Promising Tall Coconut Cultivars of Andaman and Nicobar Islands

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Introduction

The Andaman and Nicobar Islands in Bay of Bengal comprises of about 572 Islands and islets falls under the humid tropics with an average rainfall of over 3000 mm in about 139 rainy days with 78 % humidity and with mean maximum and minimum temperature of 30^{o}C and 23^{o}C, respectively. The soil type of A&N Islands ranges from sandy clay to sandy loam. The soil and climatic conditions are highly suited for cultivation of various plantation and spice crops such as coconut, , cashew nut, rubber, black pepper, and tree spices. Coconut and arecanut are the predominant plantation crops of these islands among which coconut is the predominant crop grown in Andaman and Nicobar Islands occupying an area of about 20000 ha out of the total 46000ha under agriculture. It plays a major role in the livelihood of people in these islands particularly the Nicobari tribes hence considered as the backbone of Island agriculture. The vast population of the native tribes and other settlers in A&N islands rely on coconut farming along with spices, tuber crops and fruits for their livelihood besides the marine capture fisheries. Coconut has been associated with the socio-cultural life of the people of these islands. The productivity of coconut in these Islands is 5888 nuts/ha as compared to the national productivity of 10122 nuts/ha. Limited management practices, lack of timely replanting of senile / dead palms, use of unselected planting material, lesser adoption of basin management and soil and water conservation measures are considered some of the reasons for low productivity in several locations.

The average coconut productivity of these islands is ranging from 30 to 45 nuts per palm at different islands whereas, at few places it exceeds more than 100 nuts per palm per year. However, remarkably high yielding individual palms are also noticed throughout these coconut populations amidst average or marginally yielding palms highlighting the importance of selection of mother palms for quality planting material production. Most of the coconut plantations in Andaman Islands are with selected planting material whereas the groves in Nicobar are filled with naturally regenerating diverse types. There is a need to use better cultivars and improved varieties to achieve better productivity at such places. Most of the coconut plantations in Andaman and Nicobar Islands consist of tall group of palms preferred for copra production whereas the dwarfs are grown in households and in urban areas for tender coconut purpose.

The popular tall coconut types from the Islands viz., Andaman Ordinary Tall, Andaman Giant Tall, Katchal Tall, Auck Chang Tall, Campbell Bay Tall and Tamaloo Tall are preferred for planting. These are well known among the farmers which have been collected, conserved and characterized by ICAR-CIARI, Port Blair. Besides, Andaman Ranguchang Tall is also well known for fruit yield. Selections have been made from Andaman Ordinary Tall and Andaman Giant Tall and released as improved varieties in other coconut growing mainland states Tamil Nadu, Kerala, Karnataka by research organizations such as Tamil Nadu Agricultural University and ICAR-CPCRI, Kasaragod with the names VPM 3 and Kalpa Dhenu, respectively.The details on the popular tall cultivars of these Islands are given here.

Andaman Ordinary Tall

It is the largely cultivated tall coconut cultivar in Andaman Islands, popularly known for attractive large fruits and sturdy palms. The palms of this cultivar exhibit robust growth habit with strong and stout stem with a well noticeable bole at the base of the stem which produces strong dark green leaves. The leaf drooping trait of Andaman Ordinary Tall is categorized as intermediate. The fruits are large, oblong shaped with husk thickness of about 2 to 3 cm. The husked fruits are round or oval, thick shell of over 4 mm with kernel thickness over 1.3 cm. The individual palms of this population show variation for fruit colour unless selected for particular colour. The fruit colour varies from dark green to light green or light brown. However, the predominant fruit

colour is green and shades of green. The palms of Andaman Ordinary are considered drought hardy, withstand heavy winds but takes longer time for first flowering when compared to other tall cultivars. The copra content ranges from 180 to 250g per nut with oil recovery of about 65%. The fruit yield per palm/year ranges from 50 to 150 depending upon the management conditions. The cultivar has also been reported as having tolerance to nematodes under field conditions. Although the tender coconuts are also used for drinking purpose, it is mostly utilized for copra making, processed coconut kernel products such as desiccated powder etc and VCO production.

Andaman Giant Tall

The palms of this type occur sporadically among the Andaman Ordinary population. Careful selection of mother palms and seedlings is important to establish a new plantation of Andaman Giant Tall. As the name implies, the fruits of Andaman Giant are large, round to oblong shaped, weighing over 5 to 8 kg at tender fruit stage. The husked fruits are also larger than Andaman Ordinary Tall, mostly globular. The kernel is thinner than Andaman Ordinary Tall, but the cavity volume is over 300 ml in matured fruits. The tender nut water content ranges from

350 to 600ml depending upon the stage of maturity and individual palms. The average tender coconut water per fruit is about 300ml. The palms possess dark green leaves, fruits are predominantly green with less proportion of palms with brownish fruits. The cultivar is preferred as a tender coconut cultivar by many traders as the larger fruits could be used to attract the customers to the tender nut parlor. The palms are robust growing with strong and stout stem with a prominent bole at the base of the palms, intermediate drooping of leaves. The palms of Andaman Giant are considered drought hardy, withstand heavy winds. The copra content ranges from 200 to 400g per nut with oil recovery of about 64%. The average copra content is over 240g per nut. The fruit yield per palm year ranges from 40 to 90 depending upon the management conditions. The palms are relatively moisture stress tolerant. A better performing selection made from Andaman Giant has been released by ICAR-CPCRI as 'Kalpa Dhenu' which is popular in the mainland which gave mean yield of 86 fruits per palm per year with the copra out turn of about 20kg per palm per year. Although the tender coconuts are also used for drinking purpose, it is mostly preferred for copra making, processed coconut kernel products and VCO production.

Auck Chang Tall

It is a popular cultivar of Car Nicobar Island from Nicobar district. Generally, the palms are morphologically similar like Andaman Ordinary Tall but with differences in nut characteristics. An accession collected and evaluated at World Coconut Germplasm Centre (WCGC) at Port Blair has shown that the palms of Auch Chang Tall cultivar are robust, high yielding (more than 100 nuts per palm/year) with higher copra content. The kernel is thick and recorded higher milk recovery under VCO production process through fermentation method. The fruits are green or light brown, husk thickness is thin (2 to 3 cm), husked fruits are oval, good tender nut water quantity (560 ml per fruit), average fruit weight over 1700g with average copra content of about 170g. However, there are palms with copra content of more than 260g recorded in the population. The oil content is about 65%. Under the natural habitat of rainfed conditions in Car Nicobar, the palms exhibited large bole, stout stem, good fruit setting with estimated fruit yield of over 140 nuts per palm per year, regular production of bunches and dense crown. There are no major pests recorded in this population. Careful mother palm selection followed by seedling selection is important to establish good plantation of Auck Chang Tall considering the variability observed in the natural and conserved population.

Katchal Tall

It is a cultivar of Katchal Island of Nicobar district. The palms of Katchal Tall are morphologically similar to Andaman Ordinary Tall but with differences in nut characteristics. An accession collected and evaluated at WCGC has shown that the palms of this cultivar

are robust, high yielding with higher copra content. The kernel is thick and recorded higher milk recovery under VCO production process. The fruits are green, large to exceptionally large sized, husk thickness is thin (2.5 cm), husked fruits are oblong, good tender nut water quantity (706 ml per fruit), average fruit weight over 1814.25g with average copra content of about 217.75g. The oil content is about 64%. Under the natural habitat of rainfed conditions of Katchal, the palms exhibited large bole, stout stem, good fruit setting with estimated fruit yield of over 140 nuts per palm per year, regular production of bunches and dense crown. The fruit colour in the population is predominantly green but considerable proportion of palms produce reddish brown fruits which are preferred for tender coconut purpose. The copra quality is considered incredibly good, and the tender coconuts are categorized as particularly good for water taste and tender kernel taste.

Tamaloo Tall (Acc 26)

It is a cultivar of Tamaloo village of Car Nicobar Island in Nicobar district, preferred for copra production and culinary uses. An accession collected from this population and evaluated at WCGC has shown that the palms of this cultivar are robust, high yielding with higher copra content. The kernel is thick and recorded higher milk recovery under VCO production process. The fruits are green-yellow, husk thickness is thin (2 .47cm), husked fruits are oblong, good tender nut water quantity

(459 ml per fruit), average fruit weight over 1809g with average copra content of about 246g. The oil content is about 66%. Under the natural habitat of rainfed conditions in Car Nicobar, the palms exhibited large bole, stout stem, good fruit setting with estimated fruit yield of over 120 nuts per palm per year, regular production of bunches and dense crown. There are no major pests recorded in this population. Careful mother palm selection followed by seedling selection is important to establish good plantation of Tamaloo Tall considering the variability observed in the natural and conserved population.

Campbell Bay Tall (Acc 30)

It is a cultivar of Great Nicobar Island in Nicobar district preferred for copra production. An accession collected and evaluated at WCGC has shown that the palms of this cultivar are robust, high yielding with higher copra content. The kernel is thick (1.4 cm) and recorded higher milk recovery under VCO production process. The fruits are green-red, thin husk(2 .06cm), husked fruits are oblong,

good tender nut water quantity (365 ml per fruit), average fruit weight over 1369.50g with average copra content of about 183g. The oil content is about 64.5%. Under the natural habitat of rainfed conditions in Great Nicobar, the palms exhibited large bole, stout stem, good fruit setting with estimated fruit yield of over 150 nuts per palm per year, regular production of bunches and dense crown. The population produce good proportion of palms with micro sized fruits and exceptionally large sized fruits. Hence, mother palm selection and seedling selection must be followed stringently.

Conclusion

The popular and promising tall cultivars of these Islands have immense potential as they perform well under marginal management conditions. Careful selection from these types could be especially useful in developing climate resilient coconut varieties aspiring for drought tolerance, wind tolerance and high yield. Apart from the above popular cultivars, many, diverse tall type accessions have been collected from these tropical Islands of Andaman and Nicobar which has been well reported to be exceptional and unique. More than 100 diverse accessions with varying morphological characteristics have been collected from different parts of these Islands and conserved at National Coconut Gene Bank of National Active Coconut Germplasm Site maintained by ICAR-CPCRI. The unique germplasm resources of Andaman and Nicobar Islands include fruits having soft endosperm, fruits with horn like structures, fruits with aroma, cluster bearing micro coconut types, spicata type, beaked fruit types, pink husked types, thin husked fruit types, sweet/soft husked types, persistent leaf base type, persistent inflorescence type, wind tolerant types having very sturdy stem, compact crown types, viviparous coconuts, and high yielding accessions. Wide variation also has been reported for morphological and fruit component traits among all these diverse types. The coconut groves in Nicobar district could be considered as a in situ coconut gene bank wherein one can see and select all the diverse types. ■