REPUBLIC OF KENYA

KALRO
Kenya Agricultural & Livestock Research Organization

NAVCDP
National Agricultural Value Chain Development Project
*Transitioning from Subsistence to Commercial Farming*

# Ware Potato Production

## Introduction

Potato (*Solanum tuberosum* L.) belongs to the family Solanaceae. It is an important staple and cash crop in Kenya. Ware potato are grown for consumption as opposed to seed potato. The commonly grown varieties include Shangi, Kenya karibu and Dutch robyjn. Optimal altitude for ware potato production is 1500 to 3000 m. The main growing areas are Nyandarua, Nakuru, Narok, Kiambu, Elgeyo Marakwet, Nyeri, Meru, Bomet, Bungoma (Mt Elgon area), Uasin Gishu, Taita Taveta, Muranga, Trans Nzoia and West Pokot. Ware potato can be boiled, fried, mashed or made into crisps or chips. They can also be eaten in stews or in mixed foods such as maize and beans.

## Site selection and land preparation

- Select a site where Solanaceae family crops including tomato, chillies, eggplant among others have not been grown for at least two seasons (one year). This is important to control soil borne diseases.
- Avoid poorly drained or rocky soils
- Plough the land thoroughly to remove weeds
- Soil should be well broken to allow aeration
- Make planting furrows 75 cm apart and 10-15 cm deep

## Seed size and sprouting

- Use disease-free or certified seed tubers
- One acre will require approximately 16-18 seed size bags of 50 kg seed tubers depending on seed size
- Seed tubers should measure 25-35mm in diameter with 4-5 sprouts each

- Seed tubers are kept in diffuse light conditions during sprouting so as to allow short strong sprouts to grow
- Good sprouting of tubers ensures early emergence leading to higher yields

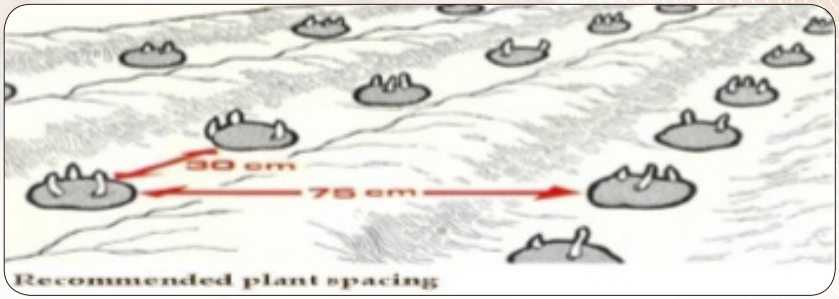
## Fertilizers and manure

- Apply DAP fertilizer in the rows at planting at the rate of 500 kg/ha (or 200 kg/acre)
- On acidic soils, apply Monoammonium Phosphate (MAP) at the same rate as DAP
- Take half litre container and fill it with the fertilizer and apply uniformly
- Fertilizer is applied in the rows and mixed thoroughly in the soil
- Apply well decomposed manure at the rate of 5-10 t/ha. Well rotten manure helps to prevent the occurrence of black scurf (*Rhizoctonia solani)* fungal disease

Soil analysis is recommended to determine the soil pH and nutrient status to provide a guide for fertilizer and manure requirement. This service is available at KALRO-Kabete (NARL) and a number of other KALRO centers.

## Planting and spacing

- For pure stand potato the spacing of 75 cm between furrows is recommeded.
- Place tubers 30 cm apart in the furrows
- Avoid direct contact of tubers with fertilizer as this may have a burning effect on the tubers




*Recommended plant spacing*

- Planting should be done shortly before onset of rains
- Place tubers in furrows with the side having sprouts facing up
- Cover the tubers with soil completely to avoid sun scorching

## Weeding and ridging

- Weeding should commence after potatoes have germinated to avoid uprooting seed tubers
- Earth-up along the rows as the potato grow eventually forming ridges of about 25 cm in height
- After the plants have completely covered the space between the rows, no more weeding or ridging should be done to avoid damaging the stems (haulms)
- Avoid working in the crop when the soil is too wet to minimize soil compaction and spread of fungal diseases like late blight

## Diseases and Pests

### Late blight

This is the most serious fungal disease of potato in Kenya. It first appears as water soaked spots on leaflets. The spots enlarge rapidly and turn brown. The spots can also occur on the tips of the stems which turn black and die off. On the underside of the leaf, the fungus produces a white mould.

*Symptoms of late blight on leaves and stem*

**Control:** A number of effective fungicides are available on the market. Farmers are advised to consult the nearest extension officer for advice. Start spraying when the plants are 10cm tall. Spraying should be carried out as a preventive measure especially on susceptible varieties. For varieties with some resistance, spraying should commence when the first spots are noticed on the crop. Ensure thorough coverage of foliage.

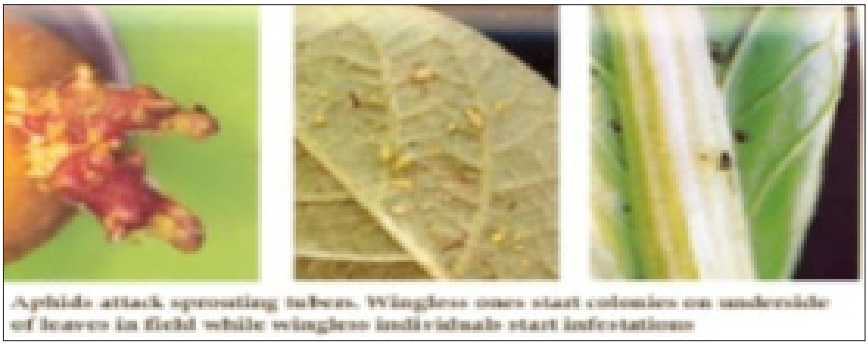
### Bacterial wilt

This is a serious soil and seed borne disease caused by a bacterium (*Ralstonia solanacearum*). It persists in the soil for long periods, sometimes up to 4 years or longer. Spread is mainly through infected soil, infected potato tubers, farm tools and contaminated irrigation water. Leaves or branches of infected plants wilt randomly in the field. Leaves maintain a green colour and do not fall off but the plant wilts completely.

**Control:** No chemical cure is available once the disease has infected a crop. A combination of practices can reduce the destructive effects of bacterial wilt. Avoid fields with previous incidents of bacterial wilt. Use uninfected seed tubers by obtaining planting materials from a reputable source. Carry out crop rotation and field sanitation including sterilization of farm tools.

## Aphids

An insect that sucks sap from plants and transmit viral diseases like potato leaf roll virus.



*Aphids attack sprouting tubers. Wingless ones start colonies on underside of leaves in field*

***Control:*** Aphids can be controlled by both systemic and contact insecticides .

## Potato tuber moth

This is both a field and storage pest. In the field, the larvae mines the leaves, feeding between the upper and lower epidermis. The main damage is caused by larvae tunneling the tubers and leaving tunnels filled with excreta. This damage is mainly noticed in the store and can cause the tubers to rot.

**Control:** Field management is done through proper earthing up in the field to ensure that tubers are not exposed to tuber moth attack. Spray with suitable insecticides as advised by extension personnel.

as soon as infestation is observed in the field. Cleaning stores is recommended as a cultural practice.

## Harvesting

High and quality yields are obtained by leaving potato in the ground until they mature and the skin has hardened. Hardening of the skin can be accelerated by cutting the haulms or pulling them out about two weeks before harvesting.

## Yield

Areas at 1500 to 3000 m a.s.l. and with adequate rainfall can yield as much as 40 t/ha depending on variety.

## Grading and storage

Before storing potato,es mis-shapen, diseased and damaged tubers should be removed to avoid losses in storage due to rotting. Potatoes are graded into three sizes depending on the diameter: Large or ware (greater than 55mm), medium (25-55 mm) and smallest or chatts (less than 25 mm). Keep ware tubers in a cool dark well aerated store to prevent greening. Potatoes can be held in sacks for short periods (up to one month) but for longer periods, wooden crates are preferred.

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**Compiled by:** Nyongesa M., Kinyae P., Otieno A.S., Oyoo J., Ng'ang'a N., Onditi J., and Muchui M.

**Editors:** Nyabundi K.W., Maina F.W., Mukundi K.T., Maina P., Wanyama H.N. Mbugua D. and Ekadeli J.

**Design:** Odipo S.N.

**For further information, contact:**

Horticulture Research Institute

P.O. Box 220-01000, Thika

Tel:+240-20-2055038

E-mail: director.hri@kalro.org

or

Centre Director,

KALRO Tigoni,

P. O. Box 338 Limuru,

Mobile: 0727031783

Email: kalro.tigoni@kalro.org

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