

## Planting

One of the best ways to find out how potatoes are produced is to follow one field from the early spring, just before the potatoes are planted, until they are harvested in the fall. This information is based on *Growing Potatoes in Dufferin County, Ontario*, and has been used with permission and modifications.



### Planting Potatoes

Here is what the field looks like on **May 17**. This farmer probably grew a cover crop such as wheat on the field last year. After the wheat crop was harvested the farmer tilled the field with either a disc or cultivator and planted a rye cover crop. This practice of crop rotation is used in all potato growing areas. The crops that are used in the rotation vary depending on other crops grown in the area. Grain crops such

as wheat and corn, and vegetable crops are some of the most common crops rotated with potatoes.

Once the soil has dried, the farmer prepares the land for potato planting. The former crop is broken up and incorporated into the earth using a disc. Because potatoes must be planted deep in the soil, a moldboard plow or chisel plow may be used to dig down and loosen the ground to a depth of about 8", or this operation may be done with field cultivators and discs.

### April 23

Several weeks before planting the farmer must prepare his seed potatoes for the planter.

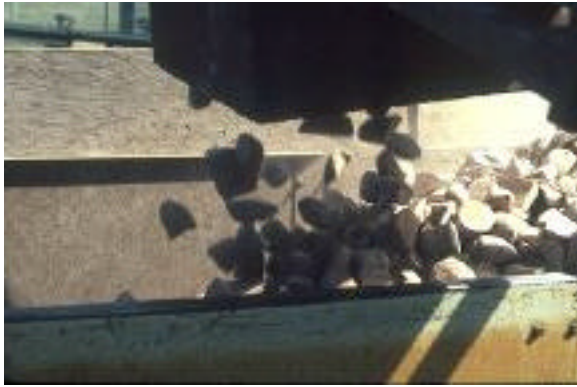


Each seed potato must be inspected by hand to ensure quality. They are then cut according to size and loaded onto trucks that will take them to the planter in the field.



Rollers force potatoes through knives so that they may be cut into sections.

Each section should have a growing point, sometimes referred to as the "eye" of a potato.



The cut potato seed is transferred from the truck to the planter. The potato plant requires fertilizer to grow so the farmer also places fertilizer in the planter. This will be placed to the side and just below the rows of potato seeds.

## May 20

The potato planter places the potatoes in an opening that it makes in the ground that places the seed pieces about six inches deep and ten inches apart in the row. The picture shows you how the planter forms the "hills" where the new potato plants will grow.



Farmers hill potatoes because the potato tuber sometimes forms very close to the soil's surface. If these potato tubers are exposed to the light, they will turn green and not be suitable for eating.



## Growing

It is now the first week of July and the potato plants are growing well.

Farmers use herbicides to control weed growth in the potato fields but they also cultivate the spaces between the rows. The teeth of the cultivator rip the weed roots out of the ground leaving these plants to dry out and die in the hot summer's sun. The cultivator also piles soil up against the potato rows forming a hill. This is done because, the potato tubers that form on the roots and become the new potatoes we eat, grow very close to the soil surface. If these new potatoes are exposed to sunlight, they will turn green and not be suitable for eating.

## July 1

Here is one of the real pests that potato farms must control - the Colorado Potato Beetle. Can you spot the eggs of this beetle in the picture below? Farmers have no choice but to kill these insects. Left unchecked in a potato field, Colorado Potato Beetles would soon damage all of the plants and the crop would be lost. Insecticides are used to control these beetles but farmers are constantly looking for other methods of control. Large vacuum

cleaners have been tried that suck the beetles from the plants but there were some problems with damage to the potato plants by the machine.



Each year, potato crops are threatened by the Colorado potato beetle, which is considered the most destructive potato pest worldwide. The U.S. Department of Agriculture estimates that potato growers spend \$75 to \$100 million annually to control the beetle. Over the years, hundreds of compounds have been used to combat the beetle with

varying results. Regardless of the pesticide used, the beetle consistently develops resistance.

Another method is a plastic lined ditch. This ditch surrounds the field and traps the incoming potato beetles- they are unable to climb out on the slippery sides. The advantage here is that the insects can be eaten by other animals without passing chemical residues down the food chain. Farmers are always trying new methods of control because the chemical sprays are very expensive. Potato plants have been genetically engineered to resist the Colorado Potato Beetle. This form of crop protection could provide an environmentally sound alternative to chemical control products.



It is now the first week in August and the potato plants are starting to flower. Perhaps you have seen fields that look like this. Now you know that these plants are potatoes.



## Harvesting

It is now September 19 and harvesting has begun.

Potatoes are one of the last crops to be harvested in the fall and sometimes the growers have to work in wet and cold conditions.



Here we see a potato windrower in action.

This machine has a big shovel on the front that digs down below the potato tubers and lifts them to the surface and cleans the soil and vines making a long row of potatoes. When growers put crops in rows they call them windrows. Of course, along with the potatoes come stones, clods of earth and plant stems that have to be separated.

This diagram shows how the machine separates the potatoes from the dirt, stones and plant material. The rods are connected to a flexible chain. This forms a table much like a snowmobile track only with spaces between the rods where everything but the potatoes falls through. The windrower digs the potatoes out of the ground and places them in a windrow to speed up the harvesting of the potatoes.



Here we see the windrow of potatoes placed on top of the ground for the harvester.

The harvester is much like the windrower in that it can also dig the potatoes out of the ground. It may dig several rows where the windrower deposits the rows it has dug. This machine has many more chain tables to make certain that only the potatoes are collected to be transferred to the truck. No machine can do a perfect job so there is room on some harvestors for people to clean out any foreign materials and cull potatoes before they are transferred to the truck.

Harvesters used in Montcalm County have airheads which are large powerful fans designed to float potatoes on a short bed of air which allows the many stones that the harvester picks up to drop onto a conveyor chain. The chain deposits them in a large stone box which drops them in piles which are picked up and taken off the field. With all this large machinery and their many moving parts, potato harvesting can be a very dangerous job. It is very important to stay well away from any equipment that is in operation if you plan to visit a potato field during the harvest.

If you look at the end of the arrow you will see the row of dug potatoes.

Some potato growers sell their potatoes soon after they are harvested but many place their crop in storage. These potato storages are large buildings with insulated walls. It is important that the harvested potatoes neither get too hot nor too cold. The best

temperature range to store potatoes depends on the variety of potato and their final use. Potatoes that you buy in the grocery store are best kept at 40-45 degrees F. When potatoes are grown and sold to make french fries it is very important that the temperature does not go below 45 degrees F. When this happens, the fries will be dark in color after frying. Farmers choose to store their potatoes because there is usually a price increase



during the winter. They may get more for their product later in the year if they have a price contract. Also, sometimes potatoes will not store well because of poor weather conditions or problems within the pile of potatoes. We have all heard of the one bad apple destroying the basket. The same is true for potatoes only this time the basket is much larger. Potatoes will also lose water, called shrink, during the winter storage period. This shrink causes a loss of as much as 10% of their original weight.

## Potato Farming -- A Large Financial Investment

**Production costs** The total input costs to grow and harvest one acre of potatoes ranges from \$1,200 to \$2,000 per acre which includes labor, equipment depreciation and land cost or rental. The wide range in these costs depends on the differing circumstances of each farm. For instance, equipment and/or land may be leased or owned outright.

The major expenses, apart from labor, machinery depreciation and land cost or rental are:

**Seed potato costs** = \$200 to \$300 per acre. (Approx. 2,000 pounds of seed potatoes are planted on each acre).

**Fertilizer** = \$150 to \$200 per acre.

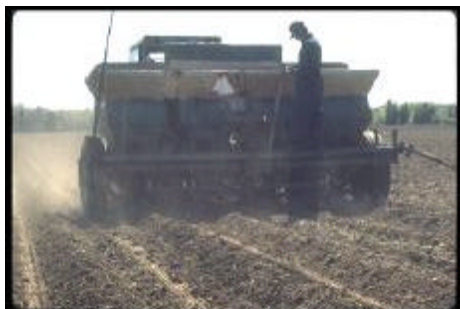
**Chemicals** = \$250 to \$350 per acre.

### Yield

Each acre of potatoes can yield from 25,000 to 35,000 pounds of potatoes per acre. Many years ago, before all the machines you see on this page were used, all potatoes used to be bagged in the field in 100 pound bags. Potato yields are still described in hundred weights (cwt's). Aren't you fortunate not to have to lift 100 pound bags of potatoes all day!

### Equipment

#### Potato Planter



---Cost = \$30,000 to \$50,000

#### Windrower



---Cost = \$25,000 to \$60,000

## Harvestor



---Cost = \$45,000 to \$125,000

## Tractors

The tractors you see pictured above have a horsepower of between 100 and 125 horsepower.

As a rough estimate, you can expect to pay \$1,000 for each horsepower -

100 hp cost = \$100,000

We hope after reading these pages you have a better understanding in what is involved in producing a nutritious food for your table.