

The boys should use good judgment in each step and consult with the most successful potato growers in their locality. It is worth a great deal to any boy to talk to a successful, enthusiastic man, who understands the business of potato growing. Such a man is not only an inspiration to one, but he can also point out little things helpful to the boy, and warn him against mistakes.

CHOICE OF GROUND.

The first thing to consider is the choice of ground, or the most desirable place to plant potatoes. A fairly light soil usually produces the best quality potatoes. Generally speaking, a light soil is one which contains some sand. The sandy soils are easy to cultivate. Clay soils are usually heavy in nature and more difficult to work. Where it is practical to do so, select sandy soil that is rich in decayed vegetable matter. The plat for potatoes should be a fairly level piece of ground which does not overflow during high water season, and where the drainage is good. Potatoes should not be planted on ground where potatoes were grown last year. If a piece of ground is available
where alfalfa has been recently plowed under, other conditions being equal, it will be ideal for potatoes; or a piece of ground which was well manured last year should be selected. The potato seems to thrive best where conditions of moisture and temperature are fairly constant.

**SIZE OF PLAT.**

Each boy is required to plant one-half of an acre for the contest, but may grow as much larger plat as he is able to plant and properly care for. It requires a plat five rods wide by sixteen rods long for one-half of an acre. This will make room for 27 rows if they are made 8 feet apart, and if the hills are made 15 inches apart in the row, will make 5700 hills.

**PREPARATION OF THE SOIL FOR PLANTING.**

Ground that has been plowed the fall before, especially where the soil has a tendency to be heavy, is usually the best. The ground should be plowed from seven to ten inches deep. Deep plowing affords a better storage reservoir for moisture, better aeration, and leaves the soil looser, which favors the growth and proper development of potatoes. The soil should be free from trash, for this material will interfere with later cultivation of the crop. If the ground must be plowed in the spring, plow early and deep. Land that has been plowed the fall before, should also be disked and harrowed early in the spring. Where the potatoes are planted early no further treatment is necessary until you are ready to plant. Harrow just before planting to kill weeds.

**SEED POTATOES.**

If it is possible to secure seed from home, it is advisable to do so, if not, each boy should buy his own seed from as near home as possible, or secure it from the county superintendent of schools. Do not be afraid to invest one dollar or even six dollars in good seed. If conditions are at all favorable, and the grower performs his part, the half acre should produce about two hundred bushels of marketable potatoes. These potatoes should net the grower sixty cents to seventy cents per bushel.
BOYS' POTATO CLUBS

aside from the premiums he may be able to win in the contests.

CHOICE OF VARIETY.

The following early varieties have given excellent results in Utah: Early Eureka and Early Ohio. Good later varieties are Peerless, Pearl, Market Pride, Idaho Rural.

In selecting potatoes for seed, the proper way to do is to select the best tubers from those hills which produced the largest number of good, uniformly sized potatoes. This should be done in the fall at the time of digging. If this has not been done, select good, smooth, uniformly shaped and medium sized potatoes for planting.

TREATMENT OF SEED BEFORE PLANTING.

It is always best to dip the seed in a solution of formalin before cutting and planting, to prevent potato scab. For this purpose use one pint of formalin to thirty gallons of water; or, one ounce to two gallons will answer for all practical purposes. Place the potatoes in a gunny sack, submerge them and leave in solution from half an hour to an hour. When the seed is taken from the solution it should be spread out upon a platform of some boards placed together for this purpose, and allowed to dry.

Potato Scab is a disease which lives on potatoes, and in the ground where potatoes have been grown. Scab causes brown colored, irregular ruptures in the skin of the potato.

CUTTING TUBERS.

The seed should be cut and planted the same day. Experience has shown that if seed is allowed to dry out between the time of cutting and planting, it will require longer time for growth to start and the potatoes will be slower to come up. There are many methods used in cutting seed; quartering the tubers, and cutting them into two-eye pieces is probably the best. If the potato is cut in quarters, it should be quartered lengthwise, so that each piece will remain equal in length to
the original length of potato. If cut in two-eye pieces, care should be taken that each piece contains a good strong eye. The strength of the eye is generally determined by its prominence. A shallow, poorly defined eye is considered to be low in vitality. The eye of the potato need not be deep, but should be well defined.

**PLANTING AND COVERING.**

The marking out of the furrows could be done while the potatoes are drying after dipping. The furrows should not be opened and left long before the potatoes are dropped and covered. The planting should be hurried, so that the potatoes can be covered with moist soil. The furrows should be made from four to six inches deep with a plow. After the potatoes are dropped in the furrow, they can be covered by the use of a leveler, following the leveler with a harrow. The rows should be straight and the covering carefully done, so that the ground between the rows can be cultivated in case weeds start before the potatoes are up.

**TIME TO PLANT.**

One is governed by the locality and the manner in which the soil warms up in the spring. From the 20th of April to the middle of May is usually the best time to plant potatoes.

**CULTIVATION.**

In the ordinary season it is not necessary to stir the soil again until the potatoes commence to break through the ground. If the ground has been properly prepared, and it is found necessary, the harrow can be used once or twice before starting the cultivator. Harrowing should be discontinued as soon as the harrow injures the vines. All later tillage should be done with a small shoveled cultivator, running at a depth of from two and one-half to three inches. As a rule, the first cultivation should be somewhat deep, while the later ones should be rather shallow to avoid injuring the roots or disturbing the tubers.
WEEDS.

Perhaps none of the cultivated crops show the effect of careless culture more than potatoes. Weeds rob the soil of moisture and plant food which should go to increase the yield of potatoes. If you are trying to produce the greatest possible yield of tubers, you cannot afford to allow any weeds to grow in your potato patch.

IRRIGATION.

In order to get good cooking quality in potatoes, it is necessary to grow them under as nearly flat cultivation as possible. Ridge them up but very little—just enough to irrigate. Where the seed bed has been properly prepared, and cultivation thoroughly done, it will in most cases, not be necessary to irrigate until after the vines have bloomed, then ridge up slightly every other row and irrigate. When it becomes time to irrigate again, furrow out the other rows and run the water there. During all other irrigations, run the water through all the rows. Cultivate as soon after irrigation as the soil will permit. Do not irrigate during the time plants are in bloom, because at that particular period the plants are using all possible energy in the starting of new tubers, and any check which the plants receive during that period lessens the number of new tubers set. If the plants will not go without water until after blooming, irrigate before they start to bloom.

Where the soil in which the potatoes are grown is heavy and clayey, the rows may be ridged up more so that when irrigating, the level of the water in the furrows will be below the soil where the new tubers are forming. This will enable you to dig your potatoes more easily and get them out of the soil in a clean condition, or without soil adhering to them.

The aim in irrigating should be to keep the soil at as even a temperature, and the same moisture content as possible throughout the growing period of the plant.

HARVESTING.

The usual method of digging, is to throw the potatoes out
by the use of a plow. Large growers use the potato digger. It is perhaps better, where the plat is small and has been grown especially for the contest, to dig the potatoes with a potato fork or a spade. This will enable the boy to lift each hill carefully, so that the tubers will not be injured in digging. This also gives an opportunity to select a quantity of the most desirable tubers from the best hills, both for seed and for exhibition purposes. These should be sacked and kept separate until the final selection. The remainder of the crop can be piled in the field and covered with straw.

Where the ground has been properly cultivated throughout the growing season, the labor at the time of digging is greatly reduced. If the ground has been allowed to become foul with weeds, it will be necessary to remove these weeds before the digging can be pursued with any degree of satisfaction. We hope that our boys will care for their potatoes in such a manner that it will not be necessary to remove the weeds before the potatoes can be dug.

STORING.

If potatoes are not marketed soon after harvesting, they must be stored in some dark, cool place. The average cellar on the farm is usually good for this purpose, providing it is dry. A good pit which can be closed up tight so that the temperature can be held comparatively low and constant is still better. The following method of storing potatoes is practiced by some of the most successful potato growers:

Dig a pit from one to two feet deep, four feet wide and any length desired, which should be left open until allowed to cool down to nearly freezing temperature. The long way of the pit should be north and south. The potatoes are then put into the pit and nicely rounded up in the center. They are then covered with a layer of from eight to twelve inches of straw (wheat or rye straw is preferred), over which is thrown three or four inches of dirt which has been removed from the pit. This layer of dirt is allowed to freeze, then more straw and dirt are added. Potatoes have been kept in this manner until the
first of April, and when taken from the pit were in fine condition for marketing or planting.

**PLANT DISEASES.**

If there is potato blight in the neighborhood which attacks the leaves and stems, the field should be sprayed with Bordeaux mixture. Bordeaux mixture is used to prevent the disease, not to cure it; therefore it must be applied to the potato vines before the disease appears.

Making Bordeaux Mixture.—Four pounds lime, six pounds copper sulphate, to 50 gallons of water is perhaps the most effective formula to follow. The mixture must be properly applied for good results. Dissolve copper sulphate in a barrel containing water, by placing crystals in a clean sack and submerging in water from 15 to 18 hours. Use a pound of copper sulphate to every gallon of water. This solution can be kept for several weeks. In another barrel slack quicklime, using a gallon of water to each pound of lime. Stir well, while lime is slacking to prevent burning. If the lime is covered with water, it can be kept for several weeks. When ready to make the mixture, two half-barrels are necessary. Into one put six gallons of copper sulphate solution and add 18 gallons of water. Into the other put four gallons of lime solution and add 22 gallons of water. The two dilute solutions are then poured together into a barrel which contains the spray pump. The mixture is then ready to be sprayed on the potato vines. If one desires to mix only a small quantity or enough to spray the plat grown for the contest, he may use smaller proportions, as, one quart copper sulphate solution with four quarts of water, and one quart of lime solution diluted with six quarts of water. This poured together will make three gallons of Bordeaux mixture. In making a small quantity of the mixture, wooden buckets can be used. Use a quart mason fruit jar to dip out copper sulphate solution.

**CONSTITUTION.**

**ARTICLE I.** Name of Club.

**ARTICLE II.** Object of Club.
ARTICLE III. Membership (including badge or button, and a provision for honorary member, if desired.)

ARTICLE IV. Officers: (A president, one vice-president from each school district, a secretary-treasurer, and an advisory committee consisting of the county school superintendent, the president of the County Farmer's Club, and a member of the Staff of the Agricultural College Extension Division.)

ARTICLE V. Duties of members. (As described in the rules for contests.)

ARTICLE VI. Duties of officers. (Defined as usual in such organizations.)

SECTION.—The Advisory Committee shall arrange for all public contests and exhibits, the procuring and forwarding of prizes, the sending of letters and circulars of information and general county meetings of the club.

ARTICLE VII. Subsidiary clubs.

Each local school having 10 club members within its district may organize as a local club with its own officers, badge, local prizes, etc. Its advisory committee shall consist of the district school board and teachers, and its president shall be one of the vice-presidents of the county club.

MEMBERSHIP CARD.

I wish to join the ............................................. County ......................... .Club, and hereby promise to follow all the rules of membership and contests.

Age at nearest birthday...................... Date of birth ..................

Township ............................... School District .................................

Post Office Address ..........................

Box No........... R. F. D. ............... .

The members of a potato-growing club keep a careful record of all work done in connection with the annual contest.

HOW THE CROP WAS GROWN.

1. Grown by ................. School District........
2. Post Office address ..............................................
3. Area of plat in square rods .................................
   \(1/2\) acre.)
4. Kind of soil (loam, sand, clay) .........................
5. Kind of crop grown on it the year before ..........
6. Kind of crops grown on it the second year before ...
7. Kind and amount of manure used ......................
8. Cost or value of manure .................................
   When applied ..............................................
9. Date of plowing ............................................
   Hours required .... Self .... Horse .................
   If two horses are used, count as twice the time of one
   horse.
10. Depth of plowing (in inches) .........................
11. Additional preparation of ground:
   (a). How many times disked .... When ..............
   (b). How many times harrowed .... When ...........
   (c). How otherwise prepared .........................
   (d). Total hours work of preparation, self .......
       horses ....... If two horses are used, count as
       twice the time of one horse.
12. Kind of potatoes planted ..............................
    Variety name ...........................................
13. Seed secured from ........................................
14. Number of hills planted .... Date .............. .19...
15. Number of irrigations .... Dates .............. .19...
    Hours worked ...........................................
16. How was seed cut ........................................
17. Was seed treated for scab? .... How .............
18. Date when first hills came up ......................
19. Number of hills failing to come up ............
    Why ......................................................
20. Date of each cultivation and implements used ....
    .........................................................
21. Total hours cultivation, self .... Horse ........
22. Dates of hoeing crop ......................... .19 ....
    Hours worked .........................................
23. Date of blooming ..................................................
24. Date of harvest ..................................................
25. Dates of any frosts on the crop.............................., 19...
26. Method of harvest ..............................................
27. Number of bushels of good potatoes ..........................
28. Number of bushels of small potatoes ..........................
29. Diseases present ...............................................  
30. Was the selecting done without any other person present 
     (except plowing, weighing and hauling the crop)? ........
31. Was all the work of production done by the contestant,  
     except plowing, weighing and hauling the crop)? ........
     (except plowing, weighing and hauling the crop)? ........
32. Total number of hours worked ..............................
33. Total number of hours horse worked ......................
34. Value of own work at......cents per hour $...........
35. Value of horse’s work at......cents per hour $........
36. Value of ground rent for crop at......per acre........
37. Value of manure used $.................................
38. Value of salable crop at......cents per bushel.........
39. Profit on the season’s work $...........................

In addition to the foregoing record, which should accompany the exhibit offered by the contestant, an essay covering the same facts in a connected description is required.

RULES FOR CONTESTANTS.

1. Each contestant is allowed to make an exhibit of best 50 pounds and best dozen tubers each year.
2. Each contestant must be regularly enrolled in the County Club before beginning work.
3. Each contestant must be either a regular student in the District or High Schools of the county, and must be under 16 years of age.
4. Each contestant for prizes must prepare his ground, plant, cultivate and irrigate all, without assistance from any other person. (He may have assistance in plowing, manuring and hauling crop, and should have in weighing it.)
5. Each contestant must study the score card.
6. Each contestant shall write an essay of not more than 1000 words, and must carefully fill the blanks on "How the crop was grown."

7. Each contestant's record and essay must be endorsed, with his exhibit, by his principal as evidence of confidence that it is all the product of his own work.

8. The following instructions will be useful in making selection of potatoes for the contest, and for exhibition purposes.

---

**Score Card for Potatoes.**

<table>
<thead>
<tr>
<th>Variety Name</th>
<th>Value</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniformity of exhibit</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Trueness to type</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Shape of tuber</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Size of tuber</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Eyes</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Skin</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Texture of tuber</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Soundness</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Freedom from blemishes</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Contestant’s name

Date

**EXPLANATION OF SCORE CARD.**

Uniformity of exhibit.—Select twelve potatoes that are uniform in size, color, shape, and which have uniformly well defined eyes of the same depth, also as nearly as you can the best fifty pounds.

Trueness of Type.—Each potato should be typical of the variety to which it belongs, i. e., the characteristics should be clearly defined, enabling one to easily identify it.

Shape of Tuber.—The shape of the potato will depend largely upon variety, but the flat, round or oval shape is favored, because these shapes usually give best quality tubers.

Size of Tuber.—As a rule, select medium sized potatoes, but if two exhibits are otherwise equal, choose the larger, unless potatoes are so large as to be considered overgrown.
Eyes.—The eyes of the potato should be medium deep, well defined and not too numerous. Deep eyes cause waste in peeling and have a tendency to affect shape of tuber. Eyes too shallow are low in vitality.

Skin.—The skin may be whitish, brown, reddish, yellowish-brown, blue or black, depending on variety. It may be thick or thin, tough or brittle. A thick, fairly tough skin is preferred, lenticels not too prominent, or potatoes sunburned.

Texture of Tuber.—This is determined by cutting tuber. A fairly fine grained, brittle texture is preferred. A tough texture does not cook up mealy and is usually poor in flavor.

Soundness.—Select potatoes that are sound and firm, not wrinkled and flabby. Hollow potatoes are objectionable, likewise any internal discoloration indicating a diseased condition. The judge should cut two potatoes in each exhibit.

**FREEDOM FORM BLEMISHERS.**

The judge will deduct from score for scab spots, or skin ruptures from any other diseases, cuts, bruises, scratches or any other defects.

**HOW TO SELECT POTATOES FOR CONTEST AND EXHIBITION.**

First study the score card, which is used as a standard by which the exhibitors and judges can be guided. As soon as you are familiar with the points which make up a good exhibit, place the potatoes which have been chosen as worthy of consideration on a table before you, and carefully select the twelve best tubers which conform to the score card, and also the best fifty pounds.

**PACKING POTATOES TO SEND TO CONTEST.**

As soon as the final selection has been made, each potato for the best dozen should be wrapped in paper and placed in a box just large enough to nicely contain the twelve potatoes, so that they will not move or roll about and become bruised in handling. The box should be lined with two or three thicknesses of newspaper to prevent freezing during shipment.
The best fifty pound exhibit should be carefully sacked, tied and handled, so as to avoid bruising.

PRIZES.

Local, County and State prizes will be given for the largest yield of good marketable potatoes. Local and County first and second prizes will also be given for best fifty pounds, best dozen potatoes grown by the contestant, and also for the best essay on potato growing as explained in the rules of contest.