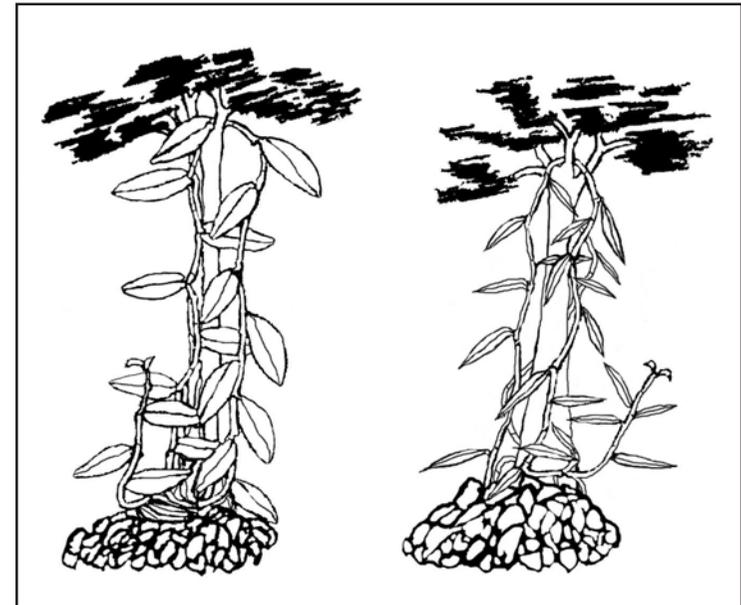


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National Agricultural Research Institute

Species of Vanilla and where to grow them in PNG



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THE INSTITUTE

The National Agricultural Research Institute (NARI) was established by an Act of the National Parliament of Papua New Guinea in July 1996 as a publicly funded, statutory research organisation, to conduct applied and development oriented research on food crops, alternative food and cash crops, livestock and resource management issues. Besides applied and adaptive research, NARI is responsible for providing authoritative technical, analytical and diagnostic services and up-to-date information to the entire agriculture sector in PNG. The major targets are the smallholder semi-commercial farmers in the country.

The mission of NARI is to contribute, through applied research and technical services, to the development of the agriculture sector and realisation of the national goals by identifying, adapting and transferring agricultural technologies and information, so as to:

- Enhance the productivity, efficiency and sustainability of the smallholder agriculture, and
- Improve farmer income, food security and welfare of Papua New Guineans and the nation.

This toktok was written by Gadi Ling, NARI Wet Lowlands Islands Programme in November 2002 (revised in December 2003). The material presented is based on the best information available at the time of printing (December 2003).



Planifolia Vanilla plant



Tahitensis Vanilla plant

Recommendations

- As Planifolia Vanilla is generally regarded as a higher quality vanilla and is easier to market, it is recommended that Planifolia is the species of vanilla to be planted at altitudes above 200 m above sea level.
- It is recommended that Tahitensis Vanilla should be grown in areas where Planifolia Vanilla does not flower well. That is in areas of low altitude (lower than 200 m above sea level) where there is no regular annual dry period of at least six weeks every year.
- If you are unsure of your place's altitude, obtain advice from your local DPI office or from NARI.

Species of Vanilla and where to grow them in PNG

There are over 110 species of vanilla worldwide including at least six known wild species in PNG, but most do not have an aromatic flavour in their fruits (beans) and so are of no commercial value.

Three species are known to be of commercial importance and only two of these are grown commercially in Papua New Guinea. These are Planifolia Vanilla (big broad leaf) and Tahitensis Vanilla (small narrow leaf).

Planifolia Vanilla (big broad leaf)

This vanilla type originates from Mexico. It is a fast growing vine with thick stem and large, broad leaves. It will yield up 1 to 1.5 kg of green beans per plant per year under suitable climatic conditions and good management. The beans contain flavouring compounds of which vanillin is the most important. The vanillin content of the beans normally ranges from 1.3 to 3.8% by weight. Good quality beans should contain more than 3% vanillin.

If harvested too early, the beans will not develop much vanillin. If harvested too late, the beans will split and this will produce cured beans of poorer quality.

Planifolia Vanilla is the principal vanilla of commerce on the world market. This type of vanilla is mostly used for flavouring of ice cream, puddings, cakes, chocolate, baked goods, syrups, candies, liqueurs, tobacco and soft drinks. Vanilla extract is also used for perfumes.

Planifolia Vanilla is best grown in PNG at altitudes between 200 and 600 metres above seal level.

Many vanilla farmers in PNG who grow Planifolia Vanilla at lower altitudes are finding that they do not get much yield from it. When Planifolia Vanilla is grown at low altitudes that are close to sea level, a regular annual dry period of at least four to six weeks is required to initiate flowering. If there is no regular annual dry period, Planifolia will not flower naturally, except during drier or drought years.

Growing Planifolia in these areas is not recommended as those farmers may only get a reasonable crop of vanilla once every four to six years. Some vanilla farmers have not had good yields from their Planifolia plants since the 1997 *El Niño* drought. Unfortunately, much of the Planifolia Vanilla in PNG is planted at altitudes close to sea level where there is little or no dry season/period.

Tahitensis Vanilla

- Long and narrow leaves, thin stem, slower growing
- Easy flower induction as minimal or no dry period needed
- Plant in areas below 200 metres above sea level, where Planifolia does not flower well
- Yield: 0.8 kg green beans per plant/year under suitable climatic conditions and good management
- Earlier producing (produces first crop of beans after two years)
- Smaller market, but has a niche market
- Less critical harvest time of beans as they do not split
- Less resistant to fungus

Comparison of the two Vanilla Species

Planifolia Vanilla

- Broad leaves, thick stem, fast growing
- Needs a well defined dry period of at least six weeks at low altitudes (below 200 metres) for flower induction
- Plant at altitudes between 200 and 600 metres above sea level, unless there is a pronounced dry season every year
- Yield: 1 – 1.5 kg green beans per plant/year under suitable climatic conditions and good management
- Later producing (produces first crop of beans after three years)
- Large world market
- Critical harvesting time for beans: when the tip of a bean starts to turn yellow and before splitting

Tahitensis Vanilla can be grown and will flower well in areas with no dry period close to sea level (below 200 metres).

Planifolia that is planted in areas where it does not flower well may be induced to produce some flowers by tip pruning looped vines and reducing shade just prior to the time of the year when there is likely to be a dryer period.

Supplying super phosphate as a granular form to the base of the vines two months after shade reduction can also improve flower induction. But in such locations it is best to grow Tahitensis Vanilla.

Root cutting or cutting the Planifolia vine close to the ground must not be practiced. Although, these practices may induce flowering, the beans produced will only be of low quality and will have very little vanillin when cured due to the excessive stress and the lack of energy reserves and sugar formation in the beans.

Tahitensis Vanilla (small narrow leaf)

The origins of this vanilla are uncertain. It is believed to have been introduced to Tahiti where it obtained its name.

The plant is not as fast growing as Planifolia Vanilla. It has a thin stem, with long and narrow leaves. The size of the beans is smaller than those from Planifolia Vanilla. The beans do not split when ripe so it can be harvested when one third is green, one third is yellow and one third is brown (tip of bean).

It can yield up 0.8 kg of green beans per plant per year under good conditions. The vanillin content in the bean is between 0.9 to 3.3 % which is a little lower than in Planifolia. The beans of Tahitensis Vanilla also contain anise compounds that give their vanillin extracts a special aroma useful in the perfume industry.

It has often been stated that there is no market for Tahitensis Vanilla. This is not true. Although the market for Tahitensis is much smaller than the Planifolia market, there is still a reasonable niche market for this type of vanilla for example in France and the USA.

Tahitensis Vanilla, and not Planifolia Vanilla, should be grown in coastal and other lowland areas up to 200 metres above sea level where there is no pronounced dry season of at least four to six weeks every year.

