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EXTENSION BULLETIN No. 1

University of Idaho

# College of Agriculture

Department of Agricultural Extension



SEED POTATOES

## Idaho Potato Culture Clubs

BY  
W. H. OLIN

Any farmer, teacher or student in the State may have this bulletin mailed to his address free of charge upon application to Dean W. L. Carlyle, Director Idaho Experiment Station, Moscow, Idaho.

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no. 1

## IDAHO POTATO CULTURE CLUBS

By W. H. OLIN

Next to rice, the potato is the most extensively grown food crop in the world. One acre of potatoes, should if properly grown, furnish as much food as many acres of wheat. The measure of success in potato growing is the yield per acre and the harvested crop. From data obtainable we find that the potato farmers by this measure of success rank as follows: *English, German, French, Austrian, Canadian, Russian Peasant and American.* Among the great potato farmers of the world, we stand at the *foot* as a nation when we should be *at the head.*

A five-year average gives Maine the greatest yield per acre of any state in the Union, 195 bushels. For the year 1911 Idaho had the same average yield as Maine, 180 bu. per acre, but the quality of potatoes from the latter state far surpassed our own and they had 118,000 acres while we grew but 29,000 acres of this crop.

Since the crop clubs in corn, field peas and small grain among the boys and girls of other states has greatly improved the general quality of these respective crops, as a whole, in the states where such clubs have been formed, it is believed that the formation of potato culture clubs in Idaho will improve the quality and assist in standardizing this crop which is being so successfully grown upon the different types of soils in both north and south Idaho.

**FORMATION OR ORGANIZATION.**—Any school trustee, rural teacher or interested parent who can secure the agreement of five or more pupils, either boys or girls, enrolled in the rural schools of the state or who, though not in school, are between the ages of 12 and 18 years, to grow potatoes in a contest under the direction of the State Superintendent of Public Instruction of Idaho, and to be governed by such rules and regulations as that official shall name, is hereby authorized to form an Idaho Potato Culture Club which shall receive an accredited number and be registered in the State Club Roll kept in the State Superintendent's office at Boise. The usual form of organization shall be followed, the club electing a president, vice-president and secretary, whose duties shall be such as usually pertain to these respective officers. In addition, the club shall elect a club advisor, some one living within the neighborhood,

who is competent to advise and direct the crop work, individual members of the club shall seek to do. All these officers shall be elected for a period of one year. Upon being organized, the proposed members of the club shall send to the State Superintendent's office, State Capitol, Boise, the following petition form for club number:

"We do hereby petition the State Superintendent of Public Instruction, State Capitol, Boise, Idaho, for a club number in Idaho Potato Culture Club work. We agree to follow the rules and regulations governing this work to the best of our ability, to keep careful records of work we, as individual members, shall do, and to be faithful students of the crop we are seeking to grow."

Signed by individual members, giving name, county and post office address.

.....  
SECRETARY. PRESIDENT.  
.....  
CLUB ADVISOR.  
P. O. Address.

The club adviser should aid the members to make proper selection of location to grow the required number of potato hills on the home farm, kind and character of seed to use, time best to plant, and give such other assistance as shall seem best to give each member a clear idea of the work to be done. This can best be done in a club meeting saving individual explanations and saving time, while it will, in this way, intensify interest. Each club member, in his own plat, on the home farm, grows his potatoes under regulations to be later given.

Club numbers shall be given in the order in which they are received. No club shall number less than five. Where it is not possible to form a club, and individual members desire to grow potatoes in the 1912 contest write to the County Superintendent of the county in which you reside.

POTATO DISTRICT.—Because of varying climatic environment, the state is divided into districts, having comparable conditions, as follows:

- District I.—Irrigated lands below 3000 feet elevation.
- District II.—Irrigated lands above 3000 feet elevation.
- District III.—Non-irrigated lands with an annual precipitation of less than 20 inches and below 3000 feet elevation.
- District IV.—Non-irrigated lands with an annual precipitation of less than 20 inches and above 3000 feet elevation.
- District V.—Non-irrigated lands with an annual precipitation of more than 20 inches.



District VI.—Cut-over lands of timber belt of Idaho.

The winners of first prizes in each district shall compete for State Sweepstakes. Where possible it is always best to pick out prize winners through a neighborhood club exhibit. These winners should then be sent to a precinct or county fair. Only the ribbon winners here are to be sent to the State Fair to compete for district ribbons and the State Sweepstakes' prize.

All clubs in sending in the petition must give what information can be obtained on elevation, rainfall and state whether crops are grown under irrigation or without irrigation and whether members live in the region of the cut-over lands, if within North Idaho.

Because no variety can be named that will uniformly answer state-wide requirements, seed is not furnished club members this first year, and said members are urged to give careful consideration as to variety type of potato selected for seed. All members of a given club are urged to agree upon one variety type for their club members to grow. Select the one which your club advisor believes to be the best one for that particular region, the one the commercial market for that region seems to demand.

## RULES AND REGULATIONS IDAHO POTATO CULTURE CLUBS

CHOICE OF SEED PLOT.—Choose a type of soil that has good under drainage. While a sandy loam soil is the most desirable for good yield and good quality of potatoes in the irrigated West, it is but fair to state that good yields are produced on several different kinds of soils and failures are recorded on all of them. The chief requisites in the soil which we should look for are:

1. Plenty of Air. Potatoes must have air, especially after the tubers set on the growing vine and they are maturing. Hence we want *Porosity* in the soil.

2. Plenty of available plant food. Soils rich in potash (as all Idaho soils are), and with a reasonable amount of vegetable mold or humus, are soils well supplied with the desired food elements for this crop.

3. An evenness of texture to receive and retain moisture and feed the same to the plant as it shall have need, through capillarity.

4. A well fined, firmed moist soil affords opportunity for a well developed root system by means of which the young plant draws sustenance from said soil.

PREPARATION OF SEED BED.—Make such preparation of the seed bed as shall, to the best of your ability, provide the above named requisites. We want to render the plant food

easily available to the sprouting tubers, conserve the moisture present in the soil and make our tillage operations do this as far as we can.

**SELECTION OF SEED POTATOES.**—When the particular variety type has been determined, procure wherever possible, uniform sized seed potatoes representing the size and shape you wish to grow for the market. While a potato is an underground stem, not a true seed, experience and practice teach us that careful rigid selection of seed from year to year will tend to control or govern the shape of the potato we seek to grow. Do not make a practice of planting culls if you wish to grow desirable market potatoes.

The following qualities should be sought for in seed potatoes:

1. Health and strength of plant. This can only be told when we observe the character of vine growth above ground and the quality of matured tubers in the hill. Hence this quality is only gained for a certainty by hill selection, which all club members are asked to practice in obtaining seed for the next year.

2. A good number of medium sized uniform tubers in a hill. To increase the yield of potatoes it is necessary to select by the hill system from the best yielding hills. We will not be able to determine very much about this quality in choosing seed for this year.

3. All seed potatoes should conform to the desired type of a particular variety or breed. To help understand this, we give, on another page cuts showing the breed type of certain standard potatoes as carefully worked out and sent to the boys and girls of Colorado by their Experiment Station. We cannot too strongly emphasize this feature.

4. Shallow eyes or buds are most to be desired. Deep eyes cause too great loss in paring. The fewer the eyes the better.

5. A reasonably thin but firm skin. This gives little waste, protects tuber from injury in transit to market and renders the potato not as susceptible to insect and fungus attacks. The most valuable food portion of the tuber lies nearest to the skin. Therefore, irregularity in shape, excrescent growths and cracks increase the waste and make the potato of lessened food value.

**PREPARING AND PLANTING POTATOES.**—When the potatoes have been selected for seed we can then consider the time to plant and to prepare the cut potatoes for the hill.

The following suggestions are here given to aid the club members in this work. All potatoes grown in the Potato Culture Clubs should be medium or late potatoes. It is the *late*, not the *early* potato which is the commercial potato of Idaho. The time of planting must be determined according to the general practice



of your district and the advice of your club adviser. This will vary widely in the different districts.

The preparing of the cut portions of the tuber for hill planting is very important and members are urged to read very carefully station bulletins and interview successful potato growers before cutting and planting seed potatoes. The writer believes the following facts helpful:

1. Exposing seed potatoes to air and light in the spring before planting is advisable provided an *intense sun* is not permitted to shine directly upon the potatoes at first, since it tends to scald the too tender potato. This is called "greening" the potato and checks fungus growths. The cut on the cover shows some samples that have been properly "greened" and sprouted.

2. Improperly cut seed weakens vitality and thereby lessens the stand. You are advised to first cut the potato *lengthwise* through the middle of the seed end. Now cut each piece half way between *seed end* and *stem end* of the potato. This will divide the potato into quarters.

3. The cut portion should have at least one good eye. The size of the cut portions should be sufficiently large to furnish food for the young plant until it can obtain it from the soil through its developed root system. The club members are asked to plant the first 100 hills grown in this year's contest with pieces weighing at least 1 1-2 to 2 ounces each. We also ask that these pieces be planted consecutively *per potato*. That is a potato we will say is cut into four pieces. Plant these four pieces of a given potato in hills in succession—1, 2, 3, 4. Then another potato and so on until the hundred hills in the row are planted. This gives one piece in each hill, and each four hills represent a unit potato. Place a label stake at first hill numbered one and at fourth hill numbered one on both sides of stakes. This marks the hills planted with potato number one. In like manner the next four hills will be numbered two since these hills are planted with parts of potato number two. So mark all hills in this row with the number of potatoes used to plant the 100 hills. We shall want to trace the progeny of individual potatoes back to parent characteristics at harvest time. Wrap in newspaper and carefully lay away three potatoes of type, character, and size used in planting these first 100 hills. Number these 26, 27 and 28 respectively. Plainly mark these so you know what they are and can use them to compare with the crop grown in hill groups of four at harvest time. Club members are urged to paint label stakes *white* and mark numbers in black on these stakes that they place in the hills of row number one. We want to carefully observe group characteristics in vine development during the growing period as well as unit potato productivity at harvest time.

For this reason, to give all a comparable start, we must exercise care in cutting the potatoes used in row *one*, so *all* hills have good even sized pieces which will furnish ample food for the sprouts or buds to grow well from the very start.

4. Plant seed as soon after cutting as the surface of the cut potato is dry. The vitality of the buds is lowered as the seed dries out.

5. Do not have too many plants in a hill. They interfere with each other's normal development. Two good plants in each hill are all you need. Club members are advised to follow directions carefully in planting hills in row *one* using but *one* cut piece per hill and thinning plants to but *two* per hill if more than two spring up. Thin when plants are small, but a few inches high, before they interfere much with each other for soil food in the hill. In planting the other four rows your club adviser or your parents can advise as to the number of pieces to plant per hill and number of plants to permit to remain growing in said hills.

NUMBER OF HILLS REQUIRED.—At least 500 hills are required for the Idaho State Contest of 1912. This means five rows of one hundred hills each. Since the boys and girls in the irrigated districts need, in some soils, more than three feet between the rows to successfully irrigate the crop, and since we must also recognize that plants must be given ample space in the rows, in the non-irrigated districts of the state with lessened rainfall from which to draw their moisture, we ask all club members to carefully read and to follow *exactly* the following requirements in planting the 1912 seed plot of potatoes:

1. Rows must be three feet three inches apart (39 inches).
2. Hills must be eighteen (18 inches) apart in the row.
3. Weigh total amount of potatoes used to seed row *one* and the total amount of potatoes used to plant each of the other rows separately. Weigh *before* the *seed potatoes* are cut. Subtract weight of such cut seed as shall not have been used for planting in the row. If thirty pounds of potatoes be weighed out for row *two* and when you have finished planting the row you have five pounds of cut potatoes, subtract the five pounds from the total amount, thirty pounds, which leaves twenty-five pounds to charge up to row *two* for seed. At harvest time weigh the cull and marketable potatoes from each row *separately* and the report will call for this weight of matured potatoes per row. While club members may grow such field amounts of potatoes as they and their parents may determine they are all asked to grow, in the seed plot, potatoes as herein described. All premiums shall be based upon exhibits made from these described seed plots, since some boys and girls may not be able to grow more than the required 500 hills.



VARIETIES OF POTATOES.—Since so many types of potatoes are being grown in Idaho and all have some commercial rating or value, we here give a classification of potatoes which has been worked out by C. L. Fitch of the Colorado Experiment Station and others:

- I. Early Varieties.
  1. Early Ohio.
  2. Irish Cobbler.
  3. Early Triumph.
  4. Eureka.
- II. Late Varieties.
  1. The Pearl.
  2. Rural New Yorker.
  3. Peachblow.
  4. Dalmeny Challenge.
  5. Burbank.

The Acme, White Ohio and Late Ohio are related strains of the Early Ohio potato.

The McClure, White Peachblow and Perfect Peachblow are strains of the Peachblow potato.

The Carmen, Windsor Castle, Sir Walter Raleigh, Vulcans and Banners are related varieties of Rurals.

The White Victor and Wisconsin are other names for the Pearl.

The Netted Gem is a strain of the Russet Burbank.

Idaho Rurals are often Pearls, but sometimes are Rural New Yorkers or Carmen. At present it is a mixed variety.

Standard markets now recognize most of the above types. The wholesale market is not as generally favorable to a red as it is to a white potato in the late maturing varieties.

CULTIVATION OF THE GROWING CROP.—Follow the cultivation method which general practice shows will loosen and aerate the soil, better fitting it for the potato roots to enter in the planted row.

Tillage, of the right kind, kills weeds and prevents too rapid evaporation of moisture, so essential to the tender growing root-lets of the sprouted tubers. It also maintains the soil mulch quite essential at all times.

In the districts where irrigation is practiced the following suggestions may prove helpful:

It is essential to potato culture that the right quantity of water be used and that it be *uniformly distributed*. Do not irrigate too much. Water should not be applied until, by the darkening of the foliage, the plants show need of water, and, in this manner, *call for it*. It were better that the tubers set or that the plants be in blossom before the first irrigation is given. Yet, if one digs down into the hill and finds the soil so dry that, when



pressed, it fails to retain its form, there is not sufficient moisture for sturdy growth and it is best to turn in the irrigation water. As soon as possible, cultivate after the first irrigation; this lessens evaporation and insures vigorous uniform growth without a serious check. Irrigate alternate rows, one, three and five, this first irrigation. Second irrigation irrigate rows two and four. Follow each with a good cultivation. In this way you run no danger of "sunscalding" your potatoes within the hill. In the second irrigation when the water seeps through to the non-irrigated row, it indicates that the soil is sufficiently wet. Care should be taken to so "trench" the rows that the roots of the potato plants will be thoroughly wet by the running water in between the rows, but that the tuber bed shall be kept dry. This tends to the prevention of "soggy" potatoes at harvest time.

Give plants sufficient water to keep up vigorous growth but do not *over-irrigate*. Follow the second irrigation with as many irrigations as shall be needed to maintain healthy normal growth in the maturing tubers. Give 20 to 30 days for ripening off the tubers in dry earth. Clean potatoes taken from dry tuber beds, look well, sell well and are usually freer from disease germs than potatoes taken from a moist seed-bed.

The amount of water applied must necessarily vary with the kind of soil and the character of the season. When once begun, irrigation should follow irrigation at intervals of eight to twelve days until crop is fully matured. In general, too much, rather than too little, water is used with potatoes.

**HARVESTING DATA REQUIRED.**—When the crop is dug keep potatoes in first row separate from those in the remaining four rows. From the hills in this first row which have had thrifty, sturdy vines and have twelve or more commercial size potatoes, select the potatoes for the next year's seed plot. From hills in any of the five rows select at least 100 pounds of seed for a designated field area to be later named as the field area for the next year's test. Weigh and record harvested crop from each row. Choose twenty-five pounds for the neighborhood club contest. Entries which win 1st, 2nd and 3rd prize in this contest can be entered at precinct or county fairs. Winner of 1st ribbon prizes here can be entered at the State Fair at Boise. First prize winners at this fair are entitled to compete for the Sweepstakes State prizes.

### KEEPING THE RECORD

1. Grown by.....
2. School District.....
3. Post Office Address.....
4. Area of Plot in Square Rods.....

5. Kind of Soil.....
  - Clay Loam.....
  - Sandy Loam.....
  - Gravelly Loam.....
  - Silt Loam.....
6. Kind of Crop Grown Year Before.....
7. Date of Plowing.....
8. Depth of Plowing.....
9. Additional Preparation of the Ground.....

Give full details.

- .....
10. Kind of Potatoes Planted.....
  11. Seed Procured from.....
  12. Amount of Seed Used.....
    - In Pounds.
  13. Number of Hills Planted.....
  14. Date of Planting.....
  15. Date when Potato Plants Came Up.....
  16. Work done During the Growing Period. Give Tillage  
Given the Growing Crop.....
  17. If Irrigated Give Date of Each Irrigation.....
  18. Date Crop was Matured.....
  19. Date of Harvesting.....
  20. Weight of Potatoes in First Row.....
  21. Average Number Potatoes per Hill.....
  22. Greatest Number Potatoes in One Hill.....
  23. Weight of Potatoes in the Remaining Four Rows.....
  24. Number Pounds Commercial Potatoes in Row One.....
  25. Number Pounds "Cull" Potatoes in Row One.....  
(All potatoes weighing less than 4 oz. or more than 20 oz.)
  26. Number Pounds Commercial Potatoes in Last 4 Rows.....
  27. Number Pounds "Cull" Potatoes in Last 4 Rows.....
  28. What was the Ratio of Increase Made by the Crop of  
1912 .....
- (The pounds harvested was how many times the number pounds  
used for seed.)
29. What was the per cent of "Culls" in Row One.....
  30. What was the per cent of "Culls" in Last Four Rows.....
  31. What was the per cent of Commercial Potatoes in Row  
One .....
  32. What was the per cent of Commercial Potatoes in Last  
Four Rows.....
  33. Date of Rains During Growing Season.....
  34. Date of Frosts from May 1 to Sept. 30.....
  35. Number of Days During Growing Season when Tem-  
perature was over 90 Degree Fahrenheit with Heat  
Temperature and Date.....



36. Total Days Required to Mature Potatoes from Date of Planting to Date of Maturity.....

Suggested Score recommended for judges to use to determine worth and merit of potatoes exhibited at precinct and county fairs, as well as the State Sweepstakes awards for the Idaho Potato Culture Club Exhibits of 1912.

This score was suggested by Mr. E. R. Bliss, President of the Colorado State Farmers' Congress, who is a most successful potato farmer of more than twenty years' experience.

### SUGGESTED POTATO SCORE

Uniformity of Potato Sample.....	40
Trueness of Type.....	30
1. Shape of Tuber.....	10
2. Eyes .....	10
3. Skin .....	10
Market Condition and Size.....	20
Texture of Tuber.....	10
Total .....	100

### SPECIAL CONTEST RULES

1. Each contestant shall be not more than 18 years of age and a resident of Idaho.
2. Each contestant shall follow the Rules and Regulations named above.
3. Each contestant shall prepare the ground, cut the seed, plant, cultivate and harvest the potato crop without assistance from any other person. (Some one else may help plow, haul and weigh up the crop.)
4. Each contestant shall give a sworn statement, signed before a notary public that all rules have been complied with in growing the crop. If it is not possible to get a notary, an affirmation countersigned by the district teacher will be accepted.
5. Each contestant will write an essay of not more than 1000 words fully explaining how the crop was grown. This essay shall give all crop data.

### PRIZES OFFERED

Miss Grace M. Shepherd, State Superintendent of Public Instruction, is arranging a most excellent premium list which is to be more definitely announced a little later through the press of the state.

The State Sweepstakes prizes are now arranged for and as soon as the district and precinct prizes are fully made up, announcement of the complete premium list will be made.

Let us all get busy and show father what earnest potato growers we can become. May you get sound seed, have a successful season, grow a splendid seed plot crop and all win ribbons. Should you fail this year try again and *yet again* until you win the *bluc*. Thus you make the Failure that wins Success a help to you in all your work.

## HELPFUL AND AVAILABLE PUBLICATIONS ON POTATOES AND POTATO CULTURE

For United States Farmers' Bulletins, apply to Secretary of Agriculture or a Member of Congress from Idaho. For Station Bulletins send to Director of Station in state named with address as given below. While, as a rule, bulletins issued by a state other than that in which the applicant resides can not be had in quantity the club adviser or teacher may be able to get for the club one copy.

1. Farmers' Bulletin No. 35. Potato Culture. United States Department of Agriculture.
2. Farmers' Bulletin No. 386. Potato Culture on Irrigated Farms of the West. United States Department of Agriculture.
3. Bulletin No. 175. The Potato Industry of Colorado. Colorado Experiment Station, Ft. Collins, Colo.
4. Bulletin No. 176. Productiveness and Degeneracy of the Irish Potato. Colorado Experiment Station, Ft. Collins, Colo.
5. Quarterly Bulletin. Maine Department of Agriculture, University of Maine. Potato Growing for Maine Farmers. Vol. VIII, No. 2, June, 1909. Orono, Maine. Written by W. D. Hoard.
6. Bulletin No. 138. Maine Experiment Station. Orono, Maine.
7. Potato Bulletins from the following States:  
Ohio—State Experiment Station, Wooster, Ohio.  
New York—Experiment Station, Genoa, New York.  
Ithaca, New York.  
Wisconsin—Experiment Station, Madison, Wisconsin.  
Minnesota—Experiment Station, St. Anthony Park, Minnesota.



... of all the best...  
... and available...  
... of the best...



CHOOSING THE PERFECT POTATO TYPE



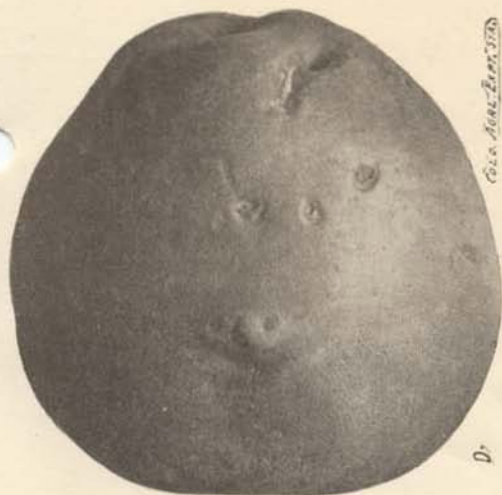
*Colo. Adm.  
1907-1910*

B



*Colo. Adm.  
1907-1910*

C



*Colo. Adm.  
1907-1910*

D



*Colo. Adm.  
1907-1910*

SOME VARIETY TYPES OF SEED POTATOES.