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### EXTENSION SERVICE

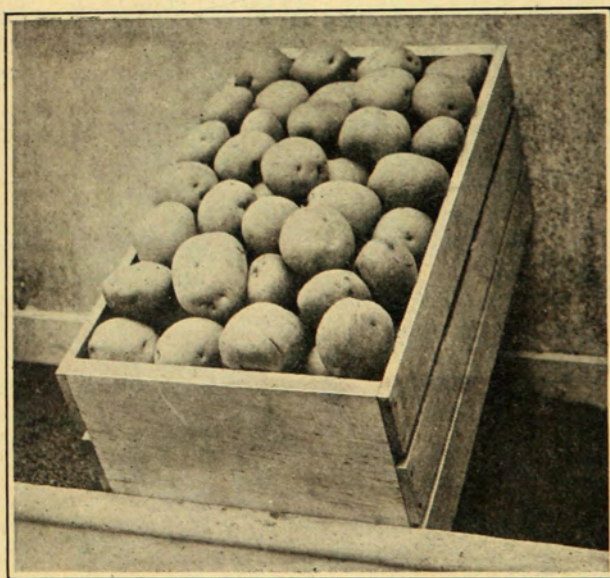
Fort Collins, Colorado

A. E. LOVETT, Acting Director

## CERTIFIED SEED POTATOES

### METHODS OF GROWING---RULES FOR CERTIFICATION---COLORADO STATE RULES

By H. D. LOCKLIN



NO, THEY ARE NOT APPLES. THEY ARE CERTIFIED SEED POTATOES.

CO-OPERATIVE EXTENSION SERVICE IN AGRICULTURE AND HOME  
ECONOMICS---COLORADO AGRICULTURAL COLLEGE AND U. S.  
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# CERTIFIED SEED POTATOES

## METHOD OF GROWING AND RULES FOR CERTIFICATION

By H. D. LOCKLIN,  
Chief Deputy State Horticulturist

### GENERAL INFORMATION

Due to the increasing interest being shown by the potato growers of the state in the growing of certified potato seed, the following bulletin is presented to give the growers a better understanding of what certification of potato seed is, to explain the growing of certified seed, and, finally, to give the rules and regulations governing certification.

(1). **Official in Charge of Certification.** In Colorado the certification of potatoes is in charge of the State Horticulturist, Horticulture Department, Fort Collins, Colorado. The inspections are made by the State Horticulturist or some other representatives of the Horticulture Department of Agricultural College.



Certified Seed Potato Exhibit at Centre, Colorado.

(2). **Who Should Grow Certified Seed.** Any one who has clean ground located at a high altitude, who is a careful farmer, and who will follow the instructions below can grow certified seed. Only those who can and will come up to these standards should try to grow this kind of seed. The best growers may have their crop turned down sometimes.

(5). **Marketing Certified Seed.** The certifying officials take no responsibility for the selling of the seed nor the price to be paid for this seed. They will, however, be willing to help in any reasonable way in getting the seller and buyer together. To this end a list of growers with addresses, and the amounts and varieties they have for sale will be published each winter as soon as all stock has been given the final inspection.

### **APPLICATION FOR REGISTRATION OF FIELD**

(1). **Time and Method of Application.** Application for certification should be made to the State Horticulturist, Fort Collins, Colorado, or to the Chief Deputy State Horticulturist, Delta, Colorado. If more convenient application may be made thru your county agricultural agent. The application must be received and accepted before June 1 of the year in which certification is desired. In case uncertified seed is planted it is a good plan to make application in time to allow an inspector or your county agent to see the seed before planting. However, this is not essential. Upon receipt of a request for certification an application blank will be forwarded for the applicant to fill out. When this blank form has been filled out, returned, and accepted, the field will be considered registered for certification for that season. The owner will then be notified.

(2). **Costs.** The charges for inspection of potato fields for certification will be \$5.00 for the first five acres or fraction thereof, and \$1.00 for each additional acre or fraction of an acre. This amount to be paid at time of first inspection. If the field is rejected at the first inspection no fees will be collected.

### **CULTURE OF POTATOES FOR CERTIFICATION**

#### **When Growing Potatoes For Certification Remember:**

1. It is best to try a small plot (1 acre or less) the first year. Later grow all you can properly care for.
2. You should not be discouraged if your field is turned down.
3. All seed should be treated before cutting by soaking one and one-half hours in a solution made by dissolving corrosive sublimate (Mercuric chloride) in water at the rate of four ounces of corrosive sublimate to thirty gallons of water. Renew the solution after using three times. Use a wooden container.
4. Plant later than the commercial crop—except in high altitudes.
5. It will be to the grower's advantage when planting uncertified seed to have the seed examined before planting.

6. Plant closer together in the row—about two-thirds usual distance. On dry land this will not usually be necessary.

7. Cultivate more—irrigate less. The seed will be more vigorous.

8. Dig late.

9. Do not bruise or cut tubers.

10. Let tubers dry off before picking up.

11. Use clean and new sacks.

12. Grade in the storage house. You will do a better job. Good grading is essential for certification.

13. Store in a frost proof storage cellar which has good circulation of air.

14. Better seed and better methods are not fads—they produce a crop of greater value, more economically.

15. Your seed will pass certification more often if you grow your own seed for next year's planting in a seed plot, and practice hill selection.

16. Write the Horticultural Department, Agricultural College, Fort Collins, for bulletins on potato growing, harvesting and storage.

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## STANDARDS FOR CERTIFICATION VINE INSPECTION

(1). **Regulations Governing Vine Inspection.** Inspection of potatoes is not only necessary after the crop is harvested but also during the growing season. The purpose of this plant inspection is to determine trueness to type and variety, freedom from disease, stand, and general vigor. This shall be accomplished by an inspection of the potato plants in the field just prior to maturity of the plant, and while the healthy plants are still a good green.

The inspector should be notified two or three weeks before the tops die.

(2). **Plant Inspection.** At this inspection the tolerances governing certification shall be: Not to exceed 5 per cent of mosaic, curly dwarf, lead-roll and other inherited weaknesses combined; not to exceed 4 per cent of diseased plants from any one of the following diseases; wilt, blackleg, and rhizoctonia, nor a total of 6 per cent of diseased plants from these three causes.



(3). **What is Certified Seed.** Certified seed potatoes are potatoes which have been inspected by proper officials and found to come up to given standards. The standards for Colorado are given later.

(4). **What Are the Purposes of Certification.** The purposes of certifying seed are many but the most important are:

1. It puts a premium on better seed and better cultural methods.

2. The methods of the commercial fields will be improved because of the better results obtained by the use of improved methods in the seed fields.



Hill Selection. Working Desirable Hill for Seed.

3. Improved seed is made available for commercial planting.

4. The buyer of this class of seed knows what he is getting.

5. Yields per acre will be greatly increased.

If 3 per cent of the vines show serious infection of early blight the field shall be disqualified for certification.

No rogueing shall be done except during the week following the plant inspection.

Fields must show good general vigor.

Fields which are "forces" or weakened by excessive amounts of water will not be certified. Use just what is necessary to keep the plants in a continually growing condition.

The uniformity and quality of the product as seed shall be determined at this inspection at which time not to exceed 5 per cent of the hills shall each weigh less than 30 per cent of the average of 100 consecutive hills.

### TUBER INSPECTIONS

(3). **Digging Time Inspection.** This inspection shall occur at the time the seed is being dug and before sacking. It is optional with the inspector as to whether this second inspection will be made. Final tuber inspection rules will apply.

(4). **Final Tuber Inspection.** This inspection shall be after harvest, after final grading for the seed market, and shall conform to the conditions as hereinafter specified.

(5). **Physical Requirements.** All potatoes intended for certification must be practically free from dirt or other foreign matter, frost injury, second growth, growth cracks, cuts, bruises or other damages caused by diseases, insects or mechanical means, with no more than a 3 per cent variation by weight from any of the above details, except as specified. It is recommended that certified seed be marketed in new sacks or containers.

Oversized tubers being wasteful and less desirable than properly grown, uniform, medium-sized potatoes, the "Seed-size" standard shall be from two to twelve ounces, with a variation tolerance of five percent by weight for sizes larger than 12 ounces.

(6). **Varietal Purity.** Since mixed varieties of seed potatoes are a potent cause of economic loss in potato production and marketing, a rigid adherence to trueness of name and type is necessary. Furthermore, since the practice of renaming old varieties or changing the name of named varieties through ignorance, or with malicious intention to defraud, is detrimental to the potato industry, the publication of Prof. William Stuart, U. S. Department of Agriculture, Washington, D. C., in "Group Classification and Varietal Descriptions of Some American Potatoes" has been adopted as the standard for correct names, groups, and variety descriptions.

Since offtype, or runout strains of any given variety are essentially as detrimental to successful potato production as mixtures of varieties, no stock shall be certified or planted with the expectation of producing potatoes for certification that are not fairly typical in all characteristics for that particular variety in the district where it is grown.

Any attempt to sell uncertified seed as certified stock will be considered sufficient reason for refusing to certify all stock for that grower in the future. Every container shall be labeled with a certification tag.

(7). **Diseases and Pests That Disqualify.** No potatoes shall be certified that show by inspection on vine or tuber the presence of the diseases known as blackwart (*Chrysophlyotis endobiotica* Schilb.) powdery scab (*Spongospora subterranea* Wallr. Johns), and violet rhizoctonia (*Rhizoctonia crocorum* (Pers) D. C.), and the pests, eelworm (*Heterodera radicola* (Greef) Mul), and potato tuber moth (*Phthorimaea operculella* Zeller).

(8). **Limitations of Other Infections.**

Scab. No potatoes shall be certified which show upon the tuber at final inspection more than 5 per cent scab (*Actinomyces scabiea* Thax. (Gussow) ), with no deep scab pustules permissible.

Rhizoctonia or Black Scurf. (*Corticium vagum solani* Burt.) More than 5 per cent shall disqualify and no scurf spot larger than one-eighth inch in diameter shall be permitted.

Vascular Infection (*Fusarium*, stem wilt, etc.) Not to exceed 5 per cent of the tubers, as determined by transverse sections of stem end of tuber in the final tuber inspection shall be permitted. Vascular infection shall be interpreted as meaning wilt diseases as *Fusarium Oxysporum* (Schlect), *Verticillium alboatrum* (Reinke and Berth.), *Baccillus Phytophthorus* (Appel et al.)

The condition of the seed after the last inspection depends upon the owner. Before the certificate is issued the owner will be required to sign a statement to the effect that he will sell no seed as certified seed, which has not passed inspection, and that he will if necessary, regrade the stock before selling so as to correspond to the standard of last inspection.

(9). **Records and Responsibility.** Careful records will be kept by the inspectors of the kind of seed planted, the condition of the crop throughout the growing season, and up till the last inspection has been completed.

(10). **Summary.** To get his field inspected for certification the grower should:

Plant clean seed on clean ground.

Get his field registered.

Notify inspector two weeks before tops die in the seed field.

Rogue out undesirable plants after field inspection.

Dig, store, and grade seed stock very carefully.

If seed passes, get certificate and tags.

Correctly fill out blank forms sent.

If stock has not been sold get his seed listed in state certified seed bulletin.



CERTIFIED SEED POTATOES  
CERTIFICATION FORMS

9

**(1). Application for Certification.**

Name .....  
Town .....  
Direction and distance from town .....  
.....  
Varieties to be inspected and acreage of each .....  
.....  
Where seed planted was grown .....  
.....  
Is seed certified? .....  
Was seed grown on dry or irrigated land? .....  
Approximate date of planting .....  
Do you intend to treat your seed? .....  
If so, with what? .....  
Remarks .....  
(Answer all questions as fully as possible.)

**(2). Certificate of Inspection.**

(Front side of certificate).

This certified that the potato field and seed stock of  
..... Colo.  
(Name) (Postoffice) (County)  
have been inspected, and that said seed stock meets with the  
prescribed standards relative to varietal purity, type, and free-  
dom from disease.

This certificate covers only the seed stock inspected, and is  
given upon the signing of a statement of the above applicant,  
that he has fulfilled all requirements made by the certifying  
authority and that he will carry out the full intent and purpose  
of this certificate.

.....  
.....  
Certifying Officer.

.....  
Office.

(Back side of certificate)

The following statement of conditions pertains to the potato seed stock covered by this certificate of inspection grown by the person whose name appears on the reverse side of this certificate.

1. Varieties and acreage .....
  - (a) Certified stock does not exceed ..... Bu.
2. Results of field inspection:
  - (a) Varietal purity ..... Percent
  - (b) Freedom from disease ..... Percent
3. Results of final tuber inspection:
  - (a) Varietal purity ..... Percent
  - (b) Freedom from disease ..... Percent
4. Market condition and quality .....
5. Yields .....
6. Remarks .....

## (3) Container Tags.

(Front of Tag)

(4 inches)

(2 1/4 inches)	<b>OFFICIAL TAG</b> <b>CERTIFIED COLORADO SEED POTATOES</b>	(2 1/4 inches)
	Variety Grown at a High Altitude. Grown and sold by	
	(Name) .....	
	(Town) .....	Colo.
	This stock has been inspected and certified by the State Horticulturist, Fort Collins, Colo. (over)	
	(4 inches)	

(Back of Tag)

# STANDARDS OF CERTIFICATION

1. Freedom from varietal mixtures, and conformity to the correct vine and tuber characteristics of the variety.
2. Weight of seed tubers from 2 to 12 ounces, with 5 percent variation tolerance above 12 ounces.
3. Freedom from wart, powdery scab, eelworm and larvae of tuber moth.
4. Freedom from serious infection of common scab, rhizoctonia, wilt, and other important tuber borne diseases.
5. The Holder of a certificate is responsible for all undesirable conditions which may develop after the date of the final tuber inspection.

6. A certificate of seed potato inspection in conformity with above standards has been issued by .....  
(Name)

..... to the person whose name  
(Office)

appears on the reverse side of this tag. (over)

## (4) Sale Agreement.

## AGREEMENT NOT TO SELL AS CERTIFIED ANY SEED POTATOES WHICH HAVE NOT PASSED INSPECTION

I hereby agree:

- (1) That the ..... of .....  
(Bushels) (Variety)

.....  
.....  
(Variety)

Potatoes to be sold under certification tags have been inspected and certified by an official inspector from the office of the State Horticulturist, Agricultural College, Fort Collins, Colorado.

- (2) That before selling, I will regrade, if necessary, all stock sold, to conform to the grade as specified for the last official inspection.

- (3) That I will make an accurate report of sale of all certified seed to the State Horticulturist on blanks to be furnish-

ed by him, of name and address of buyer, date of sale, and amounts sold.

Signed .....  
Town ..... Colo.  
Date .....

(5) Sale Record

RECORD OF SALE

Name of Gower of seed .....  
Address ..... Colorado.  
Total amount seed certified ..... Bushels

AMOUNTS SOLD

	Date	Buyer	Address	Amts. in Bus.
1	-----	-----	-----	-----
2	-----	-----	-----	-----
3	-----	-----	-----	-----
4	-----	-----	-----	-----
5	-----	-----	-----	-----
6	-----	-----	-----	-----
7	-----	-----	-----	-----
8	-----	-----	-----	-----
9	-----	-----	-----	-----