

A Note on concentrated Seed Beds and Double transplanting of Paddy in the Nellore District.

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In the Nellore District, most of the tanks usually receive their full supply of water in October—November, after the break of the north-east monsoon. Sometimes, even the Kanigiri and other major reservoirs fed by the Pennar river irrigating nearly one hundred and fifty thousand acres, do not regularly get their full supply of water in July—August. In spite of these uncertain conditions of water supply, ryots persist in cultivating a long duration variety of rice called *Molagulukulu* for the reason that it sells at a comparatively high price and its quality is good. The yield of *Molagulukulu* when planted in July—August is high. However, its yield under late-planted condition is poor, and such late planted crops are invariably susceptible to the disease known as 'blast' (*Piricularia oryzae*) which is more or less endemic in the district. Consequently, ryots are forced to cultivate an inferior coarse variety of red rice known as *Isvarakora* or be contented with growing a crop of *ragi*, or other dry crops even though water is available in plenty late in the season. The demand for *Molagulukulu* rice, otherwise known as Nellore rice, in the market from upper and middle class people of the towns of the Southern and Central districts of the Madras Presidency is steady throughout the year. In the interest of the rice growers of the Nellore district and consumers in the urban areas of the Presidency, it is very necessary to increase the total output of *Molagulukulu* crop, as otherwise limited production would either tend to increase the price of this high class rice, or when price trend is downward, would lead to adulteration of the limited good quality rice with cheap inferior quality rices.

Apart from the improvement in the local *Molagulukulu* variety from the point of its yielding capacity and resistance to disease, the best way of tackling this problem of ensuring the cultivation of the long duration *Molagulukulu* variety on a larger scale in the district, appears to be to make the best use of the existing natural facilities of water supply by adopting the system of double transplanting. The principle involved in the double transplanting system is that the initial sowing of the seed bed should take place in the proper season, and thereafter the seedlings should be so reared that overgrowth is avoided or checked by proper control till finally planted out. Under the present conditions the interval between the date of sowing in the seed bed and final planting is too long and if left in good condition in the seed bed itself, the seedlings would become overaged and unfit for planting or if water is completely withheld the death rate of seedlings would be very high. In order to overcome this, it is suggested that the seedlings from the primary seed beds are to be planted out in a secondary nursery of

about 3 or 4 times the area of the first nursery. The planting of the seedlings in the secondary nursery gives a set back to the growth of the seedlings and at the same time it makes the seedlings, with better environment, grow hardy and robust to get over adverse weather conditions after they are finally planted late in the season.

Normally, about 5 acres of seed bed area are required to transplant 100 acres. Under the double transplanting system, seedlings from the primary seed beds are planted out in 15 to 20 acres which is the secondary or intermediate seed bed. Seedlings from this secondary nursery are then planted in about 100 acres. The proper season for sowing *Molagulukulu* in the first nursery in the delta area is first week of July (*arudrakarti*). Seedlings are allowed to grow in the first nursery for about 6 weeks before being planted in the secondary nursery, wherefrom they will be again fit for final planting in about 4 or 5 weeks. As one of the objects in this system is to conserve the limited available water supply to the best advantage, it is advised that the seed bed area under a canal or in a village should be as far as possible concentrated along the main channels. In the tank-fed areas the seed beds are similarly raised except that the first sowing may have to be delayed to the end of August or early September. If water supply to maintain the primary and secondary seed beds are not available in these areas, the ryots in the nearest delta area can make a trade in raising seedlings to supply their adjacent ryots cultivating paddy under tanks. Both the primary and secondary seed beds are to be prepared under wet conditions. Seedlings in the primary seed beds should not be allowed to grow more than a foot in height and if a tendency to overgrowth is noticed at any time it is better to withhold irrigation for a week or two prior to planting the seedlings in the secondary nursery. Seedlings pulled from the primary seed beds are to be planted very close, in twos or threes, in the secondary nursery so that all the seedlings are accommodated within the small area prepared as the intermediate seed bed. The secondary nursery should be maintained under wet conditions.

The adoption of the double transplanting system, wherever facilities are available, will enable the Nellore ryot to grow the long duration variety *Molagulukulu* in a larger measure than at present even in tank-fed areas, and eliminate to a great extent the inferior variety *Isvarakora*. In the Pennar delta this system will enable the ryots to grow a green manure crop in a portion of his holding during the period the seedlings are in the two nurseries. Further, the planting period can be prolonged to adjust the work to the limited available labour without detriment to yield. They can also raise seedlings for sale to the ryots of the non-delta areas.

This method was tried in small areas in a number of villages in the Nellore district in 1940-41 season. The results were quite encouraging to pursue the trial on a wider scale in the coming season. This system will be particularly useful to the Mopad project. Till now the largest area ever cultivated under this *ayacut* is 6,300 acres, in 1925-26, though the proposed

ayacut is 12,500 acres. The average area cultivated for the last 20 years is only 4,000 acres, and by raising paddy seedlings in concentrated seed beds and double planting them all the 12,500 acres can be brought under paddy cultivation with the limited quantity of water.

Summary. Double transplanting system is an expediency cultural practice to get over the adverse seasonal conditions in the Nellore district, for the cultivation of the quality rice *Molagulukulu* even late in the season in the place of *Isvarakora*, an inferior rice variety. If the principle of the system is properly understood and carried out on a co-operative basis, so far as seed beds are concerned, the limited water supply in the major reservoirs, minor tanks or wells, early in the season, may be economically utilised for rearing the primary and secondary seed beds in the proper season, and thereby ensure a normal crop even when finally planted late after the tanks get their supply with the break of the north-east monsoon.

EXTRACTS

The possibility of extending Cinchona cultivation in the British Empire By Sir Geoffrey Evans. The Cinchona plant is the base for the manufacture of quinine, which is still the most important specific for malaria, in spite of the advent of synthetic drugs, such as plasmoquine and atabrine. The former drug is not now in favour, as it is said to give rise to certain toxic effects. Atabrine is of German origin and is protected by patents. Its cost is high, and it is stated that the cost of treating one malaria case with it would be 49 sh. as against 1 sh. for a similar treatment with quinine. It is remarkable that about 90 per cent. of the quinine products consumed in the world to-day is produced in the Netherlands East Indies, and that only about 4 per cent. is made in British countries. It has been estimated that there are some 800 million people in the world to-day who suffer from malaria and that there are two million fatal cases annually. A large proportion of these casualties are British subjects. For example, the League of Nations Health Organization gives data showing that 100 million people in British India alone suffer from malaria, but only 8 to 10 million are treated annually, and in other tropical parts of the Empire conditions are much the same.

The increased consumption of quinine is largely a matter of price and, running concurrently of efficient propaganda. With lower prices, a wider knowledge of the nature of the drug and efficient means of distribution, the consumption could undoubtedly be largely extended. India alone consumes about 210,000 lb. of quinine per annum, of which 70,000 are produced in the country and 140,000 are made from Dutch East Indies bark. The real need for India is provision for 100 million sufferers, using 45 grains a year, which would require 600,000 lb. of quinine sulphate annually.

The price of the bark is the real crux of the question, and this is largely controlled at the present time by one organization which holds a practical monopoly, namely, the Kina Bureau of Amsterdam. This controls the production of bark in the Netherlands East Indies, a region which, as has been stated above, provides not less than 90 per cent. of the total world production at present. The supplies from the South American countries which are the original home of the plant, are now negligible.

The genus *Cinchona* is a native of the Andean region and grows in a wild state on the eastern afforested areas of that region, between latitudes 10°N and