



## Potato Production Guide

### Introduction

Potatoes (*Solanum tuberosum* L) are a popular staples food for most Canadians. Potato by-products are important due to their high nutritional value and variety of uses. In 2016, Gameti community garden yielded more than 3,000 pounds of vegetables, chicken, turkey and pigs.

Potato can be made into chips, fries, and flour. They are fat free, cholesterol free, and on-their-own, are low in calories. A potato is also an antioxidant. Vitamins in potatoes are located just below its skin.

### Nutritional Value

Per 100 grams of edible portion of potato contains

Properties	Amount
- Water (g)	79.9
- Energy (kcal)	78.0
- Protein (g)	2.4
- Carbohydrates (g)	16.8
- Calcium (mg)	36.0
- Phosphorus (mg)	49.0
- Iron (mg)	1.1
- Thiamine (mg)	0.12
- Riboflavin (mg)	0.06
- Niacin (mg)	2.2
- Ascorbic acid (mg)	31.0

Source: Department of Agriculture, GNWT

### Production Management

#### Varieties

Most commonly grown varieties of potatoes are Red Pontiac, Norland, Yukon Gold, and red Russet. While the best processing varieties are Alta Russet, Kennebec, and Red Russet.

#### Planting Materials

A potato is cultivated by planting tubers. Purity of the cultivars and healthy seed tubers are the primary requirements for a successful crop. The tuber seeds should be disease free, well sprouted, 30g-40g each in weight, and at the right physiological age (2-3 months from harvest). Seed requirement per acre is

1,000 kg to 1,500 kg.

### **Soil and Climate Requirement**

A potato can be grown in almost any type of soil except saline and alkaline soils. The most preferred are loose soils, which offer least resistance to the enlargement of the tubers. Loamy and sandy loam soils high in organic matter with good drainage and aeration are most suitable for cultivation. The soil pH range of 5.2 to 6.4 is ideal. Potatoes grow best in moderately cool temperature during the growing season. The vegetative growth of the plant is best at temperature of 20°C to 24\* C while tuber development is favored at 20\* C. May to June are the best planting time at Gameti.

### **Land preparation**

Plowing and harrowing twice to obtain a friable soil is the best preparation for tuber development of potato plant. In acidic soils, apply lime 30 days before planting.

### **Planting and fertilization**

Planting can be done using the single-row and the double-row method. For flat areas, set furrows 75cm apart and holes 30cm apart along the furrow for single-row method while for sloping areas prepare 1 meter wide raised beds 50 cm apart and established 2 rows within the bed spaced 30 cm apart. The distance between holes along the furrow is 30 cm. For both planting methods, the total plant population per acre is 40,000. Apply organic fertilizer in holes, add chicken/sheep manure, and cover with a thin layer of soil. Place the tuber over the thin layer of soil and cover with 5 cm thick soil.

### **Watering/Irrigating**

Watering/irrigating is very important as potatoes have a shallow and sparse root system. Initial light watering or irrigation is appropriate at 5-7 days after planting. Subsequent watering is given at 7-15 days interval depending upon the climate condition and soil type.

### **Weeding and Hilling up**

Weeds must be controlled about 4 weeks after planting for the crop to gain competitive advantage. This can be done through weeding, hilling up, and side dressing simultaneously one month after planting. Subsequent weeding can be done sparingly depending on weed population.

### **Pest and Disease Management**

Potato major pests: cutworms, thrips, aphids, mites, leafminers, and tuber moth. Natural control is to encourage the presence of braconids, and predaceous ground beetles.

## Control Measures

### Pests

- Cutworms and thrips – spray with soap solution (4 tbsp soap/16l water)
- Aphids and mites – spray with hot pepper or soap solution,
- Leaf miners – intercrop with beans, onions, or other vegetables and maintain low weed population along alleys, and
- Tuber moth – hill up adequately to cover the tubers.

### Diseases

- Leaf blight – apply with compost tea or ground coffee. To prepare compost tea, soak ½ sack of 15 kg of mature compost tea leaves in ¾ drum (200 L capacity) of water for 5-7 days. Dilute the tea to 20 parts water and spray on the plants.
- Bacterial wilt – use clean planting materials. Plant potato in well drained soils. Practice crop rotation.
- Viruses – rogue infected plants. Control aphids which are insect vectors of viruses.

## Harvesting

Harvest at full maturity for longer storability. Potato mature at 75 days to 90 days after planting or when 80% of the leaves of the total plant population become yellow. Harvesting is done by manual digging of the tubers using a spading fork or any pointed instruments. Do not expose tubers in sunlight to prevent greening.

## Grading

Classify potatoes according to size on diameter and weight as follows:

Size	Diameter (cm)	Weight (g)
Large	7.5 and above	301 and above
Medium	4.0 to 7.4	181 to 300
Small	3.0 to 3.9	90 to 180

Source: Department of Agriculture, GNWT

## Cost and return Analysis per Acre

A. Operating Costs	Cost / Acre
- Seed & cutting	\$2,500.00
- Organic fertilizer (Chicken/Sheep Dung)	\$1,750.00
- Fuel cost - Field	\$56.00
- Trucking costs	\$185.00
- Irrigation fuel	\$85.00
- Maintenance & repairs	\$450.00
- Hired labour	\$780.00

- Insurance	\$120.00
- Utilities	\$250.00
- Other costs	\$210.00
Subtotal Operating costs	\$6,386.00
- Interest on Operating	\$75.00
<b>Total Operating Costs</b>	<b>\$6,461.00</b>
<b>B. Fixed Costs</b>	
- Own land cost	\$138.00
- Depreciation	\$689.00
- Investment	\$315.00
<b>Total fixed Costs</b>	<b>\$1,142.00</b>
<b>C. Labour</b>	
- Contractual	\$1,226.00
<b>Total Cost of Production</b>	<b>\$8,829.00</b>

#### Profitability & Breakeven Analysis

<b>Estimated Farmgate</b>	
- Price \$ per pound	\$0.79
- Gross Yield per acre (pound)	18,000
- Marketable Yield per acre (pound)	15,000
- Gross Revenue per acre	\$11,850.00
<b>Marginal Returns</b>	
- Over Operating Costs	\$5,389.00
- Over Total Costs (Net Profit)	\$3,021.00
- Operating Expense Ratio	73.2%
<b>Breakeven Price per unit</b>	
- Operating cost per pound	\$0.43
- Total Cost per pound	\$0.59

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