

## FUTURE OF ARECANUT

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The future of arecanut in this country is being debated in recent years, because of more than 100 per cent increase in production achieved within the last two decades, the reported dwindling chewing habit of the present generation, lack of export potential and economically viable alternative technology to utilise the nut and its by-products. The sudden price fall in the wake of a spurt in production in the beginning of the last decade also contributed in predicting a bleak future for arecanut. However, subsequent trend in demand and supply, and very remunerative price prevailing at present, have not substantiated this apprehension.

### I. Production trend

An analysis of the trend of increase in area, production and productivity of arecanut in the country, starting from 1961-'62 shows that in the sixties the area under the crop increased at the rate of 4.3 per cent per annum, the production at 4.8 per cent and productivity at 0.34 per cent. In the next decade (1971-'72 to 1980-'81) the area increased at the rate of 2.0 per cent per annum, whereas production increased at the rate of 3.5 per cent. The productivity increased during the decade by 23 per cent compared to 3.4 per cent in the previous decade, and this could be attributed to the impact of the results of research initiated towards the end of fifties. The increase in production by more than 100 per cent during the last twenty years has however been partly due to the increase in area to the extent of 57.9 per cent (see Table 12.1).

### II. Yield gap analysis

In the absence of information on photosynthetic efficiency, total dry matter production and harvest index, any prediction on yield potential in arecanut will be speculative. The difference between the potential and actual yield is generally

designated as *yield gap*. An average yield of about 8 kg of ripe nuts per palm per year has been obtained by several progressive farmers in Dakshina Kannada and Uttara Kannada districts of Karnataka and this can be taken as a standard for the immediately realisable yield. The present average yield of 1,037 kg of *chali* per ha for the country, works out to about 2.5 kg of ripe nuts per palm per year and this represents only about 32 per cent of the realisable yield. However, the yield potential is much more than this since an average yield of about 14.5 kg of ripe nuts per palm per year has been obtained from two cultivars (VTL-11 and VTL-17) for a period of nine years at CPCRI Regional Station, Vittal (see Table 3.11) and this can be regarded as the realisable yield goal. The best ever recorded yield in arecanut is 30 kg per palm per year (Anonymous, 1972) and based on this, the yield gap ratio at present is

$$\frac{\text{Record yield}}{\text{Average yield}} = \frac{30.0}{2.5} = 12.$$

The gap between the highest realisable yield (30.0 kg) and the best average yield so far achieved at the research station (14.5 kg) can be termed as the *research gap*. This gap can be filled up only through concerted inter-disciplinary research programmes. The difference between the best yield obtained at the research station (14.5 kg) and the yield obtained by the progressive farmer (8 kg) can be referred as the *development cum extension gap*. To bridge this gap, developmental efforts are called for to produce adequate quantities of planting material in improved cultivars such as *Mangala*, VTL-11 and VTL-17, optimum fertiliser application based on soil fertility factors, timely irrigation in summer months, plant protection measures against *mahali* disease and mites and above all technical support and guidance to the farming community. The gap between the average yield in the country (2.5 kg) and average yield obtained by the farmer (8.0 kg) can be referred as *extension gap*, and to fill this gap, it is required to transfer the established arecanut management technology to farmers through intensive efforts of extension agencies.

In the light of the above analysis it would appear that by bridging the *extension gap* alone, almost three-fold increase in production of arecanut could be achieved in this country and by bridging the *development cum extension gap* the production could be increased by six times from the existing area (Fig. 13.1). This is a good pointer for taking up concentrated developmental efforts in the more favourable areas of arecanut cultivation through, investment oriented programme with all the input components such as high yielding varieties, optimum fertiliser

application, irrigation, plant protection measures etc. If such programmes could be implemented successfully, there would be considerable scope for reducing the existing area under arecanut.

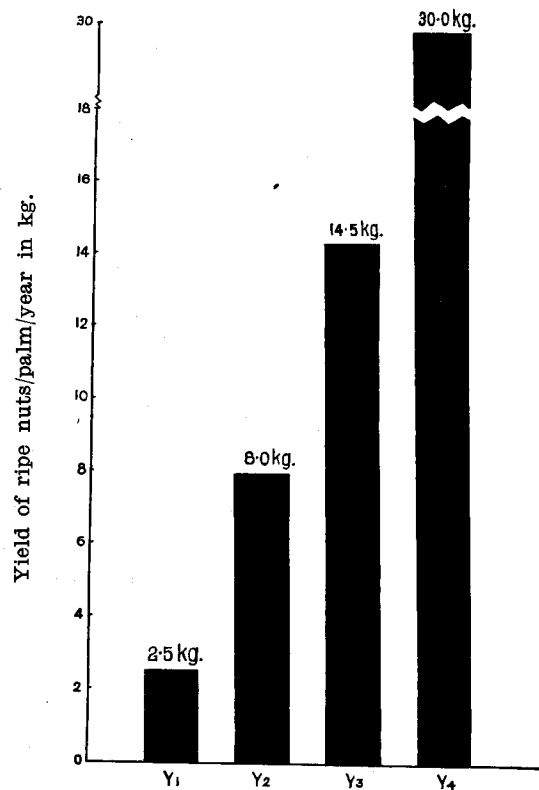


Fig. 13.1 Yield gaps in arecanut.  $Y_2 - Y_1 = \text{Extension gap}$ ;  
 $Y_3 - Y_2 = \text{Development cum extension gap}$ ;  $Y_4 - Y_3 = \text{Research gap}$

The reduction in area from 1,89,200 ha during 1974-'75 to 1,70,000 ha during 1977-'78 without any appreciable reduction in production (see Table 12.1), indicates that it would be practically possible to bring down the area under the crop considerably and divert the land to some other commercial crops. It is reported that in certain parts of Kerala, in recent years, the yellow leaf disease affected arecanut garden have been replanted with rubber.

The National Commission on Agriculture has projected the requirement of arecanut in 2000 A.D. as about 1,90,000 tonnes and production at the yield level of 1600 kg per ha at about 2,70,800 tonnes from the existing area of 1,74,000 ha.

From the surplus of about 80,000 tonnes, which partly will go for other uses, it has been indicated by the Commission that a reduction in area under the crop may be thought of at a later stage (Anonymous, 1976). However it is interesting to note that even the present production of 1,91,000 tonnes is used within the country without any visible symptom on price structure of the commodity. This shows that our internal capacity to utilise the increased production is much more than the estimated figures. Thus well planned developmental and extension efforts could be rewarding in this crop to increase productivity on one side and reduce the area on the other.

### III. Suggested future lines of work

From the foregoing discussion, it would appear that the future strategy for research and development should be to maximise production and productivity of arecanut plantations, find solutions for the more important maladies affecting the crop and ensure the market stability for the commodity. The National Commission on Agriculture has also opined that the existing research and developmental set up in the states and the Centre are sufficient for this crop (Anonymous, 1976). The future research and developmental efforts therefore should be directed to achieve these specific objectives.

Out of more than 40 species described in the genus *Areca*, so far only about half a dozen species are available in the germplasm, being maintained at CPCRI Regional Station, Vittal. Hence, it is necessary to assemble the remaining species and cultivars by a systematic collection programme not only from within the country but also probably from the centres of origin. Establishment of a gene pool containing species and types of genus *Areca* would open new possibilities of incorporating characteristics not available in the existing cultivars.

The varietal evaluation for over 15 years based on multi-location trials has indicated that besides *Mangala*, equally if not better yield potential cultivars such as 'Thirthahalli' (Anonymous, 1974), 'Andamans' (Anonymous, 1972) VTL-11 and VTL-17 (see Table 3.11) exist in the available germplasm collection. It is expected that atleast one or two selections among these will be released for cultivation in the near future. Varietal evaluation and release programme should be continued for ensuring a broad genetic base. The potential of hybrids in disease resistance has been indicated by the comparative tolerance of Dwarf  $\times$  *Mangala* hybrids to yellow leaf disease. Therefore, selection and resistance breeding to yellow leaf disease should receive high priority.

The future of arecanut as a plantation crop has to be centering on farming system in which arecanut is a base crop with cocoa, pepper, cinnamon, coffee etc. as mixed crops or tapioca, sweet potato etc. as intercrops. Practically very little knowledge exists at present regarding the cultural and manurial requirements of arecanut in the mixed or intercropping system. While the possibilities of increasing the production from unit area and income in such a cropping system has been indicated (see Tables 5.6 and 5.7), optimum input requirements are yet to be worked out. It is also necessary to select varieties and cultivars of not only arecanut but also the other components of the mixed and intercropping system, so that a most profitable and compatible crop combination could be advocated to the farmers.

In the mixed cropping, ecosystem is entirely different from the mono cropping system and basic ecology of the area is likely to change resulting in modification in the behaviour of insect pests. These alongwith problem of out-break of new pests would warrant continued pest research in arecanut.

In the field of disease control, the most serious threat to the crop at present is yellow leaf disease, the etiology of which is yet to be clearly understood. The etiology of the disease is as baffling to the scientists at present as the root (wilt) disease of coconut. While the problem is being tackled from management, nutritional and pathological angle as well as by resorting to resistance breeding, a break-through is yet to be achieved. Though various pathogens such as fungi, nematodes, bacteria and mycoplasma like organisms have been implicated in the etiology, the exact role of any one of these organisms is yet to be substantiated. Concerted inter-disciplinary approach is required to combat this debilitating disease.

Though the causative organism of *mahali* has been identified and remedial measures are available, since the disease makes its appearance during the rainy season, effective control measures at the time become rather difficult. To overcome this, the necessity for collecting epidemiological data for an effective disease forecasting system needs attention.

Since the bacterial leaf stripe is at present restricted to certain parts of *Maidan* area of Karnataka, strict regional quarantine measures are to be imposed to check the disease spread to other areas.

#### IV. Developing arecanut based industry

The future of arecanut and arecanut based industry depends on the extent to which an economically feasible alternative use for the different constituents of the nut could be developed early. The need for further investigation in the pharmacognosical aspects of arecanut is relevant in the present time when there is renewed interest in utilising the natural products in medicine.

Defatted arecanut appears to be non-irritant to mucus membrane of mouth. Constant irritation of mucus membrane generally initiates cancer lesion, hence further work for the identification of the irritating principle is needed. This will also throw some light on the relationship or association between oral cancer and arecanut (Balendra, 1949).

The possibilities of using various constituents of nuts such as fat and polyphenol fractions including as a colouring matter for food and as an ingredient for tooth paste and chewing gum could be studied in greater depth. Probably what is feasible would be an integrated processing unit where in the various component constituents of nut could be progressively extracted and utilised to have an economically feasible and viable arecanut based industry.

The most promising technology developed so far has been the utilisation of arecanut leaf sheath for preparing plyboards, decorative panels, packing cases etc. It would not be difficult to start small scale industry at the village level to produce flat sheets out of leaf sheaths by setting up a hot platten press.

In the field of arecanut marketing, though the co-operative institutions such as CAMPCO have played an important decisive role in the recent years in the states of Karnataka and Kerala, there is urgent need for streamlining the market system assuring a reasonable return of consumers' price to the arecanut growers. Establishment of regulated markets in states like Meghalaya, Mizoram and Tripura could bring an orderly marketing system where at present none exists.

Though arecanut production and related activities are reckoned as a major industry, it is a fact that no efforts at any time have been made for popularising use of this commodity. With its wide acceptability as a masticatory, particularly as processed end-products such as scented *supari*, efforts to popularise arecanut could substantially enhance its internal consumption as well as export potential. Chewing of processed arecanut by a large section of people of Indian origin settled in other countries, coupled with adequately well planned sales promotion

efforts could considerably increase the demand for arecanut. In view of the numerous uses for which arecanut has been put to, as described in this monograph, besides its main function as a masticatory, it is to be assumed that it will have an impact in future also, possibly through developing a suitable alternative technology for its utilisation.

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