SUCCESS STORY OF PRIVATE VENTURE IN COCONUT SEED PRODUCTION

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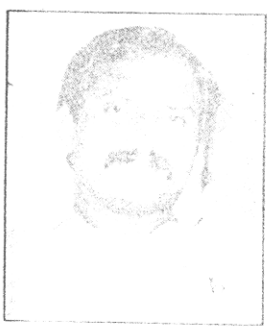
Hybrid seed production in coconut has already cut across the domain of Government efforts in India. The scintillating achievement of the Deejay group of companies in this direction is revealing and praiseworthy. The Deejay group with headquarters at Bangalore in Karnataka has a diverse range of activities in poultry and agri livestock fields. With a market share of 60 per cent for broilers and 75 per cent for layers in the 3 southern states of the country, Deejay is now synonymous with poultry farming. After having established firmly in poultry breeding, the group has devoted itself to a diversification programme which covered aquaculture, rabbitry, tissue culture and seed production in coconut.

Mr. David D'Souza
General Manager

The success story of Deejay continued unabated in all the activities which is reflective of the efficient management of the group under the dynamic leadership of the founder Chairman Mr. David J Lobo. The shrimp hatchery set up in Goa has a capacity to produce 50 million larvae for the development of aqua-culture. The rabbitry division of Deejay located at Kodai Hills in Tamil Nadu produces Angora rabbits which has helped to provide employment and additional income to a sizeable section of tribal population living in the area. Deejay has also set up a tissue culture laboratory at Bangalore for mericloning of fruit, vegetable and forest species. Tissue culture banana plantlets are being distributed from the laboratory to farmers. The coconut division of the group is running nurseries for the production and distribution of quality planting material. Strict quality control measures are adopted in the dispensing of the nurseries right from the identification of mother palms to the selection of seedlings in the nursery for distribution to farmers. The hybrid seed garden maintained by the division at Arasarady near Madurai in Tamil Nadu further reflects the systematic application of modern technology in seed production and managerial efficiency.

The Farm and its Location

The company purchased 80 ha of land in 1982 and started planting in 1983. The yellow and orange colour forms of Malayan dwarf and 4 selected local tall types comprising Nagercoil tall, Andaman ordinary, Arsikere tall and Pollachi tall in the



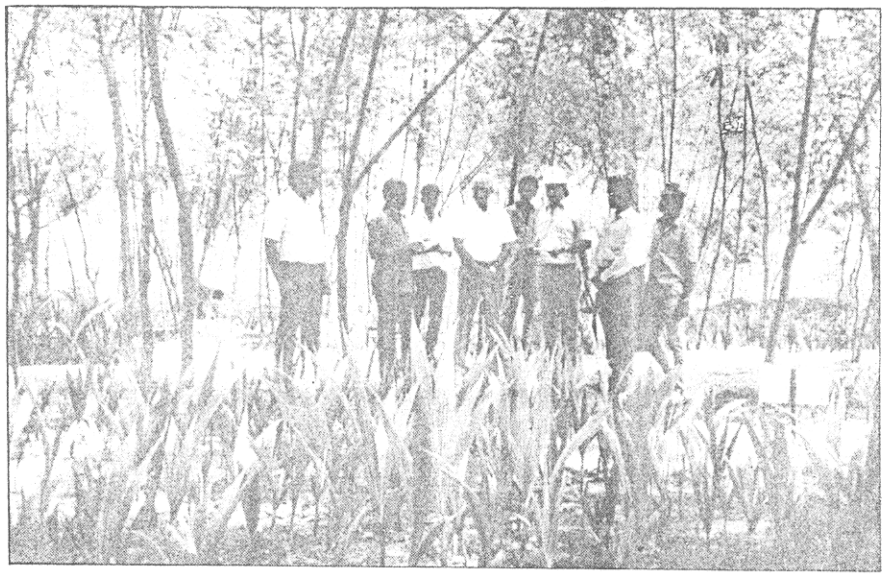
Mr. J. Perianayagam
Manager, Hybrid Seed Garden

proportion of one tall for 4 dwarfs have been planted in separate blocks. Except one side of the farm which is a hill slope, all the other three sides have been planted with 5-6 border rows of talls. The spacing adopted is 8 m x 8 m for talls and 8 m x 7 m for dwarfs. While the planting of dwarf cultivars has commenced in 1983 itself, there was a delay of over one year in the selection and planting of tall cultivars. The planting programme has so far covered an effective area of 60 ha with a palm population of 7219 dwarfs and 3477 talls.

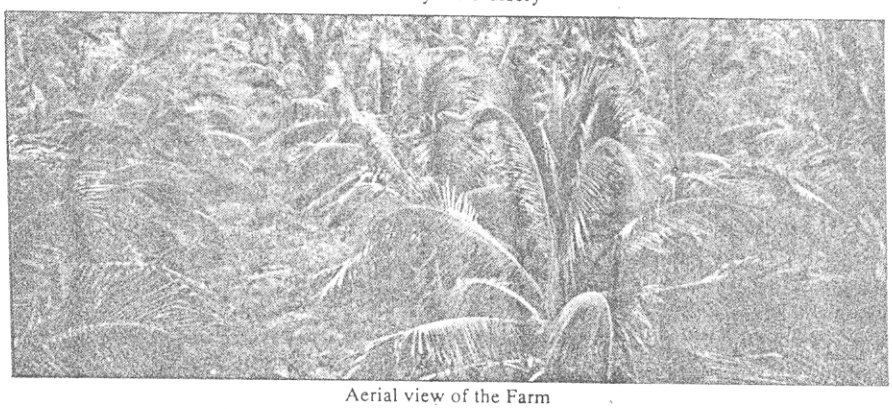
The location of the farm is not considered congenial for profitable coconut culture according to the commonly recognised norms. The area receives very low annual rainfall of 90 cm with maximum concentration in October-November. The temperature often touches 42-43° C during the peak summer months with considerable di-urnal variation coupled with low humidity ranging between 65 and 70 per cent. Despite the unfavourable agro-climatic features of the area the performance of both the talls and dwarfs is more or less comparable with that of those growing under more favoured situation. This is very much in evidence from the performance of the dwarfs which have started flowering 3 years after planting. Among the talls the Arsikere tall has also commenced flowering just 3 years after planting which is not a common occurrence under normal situations. So far 928 tall palms have reached flowering phase with the Arsikere tall constituting the bulk.

Breeding

The productivity of dwarfs grown in the farm is very satisfactory and, as such, hybridization could be commenced 6 years after planting. During the first quarter of 1989 nearly 3000 dwarf palms were utilised for the purpose. Presently a total of 4050 dwarf palms are being used for hybridization. The tall palms are yet to attain uniform flowering and, consequently, assisted pollination with the pollen collected from elsewhere is being resorted to. With the onset of uniform flowering in talls, natural pollination of dwarfs is proposed to be allowed after emasculation.



D X T Hybrid Nursery



Aerial view of the Farm

For pollen collection, selected palms of Arsikere tall and Nagercoil tall are utilised. Spikelets are cut from the inflorescences at some cm distance above the female flowers within 10 days of the opening of spathes. The male flowers are stripped by hand and cracked by using a hand roller. The cracked flowers are dried at about 35-40°C for a period of 24 hours. The flowers are then sieved using a 0.2 mm sieve and the pollen so collected is stored in small bottles kept in a desiccator and used within one week for assisted pollination.

The inflorescences of the dwarf palms in the farm are emasculated within 24 hours prior to natural opening. The time of natural opening of the spathe is judged by observing external appearances such as bulging at the bottom, the widening of the longitudinal groove along which the spathe splits naturally and the fading of fresh colour from the tip of the spathe. The tip of the matured spathe is clipped off and then stripped into 2 or 3 strips which are cut and removed at some distance above their point of attachment at the bottom of the spathe. The spikelets are then cut and removed at about 7 cm from the topmost female flower and the remaining male flowers on each spikelet are stripped off. The male flowers

Vegetable as Intercrop

are collected in a canvas sheet which is spread under the inflorescence prior to emasculation by tying the 4 corners on convenient locations. The male flowers so collected are disposed of by burying in the ground. Bagging of the inflorescences is not followed in the farm. However, those spathes which are likely to open before emasculation work commences the next day are bagged by using rough cotton cloth bags. One trained emasculator is in charge of 270 palms and he carries out an average 25 emasculations a day.

Before starting pollination, viability of the stored pollen is checked on an agar medium containing sucrose. Pollen with a germination percentage of less than 45 is not used for pollination. It has been observed in the farm that female phase in dwarfs starts in about 2 days after emasculation during summer months and continues for 5-10 days, whereas in winter and monsoon months, the female phase commences about one week after emasculation and lasts for 10 to 15 days. During the female phase pollination is carried out by using a hand held blower operated from the ground blowing a 1:19 mixture of pollen and talc. Pollination is carried out five times at 5 day intervals using about 0.4-0.5 g of pollen per inflorescence. The dilution of pollen used in the farm appears to be on the higher side when compared with the commonly accepted 1:10 dilution.

The setting percentage which was as low as 4.9 per cent in the beginning has slowly improved to the level of 25-30 per cent in the older palms in which hybridization was first started. Similarly barren nut production which was 3036 in the entire farm initially has also come down to less than 100. However, burning and abortion of spathes during summer months are serious problems and the situation may persist because of the dry atmosphere and heat during the period. The first batch of about 5000 hybrid seedlings are now available in the nursery with only less than 10 per cent illegitimates. The percentage of illegitimates is possible to be brought down to less than 5 with further refinement in the overall breeding programme. A phased programme of hybrid seed production has been visualised with the final target of production of 500,000 hybrid seedlings.

Management

Being located in a dry belt the company has given priority for irrigation in the entire area besides adopting measures for moisture conservation. A number of check dams and percolation tanks have been developed which, though not serving as water reservoirs, have helped in replenishing ground water. There are 5 open wells and 5 borewells of which 3 are effective which could fully satisfy the irrigation requirement in the farm. Drip irrigation is the method adopted under which each palm receives an average 100 l water per day. From the appearance and performance of the palms the quantity of irrigation water received by each palm could be considered adequate.

Adequate and balanced manuring is provided systematically to each palm at the annual rate of 0.5 kg N, 0.32 kg P_2O_5 and 1.5 kg K_2O through the application of 1.20 kg urea, 2.0 kg superphosphate and 2.5 kg muriate of potash in two split doses. Besides the fertilizers, each palm receives 20 kg of poultry manure also per year. Composting of coir dust has been taken up recently in the farm by inoculating the bulk with pleurotus sajor-caju mother spawn (edible mushroom). The composted mass will be an excellent bulky organic manure for basal application to the palms. Plant protection also receives proper attention. During the months of Oct-Nov-Dec., which coincide with the onset of northeast monsoon, monthly spraying of bordeaux mixture is followed as a prophylactic measure against the possible outbreak of bud-rot and other fungal diseases. In other months quarterly spraying is practised. Root feeding of monocrotophos against red palm weevil attack and control measures against rhinoceros beetle are the routine plant protection operations carried out in the farm.

The coconut division of Deejay is doing commendable work in the production of quality planting material. With the immense experience in the poultry and agrilivestock management backed by the dedicated involvement of professional managers and other employees, Deejay could render valuable services for the development of coconut culture in India.