



PLANT FACT SHEET

Manihot esculenta Crantz

GENUS *Manihot* FAMILY Euphorbiaceae

COMMON NAMES Cassava, Manioc, Tapioca

EDIBLE PARTS AND USES

Edible parts: Root, Leaves, Flowers, Vegetable

The tubers are eaten after thorough cooking. They are boiled, roasted or made into flour. The starch is used in puddings, soups and dumplings.

Young leaves are edible after cooking. They are also sometimes dried and stored.

Seeds are also eaten.

CAUTION Bitter kinds of cassava contain poison but this is destroyed on heating. This kind of cassava should be cooked, sun dried, soaked and cooked again.

DESCRIPTION

A plant which can re-grow year after year from the thickened roots. It has several stems. The stems are woody and have some branches. Plants grow up to 2 or 3 metres high. Stalks have distinct scars where leaves have fallen. The leaves tend to be near the ends of branches. The leaves are divided like the fingers on a hand. The leaves have long leaf stalks. The leaves have 3-7 long lobes which can be 20 cm long. These are widest about 1/3 of the distance from the tip and taper towards the base. The colour varies. It produces several long tubers. These can be 50 cm long by 10 cm across. The flowers are on short stalks around a central stalk. They are produced near the ends of branches. The female flowers are near the base of the flower stalk and the male flowers higher up.

HABITAT

A tropical plant. Plants grow from sea level up to about 1650 m. In Fiji they grow to 900 m. They can grow in poor soil. They can survive drought. It is native to tropical America. It grows between 25°N and 25°S. It needs a rainfall above 750 mm. It suits hardiness zones 10-12. In Yunnan.

PRODUCTION

Cultivation

Cassava is planted from sections of the stalk. Sections about 15-20 cm long of the more mature woody stem are cut and stuck into the ground. They can be completely buried or put at almost any angle and it affects the growth little. Soon roots form and leaves start to sprout from the stalk. Cassava seeds need a soil temperature of 30°C for their germination. Flower and fruit production is more common under lower temperatures such as in highland or less equatorial conditions.

It is not necessary to dig a hole to plant cassava and on many soils where the soil is loose it can be planted without digging the soil first. Cassava does not suit waterlogged soils and preferably they should not be too shallow or stony.

Cassava can be planted at any time of the year but to get started it needs moisture so is often planted near the beginning of the wet season. The crop once established can survive for several months without rain. The ability to tolerate drought varies significantly with cultivar. During drought less and smaller leaves are produced and leaves die off more quickly but storage roots can be increased in the short term.

Because cassava can still grow satisfactorily in poorer soils it is often put last in a rotation after others crops have already been grown on the piece of land. Cassava is more responsive to nitrogen and potassium than phosphorus under many field situations. Nitrogen can increase cyanide levels. Under very acid conditions with high soluble aluminium levels, cassava has been able to achieve and maintain top growth but with significantly reduce root yields. When drainage is good and soil moisture is adequate, cassava stalks can be planted at any orientation from horizontal to vertical, but in very sandy soils horizontal planting is best and in heavy clay soils vertical planting is best.

Because of the slow growth in early establishment stages, soil loss from erosion with heavy rains can be significant. To avoid this planting should be timed so that the maximum vegetative growth is occurring during the heaviest rains. A leaf area index between 2.5-3.5 is optimal for cassava yield. The critical period for weed control is the time from 2-8 weeks after planting. Cassava tuber bulking is delayed under shaded conditions. Yields are also reduced. In mixed cropping situations using crops which mature early, allowing the cassava time to recover, is one possible strategy. For optimum production shading should be avoided.

Cassava takes about 10 to 12 months to produce mature tubers in the lowlands tropics although some varieties produce a smaller yield earlier. Yields in the range of 20-45 t/ha have been recorded for 12-14 month crops. The plants can be left growing and the tubers stored in the soil for considerable time. Crops of 24 months duration occur. Once the tubers have been dug they do not keep for more than a few days. Pre-harvest pruning of plants increases the storage time of tubers after harvest.

Spacing and plant density varies with soil climatic conditions and variety. Plant densities from 10,000 to 30,000 plants per hectare are used. Plants from the higher density crops have been shown to have quick post harvest deterioration. Mulching has given significant yield increases in some conditions. It also reduces the incidence and damage of some root boring insects.

Harvesting and Seed Production

Plants can be harvested after 10 months in the lowlands. There are some faster growing varieties. Yields in the range of 20-45 t/ha have been recorded for 12-14 month crops.

NOTES

Chemical composition (after Abdelmuti): Protein (crude) = 3.0% (dry). Fat = 1.0% (dry). Fibre (crude) = 4.3% (dry). Ash = 3.3% (dry). Carbohydrate (soluble): Starch = 75.5% (dry). Sucrose = 2.8% (dry). D-glucose = 1.9% (dry). D-fructose = 2.2% (dry). Amino acids (g [16g N]-1): Aspartic acid - 5.0g. Threonine = 2.0g. Serine = 3.0g. Glutamic acid = 10.0g. Proline = 7.3g. Glycine = 2.7g. Alanine = 3.7g. Valine = 3.3g. Cysteine = 0.7g. Methionine = 0.7g. Isoleucine = 2.0g. Leucine = 3.7g. Tyrosine = 1.7g. Phenylalanine = 2.0g. Lysine = 2.7g. Histidine = 2.0g. Arginine = 4.0g.

It possibly has anti-cancer properties.

PICTURES



Credit: Food Plants International (Bruce French)



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