

PEPPER VARIETIES

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Black pepper is believed to have originated in the evergreen forests of Western Ghats of Peninsular India. During the early evolution and domestication of the species, many cycles of natural crossing, segregation and selection by man in the segregation natural populations, might have led to the evolution of many local cultivars that are now prevalent in the pepper growing tracts of Kerala and Karnataka. These local cultivars differ in their growth habit, morphological and yield characteristics and quality characteristics such as oleoresin, volatile oil and piperine contents. A short description of some of the popular cultivars of black pepper is furnished in this report.

Karimunda

The most popular pepper cultivar grown throughout Kerala is Karimunda. This had been the traditional cultivar of the Central Kerala comprising Palai, Ponnunnam and adjoining areas. The cultivar is bisexual and is characterised by small, more or less oval leaves and short to medium long, closely set spikes. The spikes range in length from about 4 cm to 10 cm or even more in certain cases, with a mean length of around 6.5 cm. A survey has shown that in Central Kerala area most of the vines have short well filled spikes but the spikes were found to be much longer in the Idukki District, and also in parts of Wynad. A prolific and regular bearer, having medium sized berries, good driage (35%) and yields good quality pepper. This cultivar has got about 11% oleoresin, 4.4% piperine and 4.0% essential oil.

The flowering time is in May-June coinciding with the monsoon. Irrigated plants flower almost continuously. This cultivar is of medium maturity, and is suitable for intercropping as well as in high density cropping.

The name Karimunda might have arisen from the bluish black tender shoots and dark green leaves and berries.

Narayakkodi

Yet another Central Kerala cultivar from the Kotayam-Champakk a-Mallappally tract, but now found in many settlement areas throughout Kerala. The leaves are small to medium, ovate and has got a characteristic twist for the leaf blade. It is bisexual, having small spikes with a characteristic twisting that results from the thick berry setting. The persistent stigmatic base gives the feeling of a 'pin' and hence

the name Narayakkodi (Narayam—a long iron nail like tool used in olden days for writing on palm leaves). It is a regular, average yielder, having high driage (37.5%). It has got about 11% oleoresin, 5.4% piperine and 4.0% essential oil.

The farmers in the Central Karala are of opinion that 'Narayakkodi' has a longer life span compared to Karimunda and also much less damaged by diseases. Studies conducted in the Central Plantation Crops Research Institute, Regional Station, Calicut has also shown that Narayakkodi is more tolerant to foot rot caused by *Phytophthora*, than most other cultivars.

Kalluvally

A promising North Kerala cultivar, hardy and regular yielder. Leaves medium, ovate, elliptic, spikes medium and has got a characteristic twisting due to very thick setting. Berries are small to medium; heavy and have high driage (about 40%). Regular bearer and reportedly tolerant to water stress and diseases. Studies have shown that it is moderately tolerant to *phytophthora* wilt. Though a very promising cultivar, its distribution is rather restricted to the settlement areas of the submountain pepper tracts and Wynad and Cannanore districts.

The Kalluvally found in many areas in the Cannanore and North Wynad does not conform to the above description. More than one cultivar is known by this name and some of these are rather poor yielders. They do not seem to be that hardy as the name indicates. These 'Kalluvally' types were also found to differ in the quality factors. For example, three Kalluvally types gave the following values; % oleoresin: 8.8; 10.9 and 8.4; % piperine: 4.2, 4.6 and 5.4 Essential oil: 3.2; 0.4, 3.0 and % starch: 31.5, 29.0 and 20.7.

Balancotta

An exclusively North Kerala cultivar. Very vigorous growing having the largest leaves among the Kerala cultivars. The vines are large, growing to the top of large support trees like mango and jack. Spikes medium-long to long, setting moderately good, and berries are bold, pale green. Early to medium duration, berries are bold and gives about 30% driage. It has got oleoresin of 9.3% essential oil 5.1%, piperine 4.2%. Its oil content is one of the highest and so has very high flavour quality.

Balancotta is reportedly tolerant to moisture stress and is also somewhat tolerant to *Phytophthora* wilt. In the Malanad areas of Uttara Kannada, this cultivar is grown under the name "Malabar pepper" especially in the Sagar, Koppa, Sirsi and adjoining areas.

The main drawback of this cultivar is the alternate bearing habit.

Kottanadan

Kottanadan is the most popular pepper cultivar in the South Kerala regions. A vigorous growing bisexual type having large broad ovate leaves, long spikes, high fruit set and medium sized berries. It is a high and regular yielder. Studies have shown that Kottanadan has the highest oleoresin content (about 17.8%). It is high in piperine content too (6.6%), though volatile oil content is comparatively less (2.5%). It gives about 37% driage and produce high quality, heavy pepper.

In the Wynad areas, Kottanadan is grown under the name 'Aimpiriyam', the name derived from the fact that the berries are arranged in five distinct rows on the spike. Under the South Kerala condition it flowers by April-May and comes to harvest by January. Under the Wynad conditions, it matures late and comes to harvest only by April.

Kumbhakodi, a cultivar grown in certain areas of Quilon district of Kerala seems to be a variant of Kottanadan/Aimpiriyam.

Kuthiravally

A south Kerala type, now found in many pepper growing areas throughout Kerala, is moderately high yielder, but alternate bearer. The ovate leaves are medium large, spikes very long and slender (like horse's tail, hence the name Kuthiravally) and bisexual. Berries medium large, having high driage percentage (over 39%). It has got about 15% oleoresin, 6.0% piperine and 4.5% essential oil. Kuthiravally thus produces high quality pepper.

A cultivar called 'Thommankodi', grown in certain areas in the eastern parts of Calicut district (Koodathai, Anakkampoyil areas) seems to be a variant of Kuthiravally. In Thommankodi, spikes are slightly shorter and berry filling somewhat better than that in Kuthiravally. Quality analysis of this cultivar has not been carried out.

'Aranavalan', a cultivar found in the Malayattoor—Kaladi areas also seems to be a variant of Kuthiravally.

Kaniakkadan

The name Kaniakkadan appears to have been derived from 'Kaniakkar' a tribal sect inhabiting the hilly Western Ghat areas in the present day Idukki district. There are four different Kaniakkadan types.

These are Cheriyananiakkadan, Valiakaniakkadan, Karutha Kaniakkadan and Velutha Kaniakkadan. The first two are more important.

Cheriyananiakkadan is a popular cultivar of the eastern parts of Kottayam and Quilon districts. It is also found commonly in many areas in North Kerala. It is a bisexual type, having small elliptical leaves, medium long spikes and medium size berries. It is an average yielder and a regular bearer and has got about 30% driage. It has got about 9% oleoresin, 3.9% piperine and 3.7% essential oil.

Valiakaniakkadan has got slightly larger leaves, longer spikes and bold and heavy berries and berry setting is good. A moderately high yielding type.

The other two Kaniyanakadans are also moderate yielders.

Arakkulamunda

A moderately good and regular bearer from the Central Kerala area. It has derived its name from the name of a village, Araggulam in the Thodupuzha taluk of Idukki district. It is commonly found in the settlement areas in north Kerala. It is a regular yielder and comes to maturity earlier to most other cultivars. The spikes are medium long, berries bold and heavy. The black pepper of this cultivar gives 9.8% oleoresin, 4.4% piperine and 4.7 per cent essential oil.

Malligesara

The common cultivar of the Uttara Kannada district of Karnataka. In the Malnad areas of Uttara Kannada this pepper is usually intercropped with arecanut and sometimes also with cocoa. Two types of Malligesara are known, Karimalligesara and Bilimalligesara. The two can be differentiated based on the anthooyanian colouration of the emerging shoots, in the case of Karimalligesara, it is purple white in Bilimalligesara it is pale green. It is a moderate yielder, having medium large leaves and spikes.

Uddaghere

A very popular cultivar in the Uttara Kannada district of Karnataka. A good yielder and regular bearer. The leaves are medium large, spikes long with good setting. It has high driage (about 39-40%) and produces good quality dry pepper. The cultivar is commonly intercropped in arecanut gardens, and there it is found to give good yield, indicating its tolerance to shaded conditions.

Neelamundi

A popular cultivar in some areas of Idukki District, especially in the Kattappana, Kallar areas. A moderately good yielder, having medium large leaves and vigorous growth, medium long spikes and thickly set medium sized berries. The farmers in the areas

are of opinion that this variety is less affected by diseases. Detailed quality studies of this cultivar has not been carried out.

The cultivar Thevanmundi found in the Kumali-Amravathy area seems to be a variant of Neelamundi.

Veluthanamban

Another moderate yielder found in the pepper tracts of Idukki district. As the very name indicates, the young emerging shoots and leaves of this cultivar has got a whitish tinge, which at maturity turns dark green. Medium large leaves and medium long spikes. Berries are closely set on the spike and the berries are moderately heavy giving a drriage of about 37-38%. Some confusion exists on the identity between Veluthanamban and Neelamundi.

Panniyur-I

This is the only hybrid pepper variety under cultivation. Developed from a cross between Uthirancotta (female) and Cheriakaniakkadan (male) at the Pepper Research Station (K.A.U.), Taliparamba. The plant is vigorous and has got large cordate leaves. Spikes are long, berries bold and filling good. It is a prolific bearer under open conditions. It is also an early bearer, having medium maturity. The drriage is around 36% and the dried berries have the following characteristics; Oleoresin 9.5%, piperine 3.6%, volatile oil 3.5% and starch 35.0%.

This variety is not suitable for intercropping. Under shade and also under heavy fertility conditions the flowering and yield seems to come down.

In addition to the above, there are many other varieties which are less commonly found cultivated. Some of these are Kottavally, Chumala, Karuvilanchy, Cholamundi, Malamundi, Jeerakamundi, Perumkodi, Thulakkodi, Uthirancotta, Arasinamoratta, Vokkalgunja, Doddigya, Doddale etc. The last one, Doddale, incidentally has got the largest leaves among all the Karnataka cultivars. A cultivar known as Vokkale found in some areas in Uttara Kannada has the smallest spikes, each spike having only four or five berries. The berries are large, heavy having very thin pericarp.

In all the major pepper growing tracts the old cultivars are rapidly being replaced by more productive ones like Karimunda and Panniyur-I. Diseases such as quick wilt and slow wilt and also drought are causing the devastation of vines in all the areas. Some of the old cultivars may have very desirable characters, such as disease resistance, pest resistance or resistance to drought or may have high quality characteristics. For example cultivars Pevemunda and Kumbhakodi, have high essential oil and piperine contents, 'Nilgiris' and Balancotta have high essential oil contents. So also Kumbhakodi, Kuthiravally and Kottanadan have high oleoresin content. Hence it has become imperative to collect and conserve all the old races of pepper for the benefit of the posterity. This work is being done at the Central Plantation Crops Research Institute, Regional Station at Calicut.

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