

Bananas of the Travancore State

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Introduction. The terms banana and plantain are synonymous. Banana is the name used in foreign countries for what is called plantain in India. *Nendran (Eththan)* which is generally known as banana in Travancore is called plantain by English speaking people elsewhere. The term banana may, therefore, better be used for all varieties of plantains including *Nendran*.

Status of the crop. Bananas are grown extensively throughout the State and form the chief fruit. These are grown as rainfed crops throughout the State except *Nendran* at Muvattupuzha, the northernmost taluk of the State. The perennial varieties are grown in elevated places locally known as *parambas* along with coconut, arecanut, jak and mango trees. Climate being favourable, a system of perennial cultivation is practised except for the variety *Nendran*. This is the only variety that is grown as a pure crop, whether rainfed or irrigated, often in comparatively rich lowlands, but not in rice fields as is the case in the adjoining districts of British India.

Nature and extent of cultivation. Twentyfive standardized varieties of bananas having 78 local names were recorded during a tour made by the author in November—December 1941 in this State. Next to the Malabar District it is the highest number recorded for any State or District in South India. Of these 25 varieties, *Matti* grown in the hill ranges near Nagercoil and *Eththa chingan* of Cherukol near Kozhencheri are new finds. Both these are economic varieties.

Common commercial varieties of the State are *Nendran (Eththan)*, *Poovan (Paleyngodan)* and *Rasthali (Poovan, Thuluvan or Nattu thuluvan)*.

Commercial varieties of local importance are *Matti* at Nagercoil; *Kadali* at Trivandrum, especially for temple use; *Chenkadali* at Trivandrum, Quilon, Punalur and other places; *Pacha nadan* at Nagercoil, Kottayam, Kozhencheri, Muvattupuzha and other places; *Kali* at Nagercoil, Muvattupuzha and other places; *Kunnan* at Nagercoil, Quilon, Kozhencheri and Muvattupuzha; *Karim kadali* at Kottarakara and Kottayam; *Thattilla kunnan* at Peermade; *Monthan* at Nagercoil, Trivandrum, Quilon and Kottayam and *Chingan* at Vaikom and other places.

Some special varieties. Stray plants of some special varieties are found here and there in the State.

1. *Chakkarakali.* It is considered the best banana in the world and known to be under cultivation only in certain parts of British India. It is found at Neyyattinkara, Nedumangad and Mundakeyam and goes by the

name *Ezhuththani* in the first two places and as *Mysore poovan* in the last place. Wherever *Rasthali* (*Poovan*) is grown this variety can be grown successfully.

2. *Chinali*. This variety comes near to *Nendran* in having flesh-coloured pulp in the green fruits and also in having the bracts and the infertile flowers sub-persistent. It is a heavy yielder and requires heavy manuring. It can also be grown wherever *Rasthali* is grown. It is found at Neyyattinkara and its neighbourhood.

3. *Moongil*. It is a variety of *Nendran* usually bearing only one hand and grown in new clearings in hilly places near Neyyattinkara. When the fruits are intended for presentation, the fruits in the solitary hand are thinned leaving only one or two to develop. Such fruits attain the phenomenal size of a foot and a half in length and about three inches in diameter weighing about three pounds each. The fruits attain such big size only when grown in virgin soils with good deal of humus in them. They need steaming before use like *Nendran*.

Cultivation. The only variety which receives intensive cultivation is *Nendran*. In Central Travancore, considerable attention is paid to its cultivation. Good open land with deep soil having good drainage is selected. The soil is dug with *mamooti* after spreading a layer of cattle manure. Two to four weeks later, towards the end of November or beginning of December, the land is dug up in circles of two and a half feet diameter and nine feet from centre to centre. A pit just big enough to hold a well developed sucker is dug in the centre. After planting, the soil all round is worked once again thoroughly and the earth heaped and pressed moderately. About 550 plants go to an acre. Ten days after planting, cattle manure is again spread in the area and dug in. After two months when the plants put forth two to three leaves the earth is removed from the base of each plant to a depth of four to five inches and to a diameter of two and a half feet and ashes and dried leaves are applied and a ring formed all round with the excavated earth. In April—May, after getting a few showers these dried leaves are removed and oil cakes especially of *Hydnocarpus Wightiana* Bl. (*Mal: Maravotti*) at the rate of a pound per plant mixed with ashes is applied and the leaves are put back. In July, a shallow furrow is made round each plant inside the ring and Niciphos at the rate of quarter pound per plant is applied and covered. *Mamooti* hoeings are given once in two months. Drainage channels, if necessary, are dug during the South-West monsoon rains. In April—May, yams (*Dioscorea alata* L.), three for every banana, are planted outside the ring equidistant from one another. No manure is separately applied to these yams. Suckers which appear before the month of May are removed with the rhizomes. The banana plants come to flower after six months of planting and are ready for harvest three months after flowering. Infertile flowers (hearts) are cut off after the fruits have set, thereby making all the plant food available for the development of fruits. Though removal of

"hearts" in *Nendran* is not practised elsewhere, the practice here shows that it is advantageous even for this variety. The bunches are enclosed in cheap baskets made of plaited coconut leaves when the bunches are 'quarter-full'. This protection against sun and rain makes the fruits, according to the *ryots*, grow stouter and give them an attractive light green colour. Such protected fruits fetch higher price than the unprotected ones. Because of the forcing nature of cultivation, the flowering of the plants and the maturity of the bunches are uniform and the crop is harvested nine months after planting to synchronise with the "Onam" festival, when it fetches very high price. The average duration is about eleven months when grown in the ordinary way without any special treatment. Only one crop is taken. The average yield is about 35 fruits per bunch which fetch according to the demand from six to eight annas. The amount realised by sale of suckers is about two annas per plant taking each plant to yield four suckers on an average. The three yams fetch another two annas thus making an aggregate gross income of 10 to 12 annas from each plant. The crop is entirely rainfed. The *ryots*, therefore, have to be careful in making the best use of the rains received in the year. They get the plants established with the moisture retained in the soil from the North-East monsoon rains and induce plants to have vigorous growth during the South-West monsoon by the timely application of manure. The gross income per acre is about Rs. 350. Deducting Rs. 150 against the cost of cultivation, lease of land, etc., there is a net income of Rs. 200 in spite of the high cost of cultivation and heavy manuring. This high income is mainly due to the high prices ruling during the "Onam" festival.

Preparation of suckers for planting. The roots are trimmed and the shoots cut off leaving two inches beyond the rhizome. The trimmed suckers are smeared with ashes or dipped in cowdung water, dried in the sun for a day or two and stored for a week, before planting. This treatment appears to be a kind of vernalization which may also be responsible for the early maturity of the crop.

Types of Nendran. Five kinds of *Nendran* are under cultivation in these parts and are locally known as *Pindi eththan*, *Kali eththan*, *Elari*, *Kal eththan* and *Veleththan*.

General use. The fruits of *Nendran* are very much in demand throughout the State and both ripe and unripe fruits are used in some form or other in every household. The pulp of the ripe fruit being tough is generally cooked in steam before use. This cooked fruit is generally one of the items of food for breakfast. Unripe fruits are used as vegetable and many preparations are made of these. Banana crisps (the pulp of the unripe fruits is cut crosswise into slices of about $\frac{1}{8}$ inch thickness, fried in oil and salted to taste) are in great demand and are exported from Calicut to distant places like Baghdad and Basra. Banana figs are often prepared from this variety and kept to be used during the off-season. Flour made from the unripe fruits of this variety is used as infant food. The pulp of ripe fruits contains

only a third of the protein content found in *Rasthali* (*Poovan*). In food value, therefore, it is inferior to other varieties. But the calcium content is three times that of *Rasthali*. Food and fodder produced in the West Coast of the Madras Province being deficient in calcium, the availability of a fruit which contains this mineral in abundance is a blessing.

Cultivation of other varieties. The cultivation of all the other varieties of bananas is of a perennial nature. They are mainly confined to backyards of houses and open places in coconut topes. The only cultural operation practised is the removal of some of the broad leaved suckers and the earthing up of the plants at the commencement of the South-West monsoon. These suckers are planted immediately after removal in vacant places without being topped but with the leaf blades cut off, half way along their length. The fruits grown under these conditions develop the best taste and flavour.

Bananas are comparatively cheap in this State. There is scope for the preparation of banana figs by sun drying process during the comparatively rainless months between December and May. The variety *Poovan* (*Paleyan-godan*) is very cheap and suitable for this purpose. *Nendran Eththan* is also good for "fig" making, but it would be more economical to sell it as green or ripe fruits.

Diseases. Bananas in this State are not attacked by diseases to any great extent. In some parts, however, a disease known as -"Manda adappu" occurs in stray plants. This disease is manifested by the tops of the pseudostems getting constricted, leaves fading and ultimately the plant drying up. It is a fungoid disease and the control method is more preventive than curative. The affected plants should be removed with the entire rhizome and scorched. Suckers from such plants should under no circumstances be used for planting.

Some suggestions for the improvement of banana cultivation.

1. Bananas may be cultivated in the *Nanjanad* (South Travancore) rice fields in rotation with rice crop in localities which have good drainage facilities.

2. Banana varieties like *Rasthali*, *Chakkarakeli*, *Matti*, *Chinali*, *Kali* and *Thattilla kunnan* may be cultivated intensively like *Nendran*.

3. Varieties like *Gros Michel*, *Pedda pacha aratti Kapur* and *Nendra padaththi* which do not occur in the State may be introduced with advantage.

4. Preparation of banana flour and banana fig may be organized as cottage industries as there are varieties suitable for both these purposes available in large quantities.

The names of all standardized varieties found in Travancore with local names in usage within and outside the State, short description and the economic aspect of each are given below. For description, etc., of those marked with asterisks, *Vide Madras Agricultural Journal*, Vol. xxx, No. 2, February 1942, pp 37-44.

1. *Vamanakeli* (*Musa paradisiaca* Linn. var. *Cavendishii* K. C. Jacob) (*M. Cavendishii* Lambert). (*Kuzhi vazha* at Neyyattinkara, *Kuttoththi vazha* at Varkala, *Morris* at Peermade). Outside the State this variety is known as *Gidda aratti* at Madanapalle; *Guja bale* in Bangalore; *Hara mowze* in Kurnool; *Kabul bale* at Udipi; *Kandy vazhai* in Trichinopoly; *Kuzhi nendran* in Trichur Farm; *Morris vazhai* at Villupuram, Tenkasi, etc., *Pacha aratti* at Kavali; *Vamanakeli* in Vizagapatam; *Basrai* in Bombay; *Jahaji kol* in Assam and *Harichall* in Cuttack. A few plants are grown here and there more as a curiosity. It is a native of Southern China. It was introduced into cultivation from Mauritius in 1829. Next to Gros Michel, it is the most popular banana in America and Europe and goes by the names Governor, Chinese, Canary Island or the Cavendish banana. This variety is extensively cultivated in the Canary Isles. This is the shortest of all banana varieties. It is generally cultivated in places subject to heavy winds because of its dwarfy nature. It is of recent introduction in India. Bracts and male flowers are persistent. The bunches are heavy and the fruits closely packed. Fruits are terete and without apex. The rind of the ripe fruit varies in colour, from green to greenish yellow according to seasonal and climatic conditions. The colour, however, of the fruit produced in the Canary Islands is yellow. The fruit has good taste and flavour. It has fairly good keeping quality. It is one of the commercial varieties in the Madras Province.

2. *Chingan* (*Musa paradisiaca* Linn. var. *chingan* K. C. Jacob). (*Chingan* or *Nachchingan* at Nedumangad; *Pacha chingan* at Kozhencheri and Kottayam). Outside the State it is known as *Shinga bale* at Mangalore and *Chingan* at Ponnani and Trichur. It is one of the rarest varieties and is confined to the West Coast. A few plants are grown here and there in Travancore. The plant is slender. Bracts and the male flowers are persistent. Bunches weigh from 15 to 25 lb. Fruits are terete and taper to a distinct apex. The rind of fruits remains green in colour even on ripening.

3. *Nendran* (*Musa paradisiaca* Linn. var. *Nendran* K. C. Jacob). (*Pindi eththan* at Chirairambu; *Kal eththan* at Neyyattinkara). Outside the State it is known as *Nona nendran* at Ponnani and Kongad; *Thiruvonam* at Tellicherry; *Chengozhikadan* at Trichur and *Pisong Talon* or *Tandok* in Malaya. It is a short duration plant. Bracts and male flowers are persistent. Hands are rather compact.

The following are the four sub-varieties of *Nendran* under cultivation in this State:—

i. *Kali eththan* (*Musa paradisiaca* Linn. var. *nendran* forma *kali eththan* K. C. Jacob). (*Kali eththan* of Chirairambu; *Vaali eththan* of Neyyattinkara). Fruit is about a foot in length and an inch and a quarter across with the apex $\frac{3}{4}$ "-1" long. Bunches are rather compact. Duration is short and the yield heavy. It is probably the best type.

ii. *Elari* (*Musa paradisiaca* Linn. var. *nendran* forma *elari* K. C. Jacob). (*Elari* at Chirairambu). Outside the State it is known as *Attu nendran* at

Nilambur and *Nedu nendran* at Trichur. In this the fruits are spreading and are $1' - 1\frac{1}{4}'$ long and about an inch across with very long apices of about an inch and a half. This has longer duration than *Kali eththan*.

iii. *Kal eththan* (*Musa paradisiaca* Linn. var. *nendran* forma *kal eththan* K. C. Jacob). (*Kal eththan* at Chirairambu). The fruit in this is the shortest in all *Nendran* varieties and is only about 6 inches long with apex of $\frac{1}{3}'' - \frac{3}{4}''$. The pulp and the skin (rind) of the fruit are harder than these of other types; hence the local name *Kal eththan*. This type is getting eliminated.

iv. *Veleththan* (*Musa paradisiaca* Linn. var. *nendran* forma *veleththan* K. C. Jacob). (*Veleththan* at Chirairambu). In this variety the stem, petiole and midrib are red in colour. It is very similar to *Kali eththan* in other respects except in duration which is a month longer. It is also getting eliminated due to the long duration.

The pulp of the ripe fruits is rather tough and needs steaming before use. It is good for "fig" making. The flour of these varieties is used as infant food in this State. It is used largely as a vegetable. Bracts and male flowers are persistent. Bunches are fairly heavy and fruits loosely set. The ripe fruits have good keeping quality. It is the main commercial variety of the State.

4. *Moongil* (*Musa paradisiaca* Linn. var. *moongil* K. C. Jacob). (*Moongil* at Neyyattinkara). Outside the State it is grown at the Ollukara Farm near Trichur, where it goes by the name *Otta mukil* and at Cuttack as *Singapuri*. It is one of the rarest varieties and is grown in new clearings in hilly places near Neyyattinkara.

5. *Chinali* (*Musa paradisiaca* Linn. var. *chinali* K. C. Jacob). (*Chinali* at Neyyattinkara). Outside the State it is grown only at Trichur Farm and there it goes by the name *Chinari*. It is a very rare variety grown only at Neyyattinkara and its neighbourhood. The bracts and the male flowers are sub-persistent. The colour of the pulp is similar to that of *Nendran*. The fruits attain a size of 7 inches in length and an inch and a quarter across and are of medium quality. Green fruits are used for frying.

*6 *Chenkadali* (*Musa paradisiaca* Linn. var. *rubra* Firminger). (*M. paradisiaca* Linn. var. *chenkadali* K. C. Jacob). (*Chenthuluvan* at Nagercoil; *Koppa* at Neyyattinkara and Kottarakara; *Chovvazha* at Kottarakara; *Chuvonna koppa* at Varkala; *Chenkadali* at Quilon; *Raktha kadali* at Kottayam; *Malam poovan* at Peermade). Outside the state it is known as *Beet Java* in Cuttack and *Rotambala* in Ceylon. It is largely grown in sub-mountainous tracts like Punalur. Stray plants are found elsewhere.

7. *Venkadali* (*Musa paradisiaca* Linn. var. *rubra* Firminger forma *venkadali* K. C. Jacob). (*Thuluvan* at Nagercoil; *Pacha vettan* at Neyyattinkara; *Malam poovan* at Kottarakara, Kozhencheri and Peermade; *Vellakoppa* at Varkala; *Vella chovvazha* at Quilon and *Chora poovan* at

Alwaye). Outside the State it is known as *Blay sugandhi* at Ramapuram; *Elakki bale* at Mercara; *Karim kadali* at Manantoddy; *Kappurap keli* at Simhachalam; *Ney vazhoi* at Pannakkadu (Pulneys) and *Venkadali* at Perintalmanna. English: Green Red or White Claret. It is grown in sub-mountainous tracts like Punalur. A few plants of this are met with here and there. It is a bud sport of *Chenkadali*. When *Chenkadali* is grown under optimum condition for a number of generations this sport is sometimes produced. Every part of the plant is identical with that of *Chenkadali*, except the colour of the stem and fruit. The colour of the stem is purplish green and not purple as in *Chenkadali*. The rind of the unripe fruit is green in colour while that of *Chenkadali* is purple and on ripening the colour turns dull yellow while it is deep red in *Chenkadali*. Colour, taste and flavour of the pulp are similar to those of *Chenkadali*.

*8. *Rasthali* (*Musa paradisiaca* Linn. var. *rasthali* K. C. Jacob). *Nattu thuluvan*, *Thuluvan* at Nagercoil; *Foovan* at Nagercoil, Quilon and Kottayam). Outside the State it is known as *Potkapura* in Cuttack; *Malbhog kola* in Assam and *Ellaichi* in Nagpur. The fruits of this variety are considered the best for dessert. The fruits produced in the State have very good taste and flavour without any "lump" in the flesh. It is one of the commercial varieties of the State.

*9. *Ney Poovan* (*Musa paradisiaca* Linn. var. *ney poovan* K. C. Jacob). *Rasa kadali* at Nagercoil and Quilon; *Kannaan poong kadali* at Nagercoil; *Thulu nattu kadali* at Nedumangad; *Madhura annaan* at Edakkode; *Naani poovan* at Nilamel and Kottayam; *Nhali poovan* at Kottarakara, Quilon, Kozhencheri and Peermade. Outside the State it goes by the name *Sufed velchi* in Bombay. This is grown along with other varieties in all banana areas especially in the back yards of houses.

*10. *Poovan* (*Musa paradisiaca* Linn. var. *poovan* K. C. Jacob). *Paleyngodan* at Nagercoil, Kottarakara, Kottayam and Peermade; *Palayen thodan* at Neyyattinkara, Quilon and Kozhencheri. The second name may be a corrupt form of the first. Outside the State it goes by the name—*Lal velchi* in Bombay. This is the second important commercial variety of the State.

*11. *Chokkarakeli* (*Musa paradisiaca* Linn. var. *chokkarakeli* K. C. Jacob (*Ezhuththoni* at Neyyattinkara and Nedumangad; *Mysore poovan* at Mundakayam). Only a few plants are grown in these places.

12. *Kadali* (*Musa paradisiaca* Linn. var. *kadali* K. C. Jacob). (*Kadali* at Trivandrum, Kottayam and Peermade and *Nivedya kadali* at Kottayam). Outside the State it is known as *Devar kadali* at Kuttaparamba; *Poovan kadali* at Kongad and *Kadali* at Tellicherry, Manantoddy and Nilambur.

It is a very rare variety peculiar to the West Coast. It is the sacred banana largely used for offerings in Hindu temples. The fruits of this variety have very thin rind. Fruit is small and terete with distinct apex. Pulp of the ripe fruit is firm, juicy and sweet, and has good flavour. It is

used in the Sri Padmanabhaswami Temple at Trivandrum for making "Thrimadhuram" (a preparation made of the pulp of the ripe fruit of this variety with sugar and honey as offering to the deity). Hands are compact. The axis is naked and sub-erect.

13. *Kali* (*Musa paradisiaca* Linn. var. *kali* K. C. Jacob). (*Chingan* at Nagercoil and at Edakkode near Trivandrum; *Padaththi* at Nagercoil, Quilon, Peermade and Muvattupuzha; *Thodan* at Quilon and *Mannan* at Varkala). It is a commercial variety of some importance in the State.

14. *Pacha nodan* (*Musa paradisiaca* Linn. var. *pacha nodan* K. C. Jacob). (*Chingan*, *Nattu chingan* at Nagercoil; *Padaththi* at Nagercoil and Kottayam and *Kali* at Kozhencheri). Outside the State it is known as *Bengala* at Jagadevipet near Nellore; *Eardan* at Perintalmanna and Trichur; *Kali* at Trichinopoly and Tanjore; *Korongu lodan* at Coonoor; *Mannan* at Calicut; *Pacha nodan* at Cuddalore and Coimbatore; *Thodan* at Nilambur and *Vella podan* at Calicut.

It is not largely grown anywhere in the State. A few plants, however, are found in many banana gardens. The fruits are unequally five-sided and without apex. The rind is very thick and the colour of the ripe fruit is greenish yellow. It is similar to *Kali* in other respects.

15. *Kunnan* (*Musa paradisiaca* Linn. var. *kunnan* K. C. Jacob). (*Poong kadali* at Nagercoil; *Annaan* at Neyyattinkara, Nedumangad and Varkala; *Kunnan* at Quilon, Kozhencheri and Muvattupuzha). Outside the State it is known as *Adukkam* at Tellicherry; (*Chinna sugantham* at Giddalore; *Chitti bale* at Kampli; *Jirike bale* at Kallamandkur near Moodbidri; *Kunnan* at Calicut and Kongad; *Sanna oakkulu chettu* at Nidubrolu and *Vellai kadali* at Sankarankoil).

This variety is largely grown in the West Coast. It is not grown on a large scale anywhere in this State. A few plants, however, are grown in all banana gardens. Fruits are considered to have medicinal properties. Green fruits are used for "curry", especially for invalids. The leaves have somewhat of an erect pose on the plant. The pulp of the ripe fruit is firm. The fruits have good keeping quality. Hands and fruits are closely set. Fruits are nearly terete with a distinct apex.

16. *Venneettin kunnan* (*Musa paradisiaca* Linn. var. *venneettin kunnan* K. C. Jacob). (*Samba poong kadali* at Nagercoil). Outside the State it is known as *Venneettu kunnan* at Calicut. It is very similar to *Kunnan* in all respects except the bloom (ashy coat) on the fruits. It is a very rare variety.

17. *Adakka kunnan* (*Musa paradisiaca* Linn. var. *adakka kunnan* K. C. Jacob). (*Samba kunnan* at Kozhencheri). Outside the State it is known as *Chara kunnan*, *Adakka kunnan* and *Pakada kunnan* at Kongad near Palghat and *Mundi kunnan* at Pulamanthol.

This has very short and plumpy fruits; hence the varietal name *Adakka kunnan*. A few plants are grown in Central Travancore. The flour

prepared of the green fruits is used as an infant food. It contains double the quantity of protein that is usually found in any other variety of banana and it is a happy coincidence that the flour of this variety has for long been in use in Malabar as an important infant food. The pulp of the ripe fruit is very firm.

18. *Thattilla kunnan* (*Musa paradisiaca* Linn. var. *thattilla kunnan* K. C. Jacob). *Koombillaaka*, *Koombilla chingan* at Nagercoil and Neyyattinkara; *Koombilla kunnan* at Kottarakara and Kozhencheri, *Koombilla annaan* at Varkala; *Thattilla kunnan* at Quilon; *Chundilla kunnan* at Kottayam, Peermade and Muvattupuzha and *Chundillan* at Peermade). Outside the State it is known as *Benda aratti* at Piridi near Bobbili; *Kaththe bale* at Bangalore; *Kodapilla kunnan* at Trichur Farm; *Poola chundan* at Brahma-desam and Thenkasi; *Rundu bale* at Moodbidri and Mangalore, *Thattilla kunnan* at Nilambur, Ponnani and Calicut.

A few plants are grown amongst other varieties in many gardens. It is peculiar in having only pistillate (female) flowers which develop into fruits. There is no male flower in this variety. Fruits are unequally five-sided and often slightly flat. Fruit tapers to a very long apex. The pulp of the dry fruit is dry and white in colour. The taste of the ripe fruit is very sweet. It is one of the choicest varieties of bananas. Bunches are heavy and the fruits closely packed.

19. *Karim kodali* (*Musa paradisiaca* Linn. var. *karim kodali* K. C. Jacob). (*Karim kodali* at Neyyattinkara, Kottarakara and Peermade). Outside the State it is known as *Chodari* at Kuttaparamba near Tellicherry; *Irachchi kai* at Kurumathur near Taliparamba; *Karim kodali* at Trichur and *Vettan* at Manantoddy.

It is a rare variety peculiar to the West Coast. It is not cultivated anywhere as a pure crop. Few plants are, however, found in all banana gardens in this State. Fruits are about 7 inches long and about an inch across. They are nearly terete without a distinct apex. The pulp of the ripe fruit is firm. The green fruit is used as vegetable often with meat. It is considered to have the property of softening meat when cooked with it. Both ripe and unripe fruits are used medicinally in the treatment of dysentery.

20. *Ney mannan* (*Musa paradisiaca* Linn. var. *ney mannan* K. C. Jacob). (*Peyan* at Nagercoil; *Pey monthan* at Neyyattinkara; *Chara kali* at Nilamel and Quilon; *Cherathali* at Kottarakara and *Chathura kali* at Varkala). Outside the State it is called *Bhysi mowze* at Kurnool; *Juvari* at Hospet and Hampi; *Malamundi* at Nilambur and Manjeri; *Nattu vazhai* at Pannakkadu (Pulneys), Srivilliputtur, Palamcottah and Tuticorin; *Ney vannan* at Kongad; *Thiyyan mannan* at Tellicherry and *Voyal vazhai* at Palni, Sankerankoil and Sendamaram.

This variety is grown in some banana gardens especially in South Travancore. It is extensively grown in the adjacent British Indian districts,

viz, Tinnevely, Ramnad and Madura. It is mainly used as vegetable and occasionally as dessert. Green fruits are excellent for "curries". Ripe fruits are insipid but are largely used by some in the Ramnad and Tinnevely Districts.

21. *Venneettu mannan* (*Musa paradisiaca* Linn. var. *venneettu mannan* K. C. Jacob). (*Chara kali* at Kottayam). Outside the State it is known as *Boodithi* at Kurnool; *Boothi javari* at Kampli; *Samba vazhol* at Multanandal (Madura Dt.) and *Venneettu mannan* at Nileshtar and Pattambi.

It is very rare in the State and is similar to *Ney mannan* except that the fruits are thickly ashy coated.

*22. *Monthan* (*Musa paradisiaca* Linn. var. *monthan* K. C. Jacob). (*Monthan* at Nagercoil, Neyyattinkara, Koltarakara and Peermade; *Mula monthan* at Neyyattinkara; *Ponthan* at Quilon and Kottayam, and *Kuppakali* at Kottayam).

A few plants are grown in all banana gardens to meet the requirements of the household.

23. *Sambrani monthan* (*Musa paradisiaca* Linn. var. *sambrani monthan* K. C. Jacob). (*Samba monthan* at Nagercoil and Neyyattinkara). Outside the State it is known as *Bonya kilandi* at Udipi; *Boothan kaya* at Gudalur; *Boothi madhuranga* at Palhalli near Mysore; *Sambrani monthan* at Erode; *Venneettu manga* at Nileshtar and *Venneettan thezhuthani* at Manantoddy.

It is very rarely grown here and is similar to *Monthan* except that the fruits are thickly ashy coated. It is considered better than *Monthan* as a vegetable.

24. *Matti* (*Musa paradisiaca* Linn. var. *matti* K. C. Jacob). (*Matti* at Nagercoil).

The cultivation of this variety is confined to Theriluppakkaadu, Thadikkaramkonam Hills, Black Rock Estate, Pioneer Estate and other Estates in the low hills near Nagercoil. This is the commonest variety cultivated in these Estates. The bunches and fruits look like those of *Thattilla kunnan*. The general appearance of the plant is like that of *Surya kadali*. The pseudostems are about seven feet high and about 19 inches in girth at the base. The petiole is about 15 inches long. The margins of the petiole are far apart. Lamina base on the right side is truncate and three inches shorter than the left which is acuminate on the petiole. The peduncle is short and pubescent. Bunches are compact and the fruits are closely packed. The pedicel is short and about a third of an inch in length. The apex of the fruit is very long, often up to an inch and a half. Ripe fruit is juicy and sweet with very good flavour. It is a commercial variety of considerable importance in South Travancore.

25. *Eththa chingan* (*Musa paradisiaca* Linn. var. *eththa chingan* K. C. Jacob). (*Eththa chingan* at Kozhencheri).

This variety is not cultivated to any large extent anywhere in the State. A few plants are grown in some banana gardens at Kozhencheri and other places in Central Travancore. The pseudostems are about 12 feet high and about 26 inches in girth at the base. The leaves are narrow and about 8 feet in length. The lamina base on the left side is two inches longer than the right and is acuminate on the petiole, while the right side is truncate. The petiole is about 16 inches long. The margins of the petiole are dark red to a width of a sixteenth of an inch. Peduncle is pubescent. Bracts and the male flowers are persistent. Bunches are rather closely packed and heavy. Fruits are nearly terete and are about 6 inches long without a distinct apex and with part of the style persisting. The skin of the fruit does not turn yellow on ripening but remains green in colour. The fruits are sweet and have good flavour. It deserves to be cultivated extensively.

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The Deleterious After-effects of Sorghum—A Review.

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The deleterious effects of sorghum on crops that follow have been extensively reported upon by American workers—Bennet (1897), Ten Eyck and Shoe Smith (1906), Snyder and Osborn (1915), Willaman et. al. (1919), Vinall and Ghetty (1921), Breazeale (1924) and Conrad (1927, 1928, 1932 and 1937). Fletcher (1912) observed the adverse effects of sorghum on a succeeding crop of *Sesamum indicum* in experiments conducted by him in Surat, Bombay. Ramanatha Ayyar and Sundaram (1941) have recorded that similar to their observations on the black soils of Tinnevely, the harmful effects of sorghum have been noted under conditions obtaining in the Coimbatore, Salem and South Arcot districts of the Madras Presidency. Breazeale (l. c.) however states that in China, sorghum is grown year after year upon the best land and that no injurious effects have been visible.

Causes of sorghum injury. American workers attribute the deleterious effects of sorghum on the succeeding crops to one or more of the following.

- a) Toxic products of decay of roots and stubbles which harm the succeeding crop.
- b) Decomposition products of crop residues encouraging the growth of certain micro-organisms which in turn compete with the succeeding crops for essential food elements.
- c) Toxic root excretions.
- d) Depletion of plant food by the heavier feeding sorghum.
- e) Depletion of moisture.

In the black soils of the Tinnevely district, however, where the injurious after-effects of sorghum on the succeeding cotton crop is a well known