

2. Semi Tall Varieties

a. Mangala

This variety is a selection from VTL-3, an accession introduced from China and possesses number of desirable characters such as earliness in bearing, more number of female flowers per inflorescence, higher nut set, initial and cumulative higher yield, quicker stabilization of production and lesser height in comparison with S.K. Local. The average yield of this variety is 2.90 kg chali/palm/year. The variety was released for commercial cultivation in the coastal areas of Karnataka and Kerala in the year 1972 under the name 'Mangala' and is characterized by partially drooping crown with well spread leaves and more number of leaflets as compared to S.K. Local. The leaflets are dark green in colour with characteristic crinkling at the tip.



b. Shatamangala

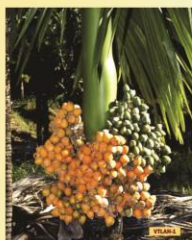
This is a high yielding arecanut variety developed from VTL-146, the indigenous accession collected from Gujarat and was released during 2016 to commemorate the centenary year of ICAR-CPCRI. The yield performance of the variety is higher than the released varieties viz., Mangala, Sumangala, Sreemangala and traditional local types and is suitable for both tender nut and ripe nut processing. The average yield is 3.26 kg dry tender processed nuts/palm/year or 3.96 kg dry kernel/palm/year. The variety is recommended for commercial cultivation in Karnataka and Gujarat.



3. Dwarf hybrids

a. VTLAH-1: Vittal Arecanut Hybrid-1

This hybrid between Hirehalli Dwarf (female parent) and Sumangala (male parent) is relatively dwarf in plant habit and was recommended for release during 2007. The palms have sturdy stem with super imposed nodes, reduced canopy size, well spread leaves, partial drooping crown. The fruits are medium sized, oval to round in shape and yellow-orange in color. Early stabilization in yield and high recovery of chali (26.45%) are the other striking features of this hybrid. The average chali yield of this hybrid is 2.54 kg/palm/year. This variety is recommended for commercial cultivation in arecanut growing tracts of Karnataka.



b. VTLAH-2: Vittal Arecanut Hybrid-2

Vittal Arecanut Hybrid-2, involving Hirehalli Dwarf (female parent) and Mohitnagar (male parent) is dwarf in plant habit and was recommended for release during 2007. Medium thick stem with super imposed nodes, reduced canopy size, well spread leaves, drooping crown, medium sized oval nuts, early stabilization in yield and high recovery of chali (28.53%) are the striking features of this hybrid. The average chali yield of this hybrid is 2.64 kg/palm/year. This variety is recommended for commercial cultivation in Karnataka.



Table 1: Arecanut varieties and hybrids developed by ICAR-CPCRI

Variety	Dry kernel yield (kg/palm/year)	State for which recommended	Year of release/notification
Mangala	2.90	Karnataka and Kerala	1972
Sumangala	3.28	Karnataka and Kerala	1985
Sreemangala	3.18	Karnataka and Kerala	1985
Mohitnagar	3.67	West Bengal, Karnataka and Kerala	1991
Swarnamangala	3.88	Karnataka and Kerala	2005
Kahikuchi	3.70	West Bengal and North East	2008
Madhuramangala	3.54 or (2.95)*	Karnataka and Maharashtra	2014
Nalbari	4.15	Karnataka, West Bengal and North East	2014
Shatamangala	3.96 or (3.26)*	Karnataka and Gujarat	2016
VTLAH-1	2.54	Karnataka	2007
VTLAH-2	2.64	Karnataka	2007

*dry tender processed nuts/palm/year

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Improved High Yielding Varieties and Hybrids of Arecanut

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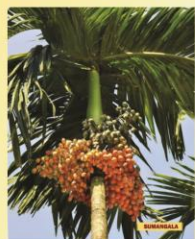
Improved High Yielding Varieties and Hybrids of Arecanut

Arecanut (*Areca catechu* L.) belonging to the family *Arecaceae* (*Palmae*) is an extensively cultivated tropical palm. The crop improvement programmes in arecanut started at ICAR-CPCRI, Regional Station, Vittal, Karnataka with the mandate to improve the production and marketing of arecanut. Comprehensive collection of germplasm, both indigenous and exotic, has been made and screening them under uniform conditions is being done. On the basis of comparative yield trials of indigenous and exotic accessions, promising tall and semi tall cultivars were selected and released as varieties. Under the evaluation of exotic accessions and selection for high yield and its attributes, the varieties released were Mangala, Sumangala, Sreemangala and Swarnamangala. Under the evaluation of indigenous accessions the varieties Mohitnagar, Kahikuchi, Madhuramangala, Nalbari and more recently Shatamangala with high yield potential have been released for commercial cultivation.

Though tall varieties possess high yield potential, they are prone to wind damage and further the tall nature of the palm hinders various operations like spraying and harvesting which are quite labour intensive and cumbersome. Therefore, arecanut breeding programs in addition to yield improvement are also aimed at development of dwarf varieties/hybrids. Hirehalli Dwarf (HD) a natural mutant identified for its short stature is a good genetic source for arecanut improvement. Dwarf varieties with high yield potential will directly benefit the growers by way of enhanced returns and reduced cost of various cultural operations like harvesting, spraying, in addition to minimising damages to palms due to heavy wind owing to greater mechanical support of the stem. Therefore, the exploitation of dwarfing genes in breeding dwarf hybrid varieties with high yield potential was initiated. Hybrids involving Hirehalli Dwarf (HD) and released high yielding tall/ semi tall varieties (Mangala, Sumangala, Sreemangala and Mohitnagar) as parents, were developed and evaluated for yield performance and dwarfness. Among the hybrids, HD x Sumangala and HD x Mohitnagar were identified as superior for yield with relatively dwarf plant habit and recommended for cultivation as, VTLAH-1 (Vittal Areca Hybrid-1) and VTLAH-2 (Vittal Areca Hybrid-2), respectively.

1. Tall Varieties

a. Sumangala



This variety is developed from VTL-11 accession obtained from Indonesia and evaluation for yield traits showed an increase in yield of 64% over South Kanara Local (S.K. Local). In view of the substantial increase in yield, the variety was released for all areca growing areas in general and Coastal Karnataka and Kerala in particular during 1985. It is a tall type with partially drooping crown. Under good management palms flowers in 4-5 years. The colour of the ripe nuts is deep yellow to orange and oblong to round in shape. The variety recorded an average yield of 3.28 kg chali/palm/year at the age of ten years.

b. Sreemangala

The variety was developed from the accession VTL-17 introduced from Singapore and showed high yield potential with 59% increase in yield over S.K. Local. The palm is tall with partially drooping crown with longer internodes and sturdy stem. It starts flowering in 4-5 years. It is high yielder with an average chali yield of 3.18 kg per palm per year. Ripe nuts are usually bold in size and round in shape with deep yellow colour. This cultivar was released in the name Sreemangala during 1985 for coastal areas of Karnataka and Kerala.



c. Mohitnagar



Mohitnagar is a selection from the indigenous arecanut accession VTL-60 collected from West Bengal, with high yield potential and was released for commercial cultivation during 1991. The important feature of this variety is its greater uniformity. The bunches are well placed and nuts are loosely arranged on spikes which help in their uniform development and also enable efficient plant protection measures. Early stabilization in yield has been observed as compared to Sumangala and Sreemangala. The variety is a consistent high yielder with an average chali yield of 3.67 kg/palm/year. This variety is recommended for cultivation in arecanut growing areas of West Bengal and coastal areas of Karnataka and Kerala.

d. Swarnamangala

This variety is a high yielding selection from the exotic accession VTL-12 collected from Vietnam. It is a tall high yielding variety with medium thick stem and partially drooping crown and homogeneous population. The palms flowers in about 4-5 years after planting. Nuts are bigger and heavier with high recovery of chali or dry kernel (26.40%). Average yield of this variety is 3.88 kg chali/palm/year. It is recommended for cultivation in Karnataka and Kerala and was released during the year 2005.



e. Kahikuchi



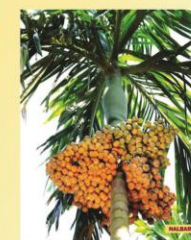
This variety, a selection from indigenous accession VTL-64 from Assam, possess high yielding nature with medium thick stem, longer internodes, partially drooping crown, homogeneous population and regular bearing. The fruits are orange in colour, bold and round shaped, with high recovery (25.16%) of chali from fresh nuts. The palms come to bearing by 5th year. The variety is a consistent high yielder with an average yield of 3.70 kg dry kernel/palm/year. The variety is recommended for commercial cultivation in West Bengal and North Eastern region of the country during 2008.

f. Madhuramangala

This variety is a selection from indigenous accession VTL-62 collected from Maharashtra. The yield performance of the variety is higher than the released varieties viz., Mangala, Sumangala, Sreemangala and also traditional local types. The variety is suitable for both tender nut and ripe nut processing and also fetches more price in the market because of its quality and marble appearance of the split nut. The average yield is 2.95 kg dry tender processed nuts/palm/year or 3.54 kg dry kernel/palm/year. The variety has been notified for commercial cultivation in Karnataka and Maharashtra in 2014.



g. Nalbari



Nalbari variety is a selection from indigenous germplasm (VTL-75) collected from Assam. The yield performance of the variety is higher as compared to all the earlier released varieties (Mangala, Sumangala, Sreemangala, Mohitnagar, Swarnamangala, Kahikuchi etc.) and found suitable for ripe nut processing. The variety possesses high yielding nature, with medium thick stem, longer internodes and partially drooping crown. The variety is a regular bearer with consistent yield and bunches are well placed on the stem. The fruits are round shaped, yellow in colour with high recovery (25.18%) of dry kernel from fresh nuts. The palms come to bearing by 5th year. The average yield is 4.15 kg dry kernel/palm/year. The variety has been notified for cultivation in Karnataka, West Bengal and North Eastern region during 2014.