

agriculturists living in the neighbourhood of big towns to develop other aspects of farming besides the time honoured cultivation of field crops.

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### **Some aspects of Coconut cultivation in the West Coast.**

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An ideal coconut palm may be taken as one that bears early, produces the maximum number of well sized nuts in a year and has a long fruitful life. According to the experience of the writer about coconut palms in the West Coast of this Presidency, the following points may be of interest.

A coconut palm comes to fruit early or late due to various causes. Even in the same locality soil differences have been found to affect it very much. A palm put in a well drained land close to ponds or other cool places has been found to bear earlier. Proximity to sea or saltish back-waters is one of the most congenial conditions for planting them to get an early crop. A very thickly planted coconut garden seldom brings in early harvest. In a plantation if well manured catch crops like vegetables chillies etc., are cultivated coconut seedlings have been found to grow very vigorously so as to come into bearing early. Good seedlings when planted grow vigorously and a vigorous seedling is the result of a good seed nut. It is therefore of extreme importance to select the best seed coconuts for planting.

Much has been said about the selection of seed coconuts for planting. Doubts have been expressed in certain quarters as to the inadvisability of rejecting nuts from young plants. Instances have also been quoted of such selections having proved successful in producing palms vigorous enough to come to fruit in the 4th or 5th year. Considering all the points that contribute to the success of the plantation experience has taught the ryots of the West Coast that good sized nuts from middle aged trees should be selected for planting. Nuts formed during the hot summer months will be small and are considered

not good for seeds. Big sized nuts are obtained from the crop which flowers when rains set in and which have all through the developing period a continuous rainfall. Some palms produce nuts with small eyes, others with big ones. Those with big eyes are preferred by the planter inasmuch as the size of the eye decides whether the future plant will be thick and vigorous or thin and weak. Nuts of an oval shape when the rind is removed are considered better as they are generally found to yield a higher percentage of oil. In certain cases there is the idea of bringing seed nuts from places where the coconut palm thrives best. This idea is more due to the possibility of getting any amount of seednuts or seedlings of the desired quality or growth than to anything else. Many do condemn this idea saying that seednuts from places where the palms grow best would not prove successful in moderately suitable localities with quite different conditions. Therefore a planter away from sea-coast avoids getting them from the coast region. It cannot however mean that well developed nuts should not be selected for seed. Therefore the question must be one of acclimatised seed. There are certain varieties that grow to abnormal size. The number in a bunch of big sized nuts should naturally be fewer and therefore there is no particular object gained by choosing a variety of abnormal size for general planting. At any rate well matured nuts should be selected for seed. Seed nuts should never be dropped down from the top of the tree as a sudden fall might affect the germ. They should be slowly brought down with the help of a rope and basket. Choicest seed nuts are sometimes sold at fancy prices rising up to two annas each.

Coconut palms delight in free air and light; therefore close planting should be avoided. It is a fact that plants alongside the sea may have some access to saline matter. When it is seen that ryots actually pay for irrigating young plants with sea water although they are within a short distance from the sea, and that such irrigations do immense good to these plants, one would think that the vigorous growth of coconut palms in the coast region is more due to the breeze and the moist yet friable soil than to the saline matter present in the soil. With the required amount of water in the soil, it is a simple

matter to understand that the growth is more vigorous where the plants are exposed to breeze; the greater the breeze the larger the amount of evaporation from the leaves and therefore the greater the absorption of water and the consequent deposition of solid matter in the plant. Even in a coast lying garden instances of palms taking 8 or 10 years to come to fruit are not very rare. This is mostly due to defective treatment.

Some ryots believe that direct manuring with cattle dung or green leaves is harmful when done to young plants inasmuch as these while rotting harbour the maggots of rhinoceros beetle which they when emerge out, attack the growing points with very destructive results, especially when the plants are young. Therefore in all cases an organic manure should be well mixed up with soil and left covered in the coconut plantation. A coconut plantation when newly started may even be leased out to careful ryots to grow catch crops for any nominal rental, care being taken to see that the crops are always manured and the soil well ploughed. The writer had the occasion to advise the owner of a newly started coconut plantation as to how his coconut plants may be improved. The whole area was weedy and the plants, sickly. A few plants growing beside an implement shed, however stood out from the rest of them. And the ryot superstitiously enough attributed it to the plants being near the house forgetting the fact that the weeds at that particular place were scraped off or otherwise smothered. According to the advice given the ryot let the area to cultivate crops in the interspaces, and it had a wonderful effect on the growth of coconut palms in two years. Plants which have shown their stem high above ground have to be given direct manuring, because it may not be quite possible to grow remunerative catch crops under coconut shade. Manuring the whole area of a plantation is more desirable than applying manure to the roots of individual plants. Raising of pulse crops with any available manure is a common thing in vogue. Digging the plantation to keep down weeds and to soak in as much of the monsoon rains as possible is a regular annual treatment in all flourishing gardens. Cattle penning in the intermediate spaces between plants is often practised. If individual manuring with cattle manure,

ashes and green leaves is to be given as is done in many parts, the ryots are always careful not to make a mound of earth round the bottom of the plant or to work the soil quite close to the stem. A pit of some 15 to 18 feet in diameter is dug all round the plants sloping from the stem to the circumference where the pits are deepest. Manure is always applied at the deepest portion of the pit far away from the stem. A good deal of root pruning is also effected when the pit is dug. It may be quite possible to cultivate cover crops to be subsequently dug in as green manure. But the idea of growing crops for the express purpose of being dug in is very strange to the local cultivator and it would take time before the method is generally adopted. Spacing the plants better is another point very much lost sight of in some parts. When a tenant is evicted improvements are paid for, calculating on the number of trees in a given area valuing each tree at a price ranging from three to five rupees. Thus if a tenant puts in the largest number of trees per acre he has been found remunerated best according to some old system. Therefore tenants who are always afraid of eviction, naturally put in more plants in a given area without considering the economic flaw if they were to enjoy the plantations. Although according to present rules the old system has given place to a new one of calculating the price of a tree from the value of the produce it can give, the tenant's method of planting is not altered. It may yet take a number of years before he realises the blunder and rectifies it. It is more surprising to see even the land owners who need not fear eviction, planting them very close copying the faulty method of the tenant. Coming to the question of spacing coconut palms, we see a thickly planted garden which enjoys the favourable condition of a sea-board bearing fruits well. In these parts over a hundred per acre is not uncommon. In the interior parts, on the other hand, hundred palms per acre would tell upon the yield very much. To plant about 60 per acre according to the soil conditions will be an average spacing for the interior. For inter-cultivation or for raising catch crops it is more convenient when plants are wider apart, provided they yield the maximum number of nuts. It is a well known saying in Malabar that coconut palms should not be planted so near as to enable the leaves of one plant to touch the leaves of the other when grown up.

An early bearing plant is often a shortlived one. So also a heavy yielder. In the interior parts away from the coast line palms come to fruit later, yield fewer nuts but live longer.

There are no methods of machine drying of kernels into Copra, so that there could be much of it for sale during the rainy season. Therefore copra manufacture is of necessity slack during that time. Shells are almost all used for fuel; the idea of manufacturing buttons out of them, carving shells into fancy cups and vases is not quite unknown. However, the industry is very limited with wide scope for expansion. The rind is sold almost exclusively for fibre making and the growth of coconut fibre trade is very encouraging with much room for further development. Perhaps the trade in fibre is the most profitable business, and it is not uncommon to see a hardy Mahomedan mortgaging his whole property to obtain the capital required to commence his little fibre business. The export trade is done by bigger wholesale dealers who get their share of the profit. Another portion of the fibre trade is in the hands of petty shopkeepers who receive fibre or yarn in barter for salt, chillies, kerosine oil, or fish etc., and sometimes even rice, sold to comparatively poorer people who take coconut fibre-making as a domestic industry on a very small scale. The quantity of fibre or yarn thus turned out is indeed large and it may be said, without fear of contradiction, that fibre or yarn-making as a domestic industry is on a firm basis as it is the means of subsistence for a large number of poor people living in coconut centres, although men engaged in yet bigger concerns or factoris are very numerous. It is not claimed to deal with coconut industries exhaustively in this article. Therefore leaving aside the fibre and shell industries as subsidiary ones the copra industry has to be considered here from a ryot's point of view. Most of the ryots sell their crop as unpeeled nuts without caring for their size. Selling nuts is in many cases to meet some pressing money demand or to get rid of an old stock-

The purchaser, who is invariably cleverer than the seller, turns this to his own advantage by offering a lower price. Price is quoted for 100 or 1000 nuts with little consideration as to their size. However the purchaser picks out the smaller nuts and either rejects them or offers them a lower price. But there is no practice of grading the nuts and demanding a higher price for bigger only. If by chance the seller realises it, the cleverer purchaser has a thousand ways of avoiding him. Therefore those who sell nuts for Copra not infrequently receive a price much lower than what their produce is worth. The real value of the coconut, should be calculated from the quantity of copra which it would yield; and this quantity varies with the size of the nut or kernel content. Anything that can remedy these evils and bring to the ryot his own legitimate dues must very probably be through the establishment of a co-operative copra industry for the benefit of the ryots in every coconut centre with sufficient means of paying the ryots the price of his coconuts from a calculation of the copra they yield. On the face of it this may not appear to be very serious and they may not realise that they are at such disadvantage as to urge speedy remedial measures. But it is a fact and any ryot will be able to gauge the extent of loss if he can only spend time to see carefully what enormous profit the copra maker enjoys giving him little for all the trouble he takes on his coconut plantation. When he realises this in course of time, it is quite possible for him to see that coconut plantations are worked at a greater profit than they are at present.

There are numerous varieties as shown by the colour of the rind, size and shape of nuts or thickness of kernel as indicated by some outside varietal marks of plants and nuts. Some when taken as tender coconuts are remarkably sweet while others are comparatively insipid. All these must have some bearing on the oil content, but no definite information of the sort is available.

What is urgently wanted may be to find out the most useful variety to produce an ideal plant with sufficient means to prevent its deterioration. An easy formula of a mixture of manures, and a method of treatment to improve already existing plants that are comparatively poorer although they are not far from the sea board, will be another line of improvement to be sought for. Improving the present output of coconut jaggery would certainly add to the wealth of a coconut planter. After a time when enough light has been thrown on the possibilities of coconut cultivation, both selection and manuring might merge into one producing better results which would seem fabulous to the present grower. Little work in the form of a systematic study of coconuts has as yet been done. It is hoped that the proposal already on foot to establish a coconut farm on the West Coast will soon be an accomplished fact and that the study of coconuts in all its aspects producing results which would benefit the enormous number of men engaged in coconut planting and allied industries, would be taken up.

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### **Hand Water Lifts in the Circars.**

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Ryots in the Northern Circars use a number of waterlifts. Some of them are *karem*, *yetam* (picotah) of several types, *chetiguda* and swing basket.

Near Kadium, *karem* first attracts one's attention in addition to the universal swing basket in use every where for lifting water from very small depths. *Karem* consists of a narrow and long wooden canoe or a hollowedout trunk of a palmyra, one end of which is suspended to a long horizontal lever while the other end is resting on the ground. It is similar to, if not identical with, the ordinary "don" illustrated in Fig: 51 in Mukerji's Hand Book of Agriculture. Tin canoes, being lighter and cheaper are now re-