

WESTERN NEBRASKA POTATOES

Box Butte County Land Pays Farmers Well for Growing Potatoes.—Potato Crop Actually Most Important One of All

(Written by F. M. Seidell, County Agent, U. S. D. A.)

A Bulletin by F. M. Seidell, Box Butte county agricultural agent, on the betterment of our potato crop. Seidell says to better the crop the growers should observe the following:

1. Use pure standard varieties for seed.
2. Select seed of variety type and free from disease.
3. Treat seed potatoes to control and eradicate disease.
4. Use proper cultural methods: practice rotation.
5. Grade for market.
6. Store in disinfected cellars with proper ventilation and temperature.

FOR TREATING SEED POTATOES THE DEPARTMENT OF AGRICULTURAL BOTANY RECOMMENDS THE FOLLOWING:

1. One pint of formalin in 30 gallons of water. Soak potatoes for full two hours; or
2. Four ounces of corrosive sublimate in 30 gallons of water. Soak potatoes for full one and one-half hours.



HAULING BOX BUTTE POTATOES



AN EFFICIENT METHOD OF TREATING POTATOES FOR DISEASE

By F. M. Seidell, County Agent, Box Butte County

Potatoes are Box Butte county's leading cash crop. The value of her potatoes in 1916 is estimated at \$551,900. In other words the value of the potato crop was approximately as much as the value of the spring and winter wheat, rye, barley, corn and oats crop combined. Hence the importance of the potato crop and its improvement.

There is a need to improve our potatoes so that the growers can produce them economically and to standardize for market so the potatoes will be in demand. This will enable the growers of this section to compete with other sections. It will bring to the grower greater returns and to the consumer greater satisfaction.

The Box Butte Farmers' Association has adopted the following project for the improvement of Box Butte potatoes. This project does not consider seed treatment, etc., alone, but all steps are absolutely necessary in order to make the desired improvement.

(1) Pure Standard Varieties
It is important that only those standard adaptable varieties known to be pure be used for seed. The experience of the growers shows that only the early varieties are adaptable. There is a market demand for the early varieties of this section. The Early Ohio is the standard table variety in demand. Bliss or Red Triumphs are in demand for southern seed trade. White Eurekas or Cobblers, demand varies, are early and good yielders. Three varieties are enough for any section.

Do not allow seed to mix in storage. In planting one variety after planting another be sure all potatoes of other variety are removed from planter. In marketing pick out all other varieties.

(2) Seed Selection
Select seed to maintain variety, type, quality, yield, and to control

disease. Know the desired shape of the variety you are growing. Potatoes will produce true to type of seed providing other conditions are favorable. Do not plant a potato off in quality such as one with small outgrowths and deep eyes (remember variety type), or a misshapen potato. The constant use of small potatoes will tend to reduce the yield. A potato may be small because of lack of moisture or an inheritable character. The latter is true too many times to risk planting small potatoes except in rare cases. A small seed piece will produce a small vine, consequently a lower yield under normal conditions. Plant nothing less than a one-ounce seed piece, and an ounce and one-half to two-ounce seed pieces are most desirable. Nothing is gained by clipping off seed end of potato. By hill selection Ohio Station increased the yield of their potatoes about 75 bushels per acre.

About the most important thing in economical production is the discarding of all potatoes affected with dry rot or bacterial wilt. These are internal diseases of the potato. A very scabby potato, however, well shaped is not a good seed potato. Upon examination of the stem end of potato if a brown discolored area appears that reaches through the potato about one-eighth inch under skin it is safe to assume that this is the bacterial wilt or black-leg disease. A wet rot may develop and destroy the tuber as result of this infection. Both dry rot organisms and blackleg produce characteristic wilting in the field. To show the advantage of using clean seed, demonstrations were conducted in 1915 under authority of the Box Butte Farmers' Association and the Department of Agricultural Botany by the County Agent on the farms of four co-operators from which the following results were secured. Whole two-ounce seed used in all cases untreated in order to measure effect of disease upon yield. The average yield of marketable po-

tatoes from seed was:

	bu. per A.
Dry rotted seed	105.09
Scabby seed	132.73
Clean seed	205.12

Dry rotted seed reduced the yield 100.03 bushels of marketable potatoes per acre and scabby seed reduced the yield 72.29 bushels of marketable potatoes per acre.

(3) Seed Treatment
It is absolutely necessary to treat seed to eradicate potato diseases. Two internal potato diseases have been mentioned controllable largely by seed selection. Scab and Stem rot or Rhizoctonia are the common external diseases of the potato. The Department of Agricultural Botany recommends the following treatment for potato diseases:

"Fungicide"
CORROSIVE SUBLIMATE—Dissolve 4 ounces of corrosive sublimate in 2 gallons of hot water. Add this solution to enough water to make 30 gallons.

Place potatoes in a gunny sack and keep for 1½ hours in the above solution. Spread the treated potatoes out on a canvas or clean floor to dry. When dry, the potatoes should be cut and placed in sacks which have been disinfected.

PRECAUTIONS.—(1) To dissolve the corrosive sublimate in hot water use a stone jar or some old pan as this solution will corrode metal. (2) THIS SOLUTION IS VERY POISONOUS, AND TREATED POTATOES MUST NEVER BE EATEN NOR FED TO STOCK. (3) Be certain that the solution is made and used according to the above directions.

FORMIC ALDEHYDE.—Pour 1 pint of formalin (formalin is a 40 per cent solution of formic aldehyde) into 20 gallons of water in a barrel or tank. Place potatoes in a gunny sack and keep for 2 hours in the above solution. Spread the treated potatoes out on a canvas or clean floor to dry. When dry, the potatoes should be cut and placed in sacks which have been disinfected.

PRECAUTIONS.—(1) Be certain that your formalin is full strength and the solution made according to the above directions. (2) Treat the potatoes for the full 2½ hours. (3) This solution is not poisonous, and treated potatoes may be eaten or fed to stock.

In no case sacrifice strength of solution by making stronger or weaker or by treating longer or shorter time. Potatoes must be in solution 6 hours before being damaged materially. In treating with corrosive sublimate, potatoes should be relatively free from dirt. Keep solution stirred up. Do not be alarmed because of evaporation.

Either treatment is effective against disease scab, and all dry rot or bacterial wilt reached by seed treatment. Corrosive Sublimate is recommended for treating potatoes affected with Stem Rot or Rhizoctonia, which appears as black specks on the exterior of the potato. This disease cuts down production and may reduce stand of potatoes.

In 1915 demonstrations were conducted by the County Agent on the farms of the above four co-operators to show the value of seed treatment. Very scabby two-ounce seed was used in all cases. Part treated with corrosive sublimate and part treated with formalin planted beside untreated scabby seed of the same kind and origin.

Corra.
Untreated Formalin Subl. Average, 132.73 155.60 166.80
Increased yield by Formalin, 25.87 bushels at 35c equals \$9.05 per acre. Increased yield by Corrosive Sublimate, 34.07 bushels, at 35c equals \$11.92 per acre.

Stem Rot was prevalent in all potatoes used for seed, which probably accounts for some difference in favor of Corrosive Sublimate.

It will cost approximately 4c per bushel to treat potatoes, allowing for chemicals at present prices and for labor, providing no time is wasted while potatoes are being treated. Any plan (providing directions are followed) that will facilitate in treating is worthy of consideration.

(4) Proper Cultural Methods
Rotation is essential in controlling potato diseases, maintaining yield and fertility. Potatoes should not be planted in the same field oftener than one year to five. This will allow the greater part of the potato disease to have disappeared.

Land free from trash is essential in the production of smooth potatoes. Remember there are two kinds of scab; one a disease, and the other a result of insect injuries. Insect trouble is largely controllable by proper rotation. A field that has been idle or uncultivated for a short time is more apt to have grubs and other enemies to smooth potatoes.

Manure if applied to land should be applied just after digging potatoes. If applied in large quantities, disease scab may live in the soil longer than five years as a result.

Growers have found by experience that a well-prepared deep seed bed gives on the average the best results. They are thus able to produce potatoes true to type and a good yield of same.

Growers know the type of cultivation generally best adapted to growing potatoes in their sections. They realize that if deep cultivation is practiced it should be done early. A more level type of cultivation is more applicable here than in sections of more rainfall.

In digging, if more dirt is run over the elevator and the digger run deeper less potatoes are cut and damaged. A cut or damaged potato is usually first affected with storage disease. A cut potato is thrown away at the big potato markets whether diseased or not. Running digger deep of course takes more horse power and the only question is whether best to use more horse power and have less damaged potatoes or not. In handling, care should be exercised to prevent injuring the potatoes. Best potato growers of the section handle their potatoes carefully and state that they are well paid for same.

The experience of the majority of potato growers in this section is that potatoes when planted on land following corn or a cultivated crop have best assurance of a good yield of well shaped smooth potatoes because they have a good seed bed on land free from trash and normally have more moisture conserved.

To the average livestock farmer of this section and considering adaptability to natural conditions a crop system that will be fair to all crops and to your potatoes on the basis of 100 acres of farm land exclusive of hay crops is—

Corn	20 acres
Potatoes	20 acres
Small grain	20 acres
Corn	20 acres
Small grain	20 acres



A TYPICAL BOX BUTTE COUNTY POTATO FIELD

Repeating this order your potatoes follow corn and are planted on the same land only one year in five.

(5) Grading for Market
After all, besides supplying home use the aim of the potato grower is to finally sell the potatoes. In order to make the greatest returns with the potato the same as with live stock, there must be a market demand and the article to sell must conform to the market demand. There is a demand for a potato of reasonable size, good in quality and relatively free from disease. The grading for market has been a thing badly neglected in this section. The growers are not always to blame for this condition, for many unscrupulous buyers have practiced buying ungraded potatoes. Every ungraded

average year makes very little by storing his potatoes. Bad roads, danger in long hauls, small difference in price, shrinkage, freezing, and storage disease losses are things to take into consideration.

However, it is important that some store potatoes so that the market is not flooded at digging time. It is absolutely necessary that the potatoes stored for home seed be stored correctly in order to give strong seed. The potatoes stored for the southern seed trade must be stored correctly (not allowed to heat) so as to maintain their vitality. Potatoes should be stored in disinfected cellars. The ideal storage temperature is from 33 degrees to 45 degrees. It is impossible to main-



POTATO INFECTED WITH DRY ROT

car of potatoes shipped out cannot help but cast reflection in the potatoes of this section.

According to the Department of Markets, the thing the potato grower must ask himself about the grading of his potatoes is, "Can he afford to pay himself for grading his potatoes at home or is it cheaper for him to haul off the culls with the good potatoes, pay freight on these culls to the big distributing points, then hire some one to grade and throw away the scabby, cut and odd shaped potatoes and pay the dealers

tain low temperature where large quantities of potatoes are stored without proper ventilation. Potatoes in storage should not be over four feet from a ventilator. That is, ventilators should be eight feet apart. Natural construction of storage cellar may facilitate in ventilation. Low temperature maintains vitality, prevents early sprouting, lowers shrinkage and lessens losses from disease. Allow as small an amount of dirt as possible to be stored with the potatoes.



POTATO INFECTED WITH RHIZOCTONIA OR STEM ROT

rightly a large insurance for handling this grade of potatoes?" All this is paid indirectly by the grower, by the lower price he received for the potatoes.

(6) Storage
The potato grower who is an av-

The above outline gives a practical plan for improving Box Butte potatoes and if followed as it is by some growers the potato industry will mean more than ever to Box Butte county.

GRADING POTATOES

Prevailing high prices for potatoes this fall was a strong temptation for growers to sell scabby potatoes, a practice that in the long run is not a profitable one, says the agricultural botany department of the university college of agriculture.

So long as a buyer for unsound potatoes could be found, their sale was profitable to the grower; but as buyers prefer to purchase from districts which maintain a reputation for producing and shipping first-class stock, districts from which diseased stock has been unloaded on the market must expect to be offered lower prices than prevail in sections of favorable reputation.

Western Nebraska has an opportunity to establish the potato industry on a secure footing by insisting upon the inspection and careful

grading of all potatoes sold in that region, by organizing an association of potato growers. The crop can then be sold under guarantee of the association.

CREAMERY COURSE

A four-months practical creamery course is to be offered by the dairy husbandry department of the University of Nebraska, Jan. 2 to April 14. The purpose of the course is to provide practical training for men interested in the commercial side of dairying. It takes up fundamental scientific principles and applies them in practice.

Men who take advantage of this course will have an opportunity to do their work with the finest equipment available in any college in the country.



EARLY OHIO POTATO



EUREKA OR COBBLER POTATO



RED TRIUMPH POTATO