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CC199 Fall Potato Production Guide for Western Nebraska

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FALL POTATO PRODUCTION GUIDE FOR WESTERN NEBRASKA

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Ten Point Fall Potato Program

To Increase Yield And Improve Quality

1. Plant Nebraska Certified Seed or, still better, Nebraska X Free Seed. It is the best general insurance for relatively disease-free seed and higher returns per acre.

2. Seed Bed Preparation. No amount of work can repair the damage from poor seed bed preparation. Fertilize according to soil test. Take soil sample in the fall or very early in the spring so you have results when you need them. Plant irrigated potatoes on sweet clover or alfalfa ground on land that has not been in potatoes for at least three years. Summer Fallow for dryland production. Soil should be moist to a depth of three or more feet at planting time.

3. Warm seed potatoes for 10 days to two weeks before planting. Treat cut seed to avoid seed piece rot. Pre-cut and healed seed can be used to an advantage. Care should be taken to avoid overheating and asphyxiation of seed.

4. Dispose of or destroy all piles of cull potatoes so that their sprouts will not serve as a source of psyllids, flea beetles and late blight.

5. IF planting before June 10, be aware of cultural problems. Early blight, Fusarium, Scab and Rhizoctonia diseases are favored by early planting. A build-up of injurious insects may also result from early planting.

6. Insure good stands by planting sound seed in moist soil.

7. Irrigate early and frequently after plants emerge. Be cautious of late season irrigation because it may seriously delay tuber maturity and, when growing potatoes for processing, will lower specific gravity.

8. Treat soil with one of the systemic insecticides. Usually one additional foliage spray may be necessary. Spray timely, properly and thoroughly should late blight become a factor.

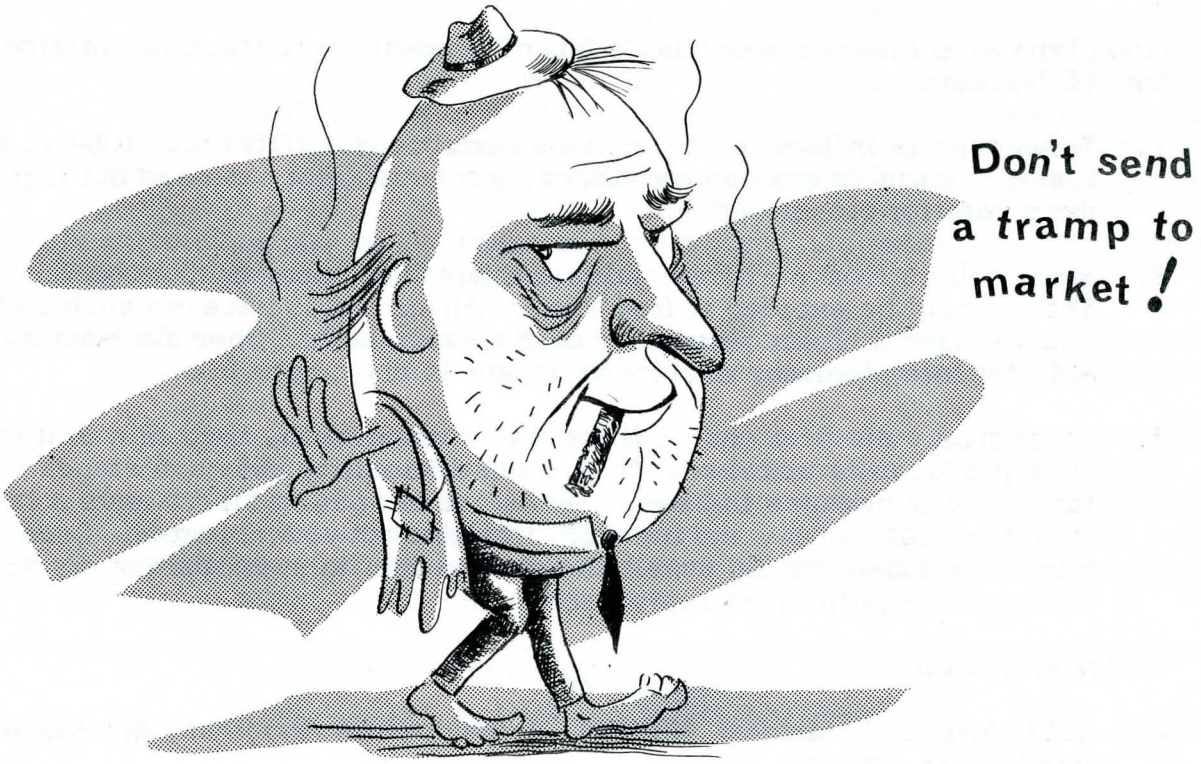
9. Reduce mechanical injury at harvest time. Make careful plans in the spring, rebuild or adjust equipment, and instruct workers as to their specific duties.

10. Store properly. Maintain high temperature (60°F.) and high humidity for the first two weeks, then cool storage to 40°F. as quickly as possible. If ring rot, pink rot or late blight are known to be present, cool storage to 40°F. immediately. If potatoes are to be used for chipping, 50°F. storage should be used. Field treat plants with MH-30 or treat tubers with CIPC or Fusarex in storage to prevent sprouting.

Methods For Producing

Maximum Yields Of High Quality Potatoes

Production of maximum yields of high quality tubers means labor saved in production and marketing as well as more efficient use of transportation. As yields per acre increase, production costs per bushel decrease. Potato growers can get these results by adopting methods proven by years of experimental work and by efficient use of available labor and equipment.



ALL POTATO PROFITS COME FROM THE CONSUMER
CONTINUED CONSUMER DEMAND COMES ONLY FROM HIGH QUALITY PRODUCTS

1. Use of Certified Seed

The most essential characteristics of certified seed are:

A. Freedom from seed-borne diseases (nature of disease determines the amount to be tolerated).

1. Must be free from certain serious diseases such as bacterial ring rot.

2. Should be practically free from other diseases that reduce yields or impair quality.

a. Diseases that can be detected by looking at the tuber are fusarium, stem-end rot, verticillium stem end rot, black leg rot, spindle-tuber, common scab, rhizoctonia, pink rot and late blight.

b. Virus diseases as a rule, cannot be detected by looking at the tuber.

3. Use only sound seed tubers. Be cautious of any lots containing wet, rotting tubers (if uncertain about such lots, seek the advice of a potato inspector or the Potato Extension Specialist).

NEBRASKA STATE CERTIFIED SEED POTATOES
MEET ALL THESE REQUIREMENTS.

B. Good type size tubers are desirable but not necessary if stock is practically free of disease.

1. Tuber type is influenced by growing conditions. "Off type" tubers, the result of variable growing conditions, are satisfactory as seed but require more care for proper cutting.

2. Small tubers from certified fields are equal or superior to large tubers. They should be avoided if from non-certified fields because such fields usually have a higher percentage of diseased plants. They are most suitable for late planting, especially if soil is dry.

3. Large tubers are best choice if disease content of the field in which they were produced is unknown. It is often difficult to get good stands from large tubers because the seed pieces cut from such tubers have a large amount of cut surface and are more likely to rot when planted. Seed cut from large tubers should usually be planted first to avoid the hot dry soil, common late in the planting season.

C. Major varieties:

Table and Seed Potatoes: Norland, Norgold, Haig, Progress, Red Pontiac, Red Lasoda, Bounty.

Processing Potatoes: Haig, Kennebec, Platte, and Hi Plains.

2. Proper Care of Seed Potatoes Is Important

A. Seed potatoes should have sprouts about one-fourth inch long at planting time to insure prompt and uniform emergence.

1. Sprouting of seed potatoes should be retarded as much as possible until within ten days to two weeks before planting. This can be accomplished by:

a. Maintaining low cellar temperatures as long as possible.

1. By proper ventilation.

2. By artificial refrigeration.

b. Storing seed tubers in shallow piles that are turned over several times, or in sacks stacked to assure adequate circulation of air.

c. Treating seed potatoes for scab control with hot formaldehyde or Semesan Bel about the time first sprouts begin to show.

B. Treat Seed Potatoes:

1. Protect the seed pieces against rot organisms and assure better stands by

treating them with a fungicide such as 7.5 percent Captan or 10 percent Zineb dusts. Apply 1 1/2 cups of dust per cwt. of tubers immediately after cutting, then plant as soon as possible after treatment.

2. Scabby seed potatoes should be treated with formaldehyde before cutting. Method: 1 pint formaldehyde, 15 gal. water, heat to 121 to 124°F., dip 3 to 4 minutes, cover with canvas cloth for about one hour, then spread out potatoes in bulk or in sacks to dry quickly. Cool potatoes before storing. This treatment may be carried out several weeks before planting time to reduce peak labor requirements at planting time and to retard sprouting.

C. Seed potatoes may be cut weeks or months ahead of planting time to reduce peak labor requirements at planting time.

1. When properly handled a layer of wound corn develops at the cut surface. This layer prevents the entrance of rot-producing organisms and drying out.

2. The prompt, effective development of this protective layer is accomplished by: holding the cut seed pieces in a layer not over 6 inches deep, in a warm place (60 to 70°F.), in a humid atmosphere (90% relative humidity) avoiding direct sunlight. Potatoes should be turned over once or twice during the first day. After 5 to 7 days cut seed can be stored and stacked in the same way as whole potatoes.

CAUTION: NEVER PLACE FRESHLY CUT SEED PIECES IN A DEEP, UNVENTILATED PILE.

3. Properly healed seed pieces produce better stands than fresh cut seed during hot weather.

D. Large seed pieces are recommended:

1. Under irrigation, 1.5 to 2 oz. pieces

2. With dryland, 1.0 to 1.5 oz. pieces

3. Seed size is governed somewhat by planting distance.

GOOD SOIL, GOOD SEED AND GOOD MANAGEMENT PRODUCE GOOD POTATOES

3. Soil Influences Potato Growth and Diseases

A. Soil Requirements:

1. Yield of tubers and their shape and general attractiveness depends to a great extent on the texture and physical nature of the soil.

2. Among the best soils for potatoes are those that are friable and coarse textured. The sandy loams are ideal. With skillful management, good potato crops can be grown on those soils not considered ideal.

3. Previous cropping history, management and moisture supply affect potato yields and quality more than soil type.

B. Soil Fertility Tests:

1. Soil tests, properly taken, show the amount of available nitrogen, phosphorus and potassium in the soil. Recommendations based on these tests tell much fertilizer is necessary to supply crop needs. Special tests for zinc and soluble or injurious salts can be obtained.

2. The reliability of soil tests usually depends on the soil samples from which they are made. A sample must be representative of the field. Collect cores or slices from plow depth at 15 or more places in the field in a clean plastic container. Mix these thoroughly for the sample to be tested.

C. On irrigated land rotations are necessary:

1. To rotate crops in such a manner that a legume will precede potatoes.

2. To maintain proper fertility.

3. To maintain proper soil structure and to influence water absorption and retention.

4. To help control the soil-borne diseases; fusarium, common scab and rhizoctonia.

5. Suggested rotations:

a. Six year: Beets (beans or corn), alfalfa seeded in small grain, three years of alfalfa, potatoes. When using manure in this rotation, apply it after potatoes and before sugar beets.

b. Five year rotation: Beets or corn, beans, sweet clover with nurse crop, potatoes.

c. Four year rotation with potatoes after sweet clover; small grain or corn, sweet clover with grain nurse crop, potatoes.

4. Time and Rate of Planting

1. In general, planting between June 10 and June 20 produces the highest yield of U. S. No. 1 potatoes, bright red tuber color with red varieties, and avoids or reduces insect and disease problems (scab, early blight, fusarium and rhizoctonia).

2. If early planting (May 15 to June 1) is practiced for producing processing potatoes and/or mature tubers adapted to mechanical harvesting, irrigation, fertilizer and insect control practices must be adjusted accordingly (see section VIII).

3. Suggested varieties, planting dates, rates and spacings with irrigation:

a. Planting rate should be varied according to: (1) variety, (2) yield level and size of tubers desired, (3) soil fertility and (4) availability of soil moisture and irrigation water.

Variety	Planting Time
Norland	May 15 - June 20
Red Pontiac	May 20 - June 10
Bounty	May 20 - June 10
Progress	May 25 - June 20
Red Lasoda	May 25 - June 20
Pioneer	June 1 - June 20
Haig	May 15 - June 20
Platte	May 15 - June 10
Hi Plains	May 25 - June 10
Kennebec	May 20 - June 10

b. With adequate fertility and optimum irrigation or soil moisture, suggested planting rates for maximum percentage of 2 1/4 to 3 1/4 tubers.

Using 1.5 to 2.0 oz. seed pieces in 36-38 inch rows:

Variety	Irrigated - 36 inch rows
Norland	12 in.; 14-15 cwt/A
Red Pontiac	9 in.; 18-21 cwt/A
Bounty	12 in.; 14-15 cwt/A
Progress	12 in.; 14-15 cwt/A
Red Lasoda	9 in.; 18-21 cwt/A
Pioneer	9-12 in.; 14-21 cwt/A
Haig	12-15 in.; 12-15 cwt/A
Platte	12 in.; 14-15 cwt/A
Hi Plains	12 in.; 14-15 cwt/A
Kennebec	9-12 in.; 14-21 cwt/A

5. Seed Management at Planting Time

A. Protect seed potatoes at all times against hot sun or winds which may damage buds or destroy cells at cut surfaces.

B. Guard against spread of bacterial ring rot or virus diseases at seed cutting time:

1. Do not cut any rotting tuber or any tuber suspected of having spindle tuber or bacterial ring rot.

2. If using fixed knives, have disinfectant constantly dripping onto cutting surface. Mercuric chloride, 1 oz. in 3 1/2 gallons of water is satisfactory. Chlorine and formaldehyde (1 tsp. per quart) disinfectants are also satisfactory for fixed knives or for dipping knives when hand cutting.

3. When tuber-unit planting machines are used, the cutting surfaces must be disinfected thoroughly with a continual disinfectant spray (formaldehyde 1 pint/15 gallons).

6. Cultivation

A. Objectives of cultivations:

1. To destroy weeds.

2. To keep soil surface loose to aid water intake, aeration, and to prevent clods at digging time if the season is dry.

B. Procedure:

1. Blind cultivation (deep) particularly if soil was packed excessively in planting.

2. Use spring tooth weeder or rotary hoe until plants are well established.

3. Row cultivation should be shallow -- especially close to the plants -- to avoid cutting roots.

4. On dryland, throw up wide ridge several inches high during mid-September to provide additional protection for tubers against field frost and sun-greening.

C. To date there is not enough known regarding herbicides and their uses on potatoes in western Nebraska. Chemicals which have given good results in recent tests are:

1. Pre-emergence: Eptam, Dacthal, Dymid

2. Post-emergence: Eptam

None of these chemicals will control emerged weeds.

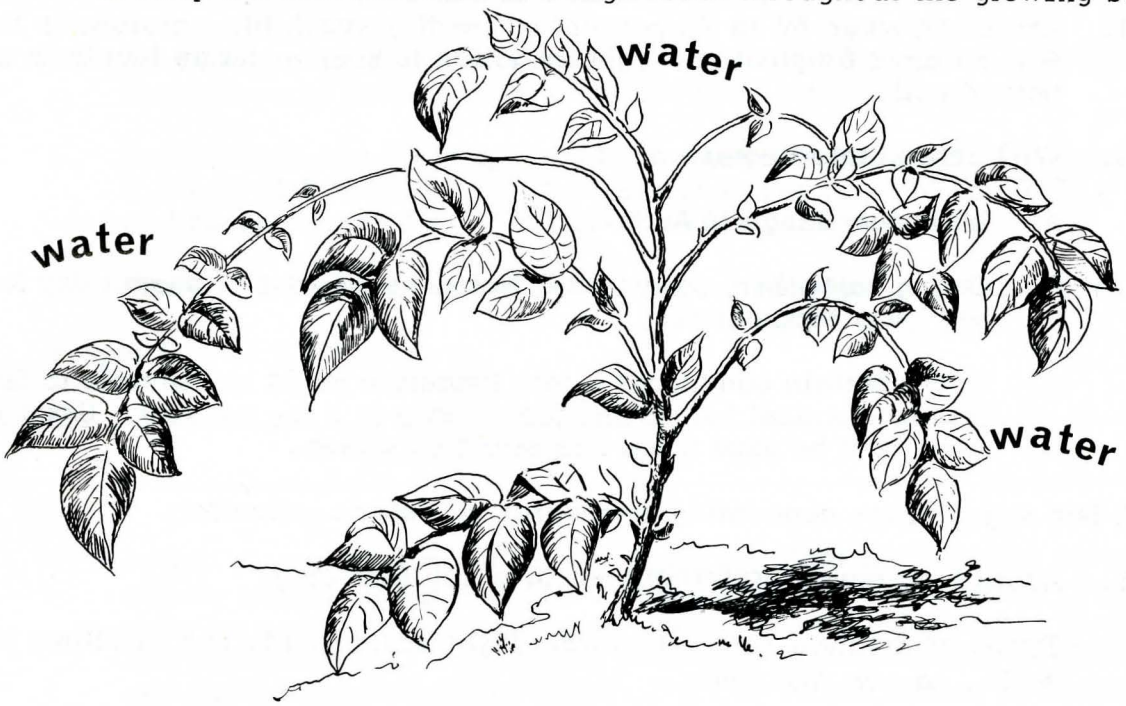
3. For established weeds: Weed burning using plant shields and vine lifters if needed.

7. Irrigation and Fertilizer Application

DON'T HAVE THE POTATOES TELL YOU WHEN TO IRRIGATE

A. Irrigate whenever necessary to keep crop growing.

1. Get started right, fill the soil profile with moisture before planting. Plan to keep the soil moisture at a high level throughout the growing season.



2. Late fall irrigation on the field that potatoes will be planted in next spring will furnish moisture for next year's potatoes and will improve the physical condition of the soil by freezing and thawing. This should not be done on water-logged soils or soils that have a shallow clay pan.

3. Potatoes require adequate moisture from planting until at least two to three weeks before harvest. The higher moisture level will aid in improving quality. Tensiometers are good tools for telling when to irrigate.

4. If the amount of irrigation water is limited, use enough water early to prevent serious checking of vine growth but use most water later -- at tuber development time. Depends on variety of potato but about 45 days.

5. Avoid a water-logged soil. It causes swollen lenticels and favors pink rot and other tuber rotting organisms in some varieties.

6. Unless weather is very hot and dry, do not irrigate within 2 to 3 weeks of harvest and then only to prevent severe soil drying.

7. If late blight appears in the field late in the season, irrigate only during bright, dry warm weather, or following fungicide applications and never in the evenings.

B. Principles of water economy with potatoes:

1. Potatoes use 22 to 24 inches of water per crop.

2. Depth of removal of water by irrigated potatoes: 57 percent from top foot of soil, 24 percent from second foot of soil, 13 percent from third foot of soil or below.

3. Within range of potato roots most soils store 5 to 7 inches of available water, but only about half of this or 3 to 4 inches is readily removed by plants.

4. Irrigation when 60 to 70 percent of readily available moisture is left in soil requires frequent and light irrigation to keep moisture levels in upper part of soil.

5. With late planted potatoes:

   a. Maximum usage in August.

   b. During September, daily usage decreases because of shorter day length and lower temperatures.

   c. Under certain conditions a late irrigation might be feasible to facilitate mechanical harvesting (especially in a dry season). Good judgment must be used when this situation arises.

C. A few suggestions concerning mechanics of water application:

1. Avoid long rows, preferably not over 500 feet long.

2. Types of ditches between rows: light soils, wide and shallow; heavy soils, narrow and deep.

3. Size of furrow stream should be as large as possible without any appreciable erosion occuring.

Approximate Days Between Irrigations

Sandy soil:	$\frac{.75 \times 3 \times .40}{.25}$ = 3 to 4 days
Sand loam:	$\frac{1 \times 3 \times .40}{.25}$ = 5 days
Medium texture:	$\frac{2 \times 3 \times .40}{.25}$ = 10 days
Clay soil:	$\frac{2.5 \times 3 \times .40}{.25}$ = 12 days
Example:	$\frac{\overset{(1)}{.75} \times \overset{(2)}{3} \times \overset{(3)}{.40}}{\underset{(4)}{.25}}$ + 3 to 4 days

(1) Amount of water a foot of soil will hold.

(2) Depth in feet that you wish water to penetrate.

(3) Amount of moisture that has been used at time of irrigation.

(4) The inches of water a plant uses per day under normal conditions.

4. Siphon tubes, gated pipe and other devices for distribution of water down the furrow are the most common methods used.

5. Packed rows will require a smaller furrow stream than the soft rows to get water down to lower end in about the same amount of time.

6. Daily water use by large plants increases with daytime temperature as follows: 70 to 80°F. = 0.1-0.2 inches per day; 80 to 90°F. = 0.2-0.3 inches per day; 90 to 100°F. = 0.3-0.4 inches per day.

7. There is a rapid decrease in the amount of water used as plants mature.

D. Proper Use of Fertilizer:

DON'T GUESS: SOIL TEST

1. Potato plants require an ample supply of plant nutrients to insure rapid, steady growth and proper tuber development. The fertility requirements must be met at the beginning of growth. The fertilizer can be broadcast and plowed down. Part of the fertilizer can be banded at planting time and the balance when the plants are four to six inches in height, which is a preferred practice.

2. Fertilizers should be applied according to recommendations derived from soil tests and cropping history (consult your County Extension Agent for sampling boxes and sampling procedure information).

3. General recommendations:

   a. 80# to 100# available phosphorus per acre following alfalfa or sweet clover; 40# to 80# available phosphorus after corn, beets, etc.

   b. A good legume crop preceding potatoes generally supplies nitrogen needs; excessive nitrogen results in immature potatoes. Apply 0 to 40# after a legume crop; 80# to 100# after corn, beets, etc.

   c. Generally, soils in Nebraska contain sufficient potassium to supply the needs of potatoes.

4. Nitrogen fertilizer can be applied in the irrigation water. This practice is especially important when the potato crop has been hailed. Apply 8-10 pounds nitrogen immediately after the crop has been hailed to activate regrowth.

5. Excess nitrogen can reduce the specific gravity and dry matter of the tubers because plants remain green longer and tubers do not mature. Care must be taken in nitrogen applications when processing potatoes are being grown.

8. Control of Insects and Diseases

The potato is attacked by many kinds of insect pests. The production of a marketable crop depends, largely, on the development of healthy plants that are not injured by these pests or by the diseases they transmit. Any method of controlling insects and keeping the plants healthy and free from injury helps improve both the size and quality of the tubers.

SPRAY FOR INSECTS AND DISEASE PROPERLY, THOROUGHLY AND TIMELY (SEE E. C. 65 1591)

A. Potato insect pests:

1. Potato psyllid: Psyllids cause the "psyllid yellows" of potatoes by injecting a toxic substance into the foliage while feeding. The condition prevents or retards the growth of the tubers. Control: Spray with either 2 quarts of DDT, 2 quarts Thiodan, or 1 pint of Endrin per acre. On early potatoes, begin spray measures when the plants are 6 inches high and repeat every 10 to 14 days. On dryland potatoes, spray when the plants are 6 inches high, then repeat if and when necessary. On irrigated potatoes, begin spray measures when the plants are 6 inches high and repeat in 14 days. Later applications can be made if the situation warrants. Excellent 70 day control can be had by using one of the systemic insecticides at the time of planting (Thimet or Di-Syston).

2. Tuber flea beetle: The larvae of these insects cause "worm tracks" on the potato tubers and slivers into the tuber. The adults eat small holes in the leaves. Control: For soil WNOG treatment, use Thimet or Di-Syston (25 lbs./acre) or Diazinon (20 lbs./acre). If the soil treatment is not applied at planting, a foliage treatment may be made by using either 2 quarts of DDT, 2 quarts of Thiodan, 2 pounds of 50% Sevin wettable powder of 1 pint of Endrin per acre.

3. Aphids: The diseases that aphids transmit to potatoes are more serious than the direct feeding on the foliage. Aphids transmit such diseases as leaf roll, mild mosaic, and spindle tuber. Populations in this area are rarely very high, but control in some cases may be necessary, particularly on seed plots. Control: If systemic insecticide is not used spray with either 2 quarts of DDT, 2 quarts Thiodan, or 1 pint of Endrin per acre.

4. Grasshoppers: Often, grasshoppers damage potato fields because of their part in spreading spindle tuber or by defoliation of plants. Control: Spray early while the grasshoppers are small in borders with either 2/3 pint of Dieldrin, 1/2 pint of Aldrin, or 1 pint of Endrin per acre.

5. Potato leafhopper: Potato leafhoppers are about 1/8 inch long and pale green in color. They inject a toxic substance into the leaves while feeding, causing the disease known as "hopperburn." In some years they have caused severe damage in Eastern and Central Nebraska, but rarely occur in abundance in Western Nebraska. Other leafhoppers which cause damage to the potato crop because of disease they transmit, are the clover leaf-

hopper and the six-spotted leafhopper which spread yellow dwarf, and aster yellows or purple top. Control: Where systemic insecticides are not used, spray with either 2 quarts Thiodan, 1 pint of Endrin or 2 quarts of DDT per acre.

6. Wireworms: These are the larvae of click beetles which feed on the roots and seed pieces of many crops. On potatoes they chew deep pits or holes in the tubers which in turn lowers the grade. Before planting, the soil should be examined to determine if wireworms are present. Control: Use Thimet of Di-Syston (25 lbs./acre) or Diazinon (20 lbs. per acre) as soil treatments.

7. Colorado potato beetle: Both the adults and larvae are very destructive to the foliage when they are numerous. They are a more serious problem in eastern and central Nebraska than western Nebraska. Control: Spray with either 2 quarts of DDT, 2 quarts of Thiodan, or 1 pint of Endrin per acre.

READ THE LABEL

B. Diseases controlled by spraying are early and late blight.

1. Time of application: Spray when notified through public late blight warning service. Those who wish to carry out a routine spray schedule should make first application when plants are 6 to 8 inches high and repeat every 7 to 14 days. If weather becomes favorable for late blight development, it will be necessary to spray every 5 to 7 days. Spray for early blight control when lesions are first noticed.

2. Method of application: Use high pressure spray (300 lbs. or greater) to get material onto undersides of bottom leaves. Vine lifters should be used if necessary.

3. Suggested materials and rates:

Fungicide	Suggested Rate
Maneb	1 1/2# of 80% material/100 gal. of water, 100-150 gals./acre
Zineb	2# of 65% material/100 gal. of water, 100-150 gals./acre
Nabam + Zinc Sulfate	2 quarts of 19% nabam + 1# zinc sulfate/100 gals./acre
Bordeaux Mixture	8# copper sulfate + 8# hydrated lime in 100 gals. of water
Fixed Copper	Follow manufacturer's directions
Polyram 80W	1 1/2 to 2 pounds/100 gals. water/acre (Start when plants are 6" to 8" high. Apply at 5 to 10 day intervals)

C. Equipment and methods:

1. Power sprayer -- 300 to 400 pounds pressure, three nozzles per row.

2. Thorough coverage -- especially undersides of leaves.

3. Dust cannot be used for late blight control.

4. Do not waste materials or labor by unnecessary spraying or dusting, use of wrong materials or improper mixtures, careless manner of application, or applying materials at improper time. Read the Label.

9. Harvesting and Handling Methods

ROUGH HANDLING POTATOES IS A LUXURY! CAN YOU AFFORD IT??

A. Mechanical injury is a major problem at harvest time:

1. Bruises, cracks and scuff damage range from as little as 3 percent to as high as 80 percent with various growers and varieties.

2. Economic significance. Reduction of this damage by 10 percent would increase No. 1 grade potatoes 300,000 or more sacks per year.

DON'T LET POOR HARVESTING AND POOR HANDLING SPOIL A GOOD CROP

3. Reasons why potatoes "harvest crack":

a. Pressure within tubers increases greatly with increased water absorption. This occurs with a sudden decrease in water loss from leaves.

b. Tubers may also develop higher pressures by absorbing moisture directly through skin if soil is very wet, the result of late irrigations or rain.

c. With increased pressure, tubers crack very readily if subjected to even slight mechanical shock or injury. Varieties differ in susceptibility to "harvesting cracking."

B. Preventing of most mechanical injury is possible by use of proven methods and intelligent organization.

1. The following practices will help reduce mechanical injury:

a. Cutting roots 1 to 3 days before digging reduces supply of water to tubers. When rains saturate the soil, much of the benefit of root cutting may be lost.

b. Proper construction, adjustment and operation of digger or mechanical harvester.

c. Care in picking with proper equipment (hand or mechanical).

d. Care in hauling to and in filling storage.

e. Removing and killing vines helps mainly in simplifying digging. Potatoes dug soon after vines are killed may crack more because no more water is lost through tops. Less cracking may result if vine killing is done a week or 10 days before digging to allow roots to die. However, kill vines by beating just ahead of digging chipping or processing potatoes.

CAREFUL HANDLING OF POTATOES MINIMIZES BLACKSPOT DEVELOPMENT

2. Mechanical Harvesting:

a. Mechanical harvesting offers the best possible solution to the dwindling supply and high cost of labor. In past years many growers have successfully harvested their crops mechanically. These farmers operated with a substantially smaller labor group (8 average) than was previously required with hand picking methods (25 to 30). In many cases the savings in labor more than offset the added fixed costs of the mechanical harvesting machinery, thus decreasing harvest cost.

HARVEST AND HANDLE POTATOES WITH CARE.
THE DIFFERENCE HELPS "PAY" DIGGING EXPENSES

b. In addition to possible savings on harvesting and labor costs, mechanical harvesting offers the following advantages:

--Utilization of workers who are not physically able to stoop and lift.

--Ability to work 24 hours per day, if necessary, to decrease harvesting time.

--More consistent and closer control of factors that result in injuring potatoes.

--Reduced labor management problems associated with hiring, housing and supervision of migrant workers.

3. Danger of spreading ring rot and late blight at harvest:

a. If ring rot is known to be present in a field of potatoes, harvest that field last. After harvest, carefully disinfect all machinery and equipment that has come in contact with diseased lots.

b. When late blight is present before harvesting, destroy the tops by spraying with a vine-killing chemical such as copper sulfate (30#/100 gal. water applied at the rate of 140 gal./acre) or sodium arsenite (1 gal. of 23.5 percent material in 100 gal. water applied at the rate of 140 gal./acre). Use a rotobeater to mechanically kill vines or delay harvesting until the foliage is dead as a result of maturity or by frost.

10. Potato Storage

No attempt is made in this circular to thoroughly discuss storage. The following are some recommended principles.*

A. To accomplish effective wound healing and reduce weight losses: maintain high humidity and do not try to cool cellars below 55-60° F. during first two weeks, then cool to 36° to 40° as quickly as possible; 50°F. for processing potatoes.

B. Provide for temperature control by forced air circulation around not through potatoes in relatively tight bins. It may be necessary to force air through processing potatoes. (If construction or rebuilding is contemplated, communicate with the Department of Horticulture and Forestry about principles to be considered.)

C. In storing seed potatoes for southern planting in December to early February continual storage at 50°F. or a period of warm storage (2 to 4 weeks) at 60°F., prior to shipment appears to be desirable to induce prompt emergence and uniform growth in the South.

D. Disinfection of all cellars before storing is essential if ring rot is to be controlled. For bins and runways, use hyamine compounds or copper sulfate spray (1 lb. in 10 gal. of water.) For machinery use hyamine compounds or formaldehyde (1 pint in 10 gallons of water).

E. If potatoes are to be used for chipping, have available some method of storing potatoes at 50°F. It is necessary to have little or no sprout growth, no accumulation of sugars, and a minimum loss of weight. Chemicals are available which will retard sprout growth and permit the storage of potatoes at this temperature. These are: (1) maleic hydrazide (MH_{30}) applied to the vines at the rate of one gallon per acre, four to six weeks before harvest, (2) Chloro-IPC applied as a vapor to potatoes in storage (one gram/cwt. of potatoes) and (3) Fusarex applied as a dust.

*Recommendations given in this section are for potatoes from fields free of late blight, pink rot or bacterial ring rot. If these diseases are present, storage should be cooled as quickly as possible, and air should be forced through the piles of tubers (not in tight partitions or flues). Although dry-rot will be favored with such management it may prevent disastrous losses because of other diseases. When these diseases have been very serious, it may be advisable to sell and ship directly out of the field and consideration of long time storage may be very inadvisable.

PLANT GOOD POTATOES, HARVEST GOOD POTATOES, SELL GOOD POTATOES, IT PAYS!