

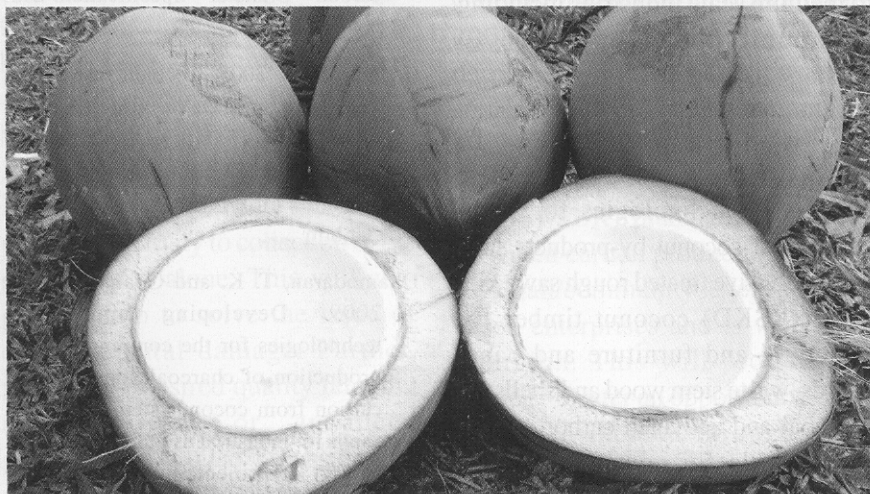
## Emulating Lessons from Manado (North Sulawesi), Indonesia

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Coconut plays an important role as a staple food of millions of people in the world. Because of the multifarious uses of coconut both for food and nonfood end uses, the commodity has acclaimed universal recognition as a nutritious and hygienic food as well as an eco-friendly fiber and high energy carbon source. Yet coconut products from the Asian and Pacific countries are facing the challenges in the international market on account of high cost of production, low and fluctuating prices, declining trend in the productivity and the recurring nature of shortage of raw materials in major exporting countries. The DC industries and the shell based activated carbon manufacturing industries in the important Asian and Pacific countries are facing the problem of acute shortage of quality

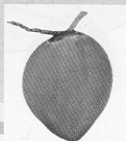
coconut shell. Similarly, the coconut oil once considered as premium oil and king of vegetable oils has now become a minor oil and has been locked up in a competitive battle with other cheap vegetable oils, particularly palm oil and palm kernel oil. Under this abject economic situation, the APCC; the Asian and Pacific Coconut Community organized the XLIV COCOTECH meeting at the Sedona Hotel, Manado, Indonesia from 4-8 August 2008 to deliberate on the Integrated Approach in Processing of Coconut Products/By-Products for value additions and Market Prospects. The essence of the meet was to showcase the available technologies across the world for product diversification and by-product utilization of coconut and to promote Good Manufacturing Practices (GMP) in coconut

**Coconut provides livelihood security to more than 7 million farm families of Indonesia. The small holders' accounts for 3.786 million ha followed by 1.07 lakh ha under private plantations. The country's average productivity is about 3882 nuts per ha or 1123 kg copra per ha.**



*Tenga Tall - The promising cultivar which starts yielding at the 4th year after planting*

*Chief Coconut Development Officer, Coconut Development Board, Kochi - 11*



processing industries. The message of the meet was to promote secondary agriculture in coconut production sector such that the member countries are amenable to product diversification and by-product utilization for value additions and thereby make the industry globally competitive.

Indonesia, the Saudi Arabia of coconut oil and desiccated coconut powder, still holds the hegemony of coconut supply and trade in the world market. It is a unique country where coconut cultivation and industry offer economic competitiveness. Besides coconut oil palm cultivation is gaining importance and contributes significantly to the growth of the country's economy. Indonesia is considered as the major exporter of coconut oil, palm oil and oil cake to India. The selection of the venue for the XLIV COCOTECH meeting rightly emphasise the importance of Indonesia in global supply, trade and domestic market of coconut and coconut products. The participants of the sessions were the plenipotentiary members, observers and progressive farmers from member countries, invited resources persons, and representatives from international bodies like FAO, ITC etc. The delegates from India including the author of this article reached Manado on 2nd August, 2008 and utilized the occasion to understand the coconut culture and industry in Manado. The facilities extended by the host country and the opportunities available in the island of Manado were converted into an experience of learning and understanding by the Indian delegates with right earnest to



*Mapanget Tall, local cultivar for copra production. Average yield of copra is 3.3 tonne/ha*

disseminate the possible strength for replications. The gist of such experiences are depicted in this article which may become a beacon light to Indian industries for up scaling the existing one and setting up new ones in the lines of industrial clusters for strengthening the power of economy in a small farmer dominated coconut culture and industry.

#### **Glimpses of coconut industry in Indonesia:**

Coconut plays an important role in the socio-economic life of millions of people in Indonesia. It is an important commodity as it is significantly attributed to meet the foreign exchange requirements of Indonesia. As per the statistics available from the Commodity Futures Trading Regulatory Agency (CoFTRA) Ministry of Trade, Republic of Indonesia for the year 2007, coconut is cultivated in an area of 3.898 million ha and more than 97 per cent of the farmers are small holders with an average holding size of 0.5 ha. It has been reported that coconut provides livelihood security to more than 7 million farm families (Doah Dekok Tarigans-2001<sup>1</sup>). The

small holders' account for 3.786 million ha followed by 1.07 lakh ha under private plantations. The annual production of coconut in the country is reported as 14984 million nuts or 31.87 lakh MT of copra. The productivity of coconut in Indonesia varies considerably from Island to Island. The country's average productivity is about 3882 nuts per ha or 1123 kg copra per ha<sup>2</sup>. Among the major coconut growing islands, Sumatera accounts for 34.60 per cent of coconut area and production followed by Java 22.87%, Sulawesi 18.73% Bali, West Nusa Tenggara and East Nusa together accounts for 7.61%, Moluccas and Papua 8.65% and Kalimantan 7.55%. The Province-wise details of area and production of coconut is given in table-1.

Coconut is the second largest crop cultivated in Indonesia after paddy. The other important crops are oil palm and rubber. It is reported that about 6.9 million coconut holdings are distributed among the small and marginal farmers only<sup>3</sup>. Domestic demand for coconut in Indonesia is mainly for consumption as fresh nuts for culinary



*Short and stout inflorescence stalk : the unique charactrestic of Native Talls*

confectionery uses. The demand for coconut oil as cooking oil is high in household sector and in the food industries like snack foods and

market are; preserved coconut milk & cream, coconut brown sugar, desiccated coconut and nata de coco. All these products commands

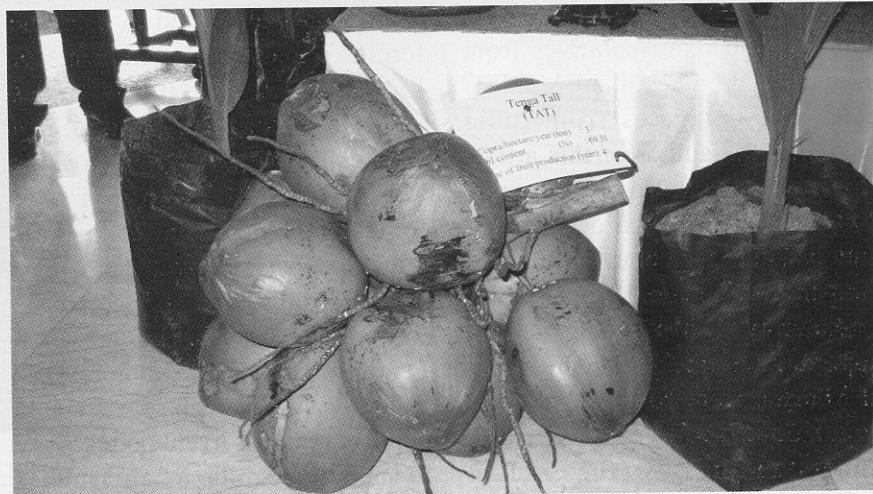
*Table 1. Area under and Production of coconut in Indonesia in copra equivalent (2005)*

Province	Area		Production	
	Ha (in lakh ha)	% share	(lakh MT)	% share
Sumatra	13.486	34.59	11.116	33.36
Java	8.919	22.88	7.362	22.09
Bali	0.73	1.87	0.758	2.28
Nusa Tenggara	2.231	5.72	1.200	3.60
Kalimantan	2.944	7.55	2.229	6.69
Sulawesi	7.302	18.73	7.288	21.87
Maluku	2.944	7.55	2.944	8.83
Irian Jaya	0.429	1.10	0.425	1.28
Total	38.984	100	33.321	100

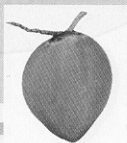
instant noodles. About 70 per cent of the total production of coconut in the country is consumed in the household sector for culinary edible uses as well as for beverage purposes and only 30 per cent is utilized in industrial sector. Coconut has diversified uses in Indonesia. About 30 per cent of the demand for cooking oil is met by coconut oil and the rest is satisfied with palm olein. Coconut has diversified uses in the country. Apart from copra and coconut oil, other potential products that are traded in the domestic

domestic demands and are also found export market. In addition to these, coconut shell charcoal, shell activated carbon, coco chemicals, coconut handicrafts, coconut water and cup jelly are the other products and by-products that find extensive export market and hence contributes significantly to country's export earnings.

The Director General of Estate Crops, Jakarta is the mandatory agency looking after the development of coconut culture and industry in Indonesia. Similarly, the Indonesian Coconut and Palmae Research Institute (ICOPRI), Manado, Indonesia is responsible for coconut research. The Institute was established by the Indian breeder, Dr.T.Davis at the behest of the then Indonesian government. Despite the fact that significant progress have been made for crop improvements in Indonesia, the common varieties that are found extensively cultivated in different provinces are the native tall of the respective areas selected by the farmers. When compared with the common tall that are being grown in India, the economic importance of the cultivars that are



*Tenga Tall - Average yield - 3 tonne copra/ha*



grown in Indonesia is the size of nuts, the kernel content and the output of shell and water. The average water content in the commonly cultivated cultivars like; Tenga tall, Mapenget Tall and Nias Yellow Dwarf at the time of tender stage is about 500 ml. The average productivity of these tall varies from 2.5-3.5 MT of copra which is 2-3 times more than that of India. Among the major high yielding tall, Tenga tall, Bali tall, Palu tall and Sawama tall are cultivated in all the eleven provinces. The other local tall that are commonly cultivated in different provinces are given in table 2.

Even though Indonesia enjoys a comfortable position over other coconut producing countries, coconut farming and industry in the country face many challenges. The declining trend in the productivity due to poor management of plantations, emerging incidences of new pests and diseases, persistence of more than 30 per cent senile and damaged plantations, substitution of coconut area for more remunerative crops like rubber and oil palms and lack of credit facilities to small-scale agro-based industries are the threatening barriers against the growth of coconut industry in the country which is distinguished by dominating small and medium enterprises (SMEs). With the increasing growth in population, the fragmentation of coconut holdings which are already small and marginal is further taking place in all the regions and has become a major impediment in improving the productivity of existing coconut gardens in the country. The displacement of coconut area for

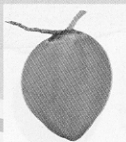


*Farmer friendly mechanical trap for catching the pests*

*Table 2. Locally adapted native tall*

Cultivars	Origin	Specific Nut Characteristics	Estimated production of copra/ha/yr(tonne)
Mamuaya tall	North Sulawesi	Thin husk, weight of meat 600 g	3.5
Dobo tall	Southeast Maluku	Weight of fruit 3.5kg, weight of meat 900g	3.5
Sangtongbolang tall	North Sulawesi	Plenty of nuts/ palm. Similar to WCT	3.0
Palapi tall	Central Sulawesi	Large fruit, high content of meat	3.0
Igoduku tall	North Maluku	High content of meat, plenty of nuts/bunch	2.7
Tobelo tall	North Maluku	High yielding	2.5
Kelambu Buruk tall	Riau	High yielding in swampy areas	3.0
Tekulai tall	Riau	High yielding in swampy areas	3.5
Bawang tall	Riau	High yielding in swampy areas	2.5
Solo tall	Central Sulawesi	Semi tall, early bearing	2.0
Palakahembing tall	East Nusa Tenggara	High yielding in drought areas	2.5
Rote tall	East Nusa Tenggara	High yielding in drought areas	2.0
Nota tall	East Nusa Tenggara	High yielding in drought areas	2.5
Bibinoy	North Maluku	High yielding	2.5
Sokong tall	West Nusa Tenggara	High yielding	2.5
Beber tall	West Nusa Tenggara	High yielding	2.5
Ijo Balit tall	West Nusa Tenggara	High yielding	2.5

Source : ICOPRI-Manado



construction of buildings in urban and rural areas has further shrunken the coconut area. The bulk of the industries particularly small scale coconut processing industries are equipped with only traditional methods of processing with manually operated and locally fabricated equipments, the productivity and efficiency of which are very low and hence the small scale industries are facing the problem of survival and competition from the large-scale processing industries. In order to safeguard such industries and also to ensure the sustainable operations of all coconut industries in Indonesia, Government of Indonesia has initiated various programs in all the provinces. North Sulawesi is one of the promising provinces where farmer participatory industrial clusters have been set up in a big way and where the lifeline of the people is totally woven around the progress of coconut cultivation and industry.

### **North Sulawesi Province: the Mecca of coconut and coconut industries in Indonesia**

North Sulawesi is the third largest coconut producing province in Indonesia. Among the estate crops (plantation crops) coconut accounts for 67.70 per cent in area and 67 per cent of the export earnings of North Sulawesi Province. About 97 per cent of the holdings are under the operational categories of small farm enterprises. About 62 large, medium and small coconut processing industries in the province are depending on these small estate units for their daily requirements of raw materials. The domestic requirements of raw coconut for household consumption are also met



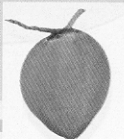
*Nias Yellow Dwarf*

from these tiny production centers. The other estate crops like nutmeg, vanilla, cocoa etc are also integrated with coconut and hence coconut industry plays an important role in the economy of North Sulawesi Province (NSP). According to the Trade and Industry Agency data (2008) more than 96 per cent of the export earnings comes from coconut and fishery products. Even though diversified source of income generation is a common phenomenon in the rural areas of NSP, coconut is the major and perennial source of livelihood security of millions of people.

Despite the fact that the average productivity of coconut in terms of copra output is comparatively higher in NSP, a dwindling trend in productivity has already been appeared. Hitherto, the average productivity was reported as 1.9 MT copra per ha. Due to the increased incidence of old and senile palms and sudden death of many high yielding palms on account of epidemic outbreak of bud rot disease; there is unprecedented decrease in the productivity. It was reported that coconut palms in more than 2500 ha have been totally dead or damaged due to bud-rot. The



*A view of an elite seed garden*



annual rate of decrease in the population of the old coconut trees (above 50 years) is 6.03 per cent whereas the rate of increase of coconut replanting is less than 3.21 per cent<sup>4</sup>. The cumulative effect of these biotic stresses has caused considerable shortage of raw materials in the processing industries. This in turn has resulted in the operation of many industries with underutilized capacities. The rate of utilization of the installed capacity of the largest three coconut processing companies in the NSP is reported to be only 54 per cent. Even though Indonesian government has started various programs for the development of coconut industries the acute shortage of raw materials is reported to be a stumbling block against the growth of the processing sector. Yet the coconut industry in the NSP is globally competitive and many emulative models are in existence for replication.

The programs for the development of coconut industry in NSP have been under implementation since the era of *Orde Baru administration* (1968-98). However, the implementation of integrated processing of coconut which was initiated since 2000 has made tremendous progress in coconut cultivation and industry of the island. The accessibility of the farmers for value addition has significantly improved and the flow of investment in the form of machineries and equipments by farmers groups has helped the growth of the industry in the islands. The implementation of integrated coconut processing



*Salak Dwarf*

coupled with the implementation of coconut cluster program was helpful in promoting coconut processing in the post harvest processing and the coconut farmers staying organized in the supply sector. In the emerging global market prospects for coconut products along with the negative trend of coconut production and productivity, the Government of Indonesia has been trying to reengineer and revitalize the coconut industry by implementing a new program, Coconut Industry Cluster(CIC) since 2006. The implementation of CIC model is intended to promote the development of village-based integrated coconut processing enterprises as well as improving coconut productivity and production. The coconut farmers and the industries in the NSP have been benefited remarkably from the program and many novel industries have been set up. The important among them are in the area of commercial production of coconut based convenient food products, coconut wood furniture etc. As a

result of these innovative activities, the export from the islands has increased considerably. The transforming changes that has been taken place in the post harvest processing of coconut in the North Sulawesi has embarked upon the emergence of new enterprises which are emulative models for other coconut producing countries. Staying organized is the mantra of success in coconut industries in NSP.

*- will be continued in May 09 issue.*

<sup>1</sup> Tarigans D.D (2001) "Research output and farmers adoption of Technologies on Coconut-Based Farming System ". Report of the XXXVIII APCC Session 2001, APCC Jakarta

<sup>2</sup> Anonym (2008) XLIII "Cocotech Meeting and Coconut Festival: Report of the meeting" Asian and Pacific Coconut Community , Jakarta, Indonesia.

<sup>3</sup> Dede Kusuma Edi Idris(2006) "Global development affecting the competitiveness of coconut industry" country paper presented at XLII COCOTECH meeting held at Manila, Philippines, August 2006.

<sup>4</sup> Jen Tatu(2008) "Integrated Coconut Processing in North Sulawesi: Programs and Prospects." Paper presented at the XLIII COCOTECH meeting held at Manado.