SAKATA®
PASSION in Seed

Pluto

F1 Hybrid Butternut Squash

TB REF : PLUTO: 01/04/2024

P.B.R.

OUTSTANDING QUALITIES

- **UNIFORM, MEDIUM SIZED FRUIT**
- **EXCELLENT YIELD POTENTIAL**
- **OUTSTANDING INTERNAL QUALITY AND FLAVOUR**
- **INTERMEDIATE RESISTANCE TO POWDERY MILDEW**
- **INDUSTRY STANDARD**

Pluto F1 hybrid is a *Cucurbita moschata* type butternut with medium sized fruit and excellent fruit quality. Plants are adaptable and vigorous and tend therefore to be less susceptible to diseases. Yield potential is excellent and the fruit is not inclined to crack. Fruit set is excellent and covers a long bearing season. Fruit shape is similar to that of Waltham and the weight is 1 - 2 kg. The firm, deep orange flesh has an excellent flavour and high sugar content. The smooth rind has a tan colour when mature. Mature fruit has an excellent shelf life. **Pluto** is well adapted for cooler season harvests where small to medium fruit are required. The fruit is used as traditional butternut for the fresh market, however, the superior flesh quality makes **Pluto** suitable for processing and export. **Pluto** has intermediate resistance to Powdery mildew (Px) (ex Sf).

SPECIAL VARIETAL REQUIREMENTS

- **Pluto** performs well in cool and warm season plantings, however during cool seasons, fruit size is smaller than during summer
- Fruit size is affected by plant population: The higher the population, the smaller the fruit size. We suggest 12 000 - 15 000 plants per ha

CHARACTERISTIC*	PLUTO
KIND	F1 hybrid squash (*Cucurbita moschata* (Duchesne) Duchesne *ex* Poiret)
TYPE	Butternut squash
MATURITY	85 - 100 days to harvest as mature fruit
SEASON	Widely adapted for warm season production and cool season production in tropical and sub-tropical areas
PLANT TYPE	Full vine
FRUIT SHAPE	Cylindrical, with a bulbous blossom end
RIND COLOUR	Tan
YIELD POTENTIAL	35 - 50 t/ha
MATURE HARVEST MASS	1 - 2 kg (depending on season)
SHELF LIFE (MATURE FRUIT)	Excellent
UNIFORMITY	Very good
POPULATION GUIDE	Final stand of 12 000 - 15 000 plants per ha
DISEASE REACTION (SCIENTIFIC)	**Intermediate resistance:** *Podosphaera xanthii* (ex *Sphaerotheca fuliginea)* Px (ex Sf)
MARKETS / END USE	Export, fresh market and processing
SPECIAL FEATURES	Very uniform, medium-size fruit, superior flesh quality and excellent flavour, excellent yield potential

* Characteristics given are affected by production methods such as soil type, nutrition, planting population, planting date and climatic conditions. Please read disclaimer.

Resistance: is the ability of a plant variety to restrict the growth and development of a specified pest or pathogen and/or the damage they cause when compared to susceptible plant varieties under similar environmental conditions and pest or pathogen pressure. Resistant varieties may exhibit some disease symptoms or damage under heavy pest or pathogen pressure (HR = High resistance, IR = Intermediate resistance).
* Experimental: This variety does not appear on the current South African Variety list, but has been submitted for registration.
Recent version: Kindly contact Sakata or Area Representative for the most recent version of this Technical Bulletin.

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Pluto

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GENERAL TIPS FOR BUTTERNUT PRODUCTION

Soil requirements
Butternuts grow best on well-drained, fertile soil. The plants produce large, shallow root systems very rapidly in the top 20 - 25 cm of soil, which should be prepared into a firm, well-fertilised seedbed. Butternuts do well in soils where 25 - 30 tonnes of well-rotted manure has been applied per hectare. To help avoid soil-borne disease problems, select fields that have not had other vine crops, tomatoes or peppers for at least three years.

Butternuts are moderately sensitive to acidic soils. Good results can be expected over a wide range of pH values extending from 5.5 - 7.5 (H_20). If the soil pH is lower than 5.5, agricultural lime should be applied in accordance with the analytic findings. Agricultural lime should be ploughed in at least four weeks prior to planting season.

Planting time
Butternuts may be planted from early spring to midsummer, or as soon as the danger of frost is over. The decision of planting date depends on the market and environmental conditions. Late summer and autumn plantings can also be done in sub-tropical areas. The size of insect populations and humidity are of particular importance. The insect population (like aphids) increases as the season progresses and accordingly the occurrence of virus diseases.

In the summer rainfall areas, the increase in humidity during summer can lead to serious problems with leaf diseases. These can be avoided to a large extent by planting early. On the other hand, in the winter rainfall areas, early plantings are more susceptible to leaf diseases due to high humidity and low temperatures. Vegetative growth, flowering and fruit set are greatly affected by temperature. Cucurbits are sensitive to frost and are injured at temperatures below 0ºC.

Temperature has an important effect on pollination. This applies especially to the minimum temperature, as pollen will still be released above the optimum temperature but not below the minimum temperature.

The length of the growing season is determined by temperature. This must be kept in mind when plantings are planned. Early plantings are subjected to relatively low soil and air temperatures at the beginning of the growth period, while late plantings are subjected to relatively low night temperatures at the end of their growth period. Under these conditions the period of the crop on the land is extended. The length of the growing season from planting to harvesting is generally 90 to 100 days under optimal growth conditions.

Butternut is a warm season crop and performs best when soil and air temperatures are above 15°C.

Plant spacing guide: Distance between plants in the row.

Between row spacing	Plant population		
	12 000	15 000	18 000
1.0 m	83 cm	66 cm	55 cm
1.6 m	52 cm	42 cm	35 cm

Soil Temperature	Plant response
< 13ºC	No germination
13 - 15ºC	Seed germinates poorly, takes 2 - 3 weeks
>15ºC	Seedling emerge within 7 days
20ºC	Optimal root development

Air Temperature	Plant response
< 0ºC	Plants injured
<13ºC	Almost no growth
18 - 27ºC	Rapid growth

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