PLANT FACT SHEET

Musa x paradisiaca L.

GENUS *Musa* **FAMILY** Musaceae

COMMON NAMES Banana, Hybrid plantains

EDIBLE PARTS AND USES

Edible parts: Fruit, Flowers, Vegetable, Stalk, Corm, Root, Bud

Fruit are eaten raw or cooked depending on variety.
Male buds and flowers are eaten on some varieties. They are cooked as a vegetable.
The central pith of the false stem and the underground rhizome are also sometimes eaten.
The corm is boiled, dried and eaten with the false stem. (It has little food value)

DESCRIPTION

These are the main group of cultivated bananas. They can be classed into diploid, triploid and tetraploid kinds with various amounts of the A or B parents. They grow 2-9 m high. They are large non woody herbs with broad long leaves. Most kinds have several suckers. Bananas grow a soft firm false stem from an underground corm. The fruiting stalk eventually emerges from the top of this false stem and normally curves over pointing towards the ground. Fruit occur in clumps or hands along this stem. The male flowers are in a red bud at the end of the flower stalk. The colour of the stem, bracts, bud and fruit varies considerably depending on the variety. The fruit can be 6-35 cm long depending on variety. They can also be 2.5-6 cm across.

HABITAT

A tropical and subtropical plant. They grow from sea level up to about 2000 m altitude in the tropics. They are rarely an important food above about 1600 m. In Nepal they grow to about 1800 m altitude. They do best in warm and humid tropical climates. Temperatures need to be above 15°C. The best temperature is 27°C. The maximum temperature is 38°C. Bananas grow best in full sun. For best growth, a rainfall of 200-220 mm per month is needed. A deep friable soil is best. They can tolerate a pH between 4.5-7.5. It is moderately salt tolerant. It suits hardiness zones 10-12. In Yunnan.

PRODUCTION

Cultivation

They are planted from sword suckers. Diploids need re-planting annually but many triploids can be re-suckered from the base on the same site. Spacing depends on variety. A spacing of 1000-3000 plants per hectare is used depending on variety. Suckers are usually put 30 cm deep.

Harvesting and Seed Production

Time to maturity varies from 6 to 18 months depending on variety and altitude. Triploids have larger bunches than diploids. Tetraploids are very large plants.

Planting instructions

Banana

Scientific name: Musa sp (A&/or B genome)

Bananas.

Most areas of Papua New Guinea have bananas. Some people have them as their main staple food while in other areas they are just a snack food. There is a very large amount of variation within the banana varieties in Papua New Guinea. It is important to understand something about these types of bananas.

Within some of these groups, Papua New Guinea has more varieties than any other country in the world. Within the banana group of plants there are several wild ones. In Bougainville the rainforest is full up with wild inedible bananas. But this article is about the main group of edible kind of bananas.

The banana story.

Although this story of the history of bananas is a little complicated it is important because it is most likely that all these kinds of bananas probably originally developed in Papua New Guinea. It is also important for banana growers to recognise some of the important differences between the groups.

Originally there were small traditional bananas like some of the edible kinds but the fruit were full of seeds. One of these became a parent of present bananas and by scientists is represented by AA meaning both its sets of chromosomes came from an original plant (Musa acuminata [Syn. Musa banksii]). This plant occurs as a wild seeded plant in many areas along the north coast of mainland Papua New Guinea. This plant when it is without seeds gives an important group of local edible bananas called diploids. Varieties in the Gazelle with names like kekiau, gulum, pitu, gorop and katual belong to this group. But another wild seeded parent is also another parent of some of the present bananas. This plant is called BB by scientists because it has two sets of chromosomes from an original plant (Musa balbisiana). This plant occurs in the Gazelle Peninsula and is called Okaoko. A similar banana plant in the Gazelle Peninsula is called Auko and is an edible cultivated banana without seeds.

So the start of the banana story is that these two wild seeded parents have crossed.

AA x BB

AB

But another thing can occur with bananas and this is where they develop more than two sets of chromosomes (the threads that contain the messages that control breeds and breeding). So there can also be plants represented as:-

AAA
AAB
ABB
AAAA
AABB
ABBB

Occasionally plants can cross with some of the other wild bananas in Papua New Guinea (Musa schizocarpa) and give ones such as AS which is called Kalakala variety in Morobe district.

So the picture of the main group of bananas in Papua New Guinea starts to look something like this: (Using Tolai variety names)

Diploids AA - eg mami, kekiau, gulum, gorop etc.
BB - eg auko

Triploids AAA - eg siaina(Cavendish), marau,
AAB - eg avundumong, maramba, akambia
(some very large fruited kinds within his group are called "Horn Plantains" and "French plantains" in other countries. These kinds can be seen in Sepik areas in PNG.)
ABB - eg Jawa, kalapua, akambia.

Tetraploids ABBB - eg atan,
AABB - eg kalamasol (N.Solomons)

Others AS - eg Kalakala (Morobe district).

This drawing is of a diploid (kekiau) banana.
The next drawing is of a triploid banana.

Why is understanding the banana story important?

With bananas it is important to put the right kind of banana in the right place. The different groups of bananas have some things in common. Often "A" means the banana can't stand shade, cannot tolerate drought, needs fertile soil, and gets certain diseases.
Similarly "B" means these plants can grow with more shade in drier soils and with lower soil fertility. As well, diploids (2 sets of chromosomes) are mostly smaller plants with fewer fruit and they produce less suckers. They need to be replanted after each crop of bananas. Some triploids such as ABB (Java) can often grow for many years in the one place and with poor soil. Some tetraploids such as (ABBB) are extremely large plants.

An understanding of these types can be seen in the way some Tolais lay out their gardens.
AA types are used as temporary shade for cacao.
AAA types are put in fertile areas near creeks.
ABB types are put around houses and along tracks leading to water etc where they will be left to grow for many years.

Growing bananas.

After choosing the type of banana it is important to grow it well.
A healthy sucker needs to be cleaned to be sure that insects or nematodes or fungal diseases are not carried from one garden to the new garden.

The sucker needs to be put in freshly cleared ground where the soil is fertile, or the soil needs to be built up by putting compost and plant material in the planting hole. A hole 30cm x 30 cm is suitable for most varieties.

The spacing of the plant will depend on variety and whether it is being intercropped with other plants. Diploid plants can be 1.5m apart and larger kinds need to be 2m or more apart. Thought needs to be given to whether it is a kind that will be replanted within a year or left to grow as a large clump for several years.

Soils must be well drained and most bananas require a fairly fertile soil.

For larger bunches of fruit, some suckers need to be removed on the kinds that sucker freely.

Banana insects

Banana aphid (Pentalonia nigronervosa)

This small sap sucking aphid is potentially very important because it can spread virus disease around. These virus diseases have not been confirmed as present in Papua New Guinea yet.

Banana fruit fly (Dacus musae)

Ripe fruit can easily be attacked and spoilt by this (and other) fruit flies. Fruit need to be harvested and stored carefully.

Banana rust thrips

Banana scab moth (Nacoleia octasema)

This very small moth which hides under dead leaves during the day lays eggs on the flowers and the caterpillars badly damage the fruit in New Britain. Removing dead banana leaves near the trunk, cutting of the male flower and using varieties with widely spaced fingers reduces the damage a little.

Banana weevil (Cosmopolites sordidus)

This long nosed weevil only occurs in some coastal areas but can damage banana plants by burrowing into the stems and causing them to fall over. "B" group bananas get less damaged. It is also important to use clean suckers for planting.

Banana butterfly (Taenaris myops kirschi)

The larvae of this moth can group together and eat the leaves of bananas causing extensive damage. The caterpillars are 5cm long, greyish yellow with three lines along the side and 2 bunches of hairs on the back of each segment.

Rhinoceros beetles (Scapanes australis) & (Oryctes rhinoceros)

These beetles can burrow into the false stem of bananas causing plants to fall over and to put their bunches out the side of the stem. The beetles breed in rubbish heaps so removing these from gardens helps control. Also stripping off old leaves to form smooth banana stems makes it harder for the beetles to find somewhere to start digging into the stem.

Taro beetles (Papuana spp.)

These small brown and black beetles can dig very efficiently and damage the underground parts of banana plants as well as other root crops. They are hard to control.

Banana diseases

Sigatoka leaf spot (Mycosphaerella musicola)

A yellowish green speck on the leaf turns nto a streak and turns brown. The brown centre has a yellow ring around it. It is caused by a fungus and gets worse on "A" type bananas and in wet weather. Leaves can die off early.

Black Sigatoka (Mycosphaerella fijiensis)

This fungus leaf spot similar to Sigatoka has caused severe problems in many other countries in their bananas. ABB clones seem to get this disease less.

Black cross (Phyllachora musicola)

A fungus grows on the leaf in the shape of a black cross.

Diamond leaf spot (Cordana musae)

The spots are yellow and oval shaped. often rings can be seen inside the spots. The edge of the leaf has an uneven bright zigzag yellow band. It is caused by a fungus. The fungus normally starts its attack after other fungi have damaged the leaf.

Banana rust (Uromyces musae)

This fungus which causing brown marks which look like rust only occurs occasionally on some varieties eg Pitu. It does not appear to be a very serious problem.

Freckle (Guignardia musae)

Small black speckled stripes develop on the leaves. They are mostly on the upper side of old leaves and go from the midrib towards the leaf edge. ABB bananas seem to get it most.

Speckle (Veronaea musae) Soft grey covered spots develop on the lower surfaces of old leaves in humid areas. It tends to be worse on AAA type bananas.

Banana pests.

Burrowing nematode (Radopholus similis)

This very small worm burrows into the roots of bananas in lowland areas and cause plants to reduce in vigour. Because of this it is necessary to move plants each couple of years.

Bananas as food.

The large number of varieties of bananas in Papua New Guinea means there are kinds of bananas for many different purposes.

Some are sweet and soft and eaten fresh as a snack and baby food eg Cavendish.

Others are dry and starchy and need to be moistened in a soup.

Some eg kekiau are quickly roasted in gardens and eaten as snacks.

Others are boiled or baked and eaten as a main starchy staple eg Kalapua.

NOTES

There are about 30 Musa species.

PICTURES



Credit: Food Plants International (Bruce French)



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