

Rao Bahadur K. S. Venkatarama Ayyar, humbly remarked that cattle trespass was a serious problem in his district, and the man who foresightedly raised a crop of green manure during the summer for his paddy lands, very often found to his cost that he provided good pasturage for the village animals. Even crops like daincha and indigo which were known to be non-edible to cattle were now being eaten up by them in Tanjore. He appreciated some of the new points contained in Mr. K. Ramiah's paper, particularly the one about the manuring of rice seed-beds, and he hoped to benefit by it. There was also another difficulty with regard to applying fertilisers to rice fields in that there was the risk of the manure being washed out of the fields as the irrigation water could not be controlled properly as is usual in Tanjore.

Rao Sahib T. V. Rajagopalachari pointed out that in some parts of Madras people preferred carting leaves to rice fields from outside even at enormous costs to growing a green manure crop in the land itself. He also pointed out that there was an impression often expressed that the produce obtained from a green manured field was insipid in taste when compared to the produce grown without any manure.

Mr. K. Ramiah replied that in several experiments, there has not been any perceptible difference between green leaf manuring and green manuring. As regards the quality of the produce he thought that the cooking qualities were probably more dependent on the harvest and threshing practices rather than on manuring and he mentioned the case of Tanjore produce of a particular variety (Nellore Samba) fetching less price than the same from elsewhere. He also pointed out that the difficulties of cattle trespass with regard to growing a green manure crop were remediable and he pointed out that under very similar conditions in the Godavari delta, the practice of growing sunhemp as a green manure crop was extensively in vogue and that Godavari ryots were able to maintain better type of cattle than in Tanjore.

## THE PROBLEM OF MILK SUPPLY TO CITIES

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Intensive urbanisation of a population always creates certain problems which need solution. Housing, lighting, transport, roads and medical aid and food supply are the more important problems of the urban population. As it is not within the scope of this article to study all the problems, only one aspect of food supply will be considered. Milk supply to an urban population has become increasingly important of late, as people find it difficult to maintain a cow to supply home requirements. In cities like Madras where the milk supply is dependent on professional milkmen the problem is acute. Depending on their prosperity these milkmen keep a limited number of cows and try to meet the demand as best they can, with the result that the housing of cows and sanitation in general do not come up to a high standard.

In the absence of a sufficiently strong public opinion these drawbacks have not been rectified. Moreover, the house-wife is not prepared to pay a higher price for a better quality of milk, and the milk man in his turn wants to make profits. These are limited as the cows do not give sufficiently high yields so as to show profits. The result

is that the calves are starved and when dead they are stuffed with straw and placed before the cow so as to induce milk flow. The milk is then adulterated so as to make the industry pay. In addition to this the milkman cannot afford to keep the cow when dry. She is therefore either sold or exchanged for a cow about to calve or in milk. Very often the dry cows are purchased by the butchers who slaughter them for the beef-market. By this method the country is becoming deplete of very good milch-stock.

From time to time capitalists have started dairies to meet the demand of urban population but they have often failed owing to lack of proper supervision, adequate capital and suitable animals. \* The author has already shown how the costings for milk production work out. As matters stand in this country it has not yet become possible to supply a large number of milch cows which will yield sufficiently large quantities of milk to make the industry pay. But when the cost of milk production is low and if there are adequate transport facilities dairy farming under expert supervision should pay.

Under prevailing conditions, however, there seems to be only one quick method of solving the problem without upsetting the economics of the population of villages surrounding large cities. This is by collecting the milk produced in the surrounding villages and suitably treating it at a convenient centre and supplying it to the customers. When there is initiative among villagers, a co-operative creamery can be easily organised. If this is not possible a well qualified individual with sufficient capital should be able to collect the milk on a contract basis and transport it to cities. Some of the trained-men from the Imperial Institute of Animal Husbandry and Dairying and the Agricultural College at Coimbatore could easily tackle this problem quite successfully instead of being on the unemployed list.

In this connection it is not out of place to mention how the milk supply of Mysore and Bangalore is being tackled by Mr. M. Krishnaswami who was trained at the Imperial Institute of Animal Husbandry and Dairying. Mr. Krishnaswami had the foresight to see the growing demand for a proper organisation for supplying milk to the City of Mysore. He has organised the concern known as the City Milk Supply, Mysore, and as it is now working at a profit it would be of interest to know how it is worked. This type is usually called a creamery in the west. Like most big concerns the beginning has been a modest one. The factory is housed in a hired building with its own limitations for a proper dairy at the Old Post Office Road, Mysore. The proprietor is well aware that the locality and the building are not ideal but he feels it will not be possible to build one in a suitable locality until the business warrants a building of its own.

The initial capital outlay was Rs. 16000 and later Rs. 6000 from earnings were utilised for improvements.

The plant consists of the following:—

1. "Pioneer" Pasteurising outfit-comprising of a small steam generator working at 51 lb. pressure, a bulk pasteuriser with hand agitator, hot and cold water tank with a steam turbine for washing bottles and a sterilising chest.

2. The "Serval" refrigerating equipment and Frigidaire worked with submerged cooler, sufficient to cool the store between 1000 lb. to 1500 lb. of milk per day.

3. Separator, butter making apparatus, bottling machine and testers, milk cans, milk bottles, weighing machine and office equipment.

4. A lorry used for carrying sterilised milk cans to and from milking centre and tri-cycles with arrangements for holding cans. (A recording clerk is employed at each centre.)

There are six milking centres situated on the Yelwal road, the last village being nine miles from Mysore. The cows for milking are brought to the centres between 6 A. M. and 8 A. M. and again between 4 P. M. and 6 P. M. each day and milking is done at all the places at the same time. The milk is filtered through cotton filter and weighed put into sterilised cans and taken to the factory for pasteurising within half an hour of milking. Samples are taken for milk from various centres for testing and the milk is pasteurised. Samples are also sent once a week to the Food Analyst. The method of pasteurising is to keep the milk under pressure say about 200 lb. for about half an hour at 145°F. and to rapidly cool it down to 40°F or thereabouts.

The cows' milk is purchased at 16 lb. to a rupee and sold at 8 lb. to a rupee for casual and extra orders and at 10 lb. to a rupee on coupons and for approved credit customers. There is a loss of about 3 per cent of milk in handling. The cost of pasteurising works to 2 pies and cost of delivery charges to about 1'05 pies per lb. In addition there is the cost of breakage of bottles, cost of bottling, office staff, messengers, lighting, telephone in addition to other expenses to be taken into account. Good prices are likely to be realised during seasons, festivals, holiday making etc. 50 per cent. of the milk handled is supplied to Government hospitals, Government and public institutions. A certain amount of buffaloes' milk is handled for the use of coffee clubs as well.

It is interesting to note that the concern was worked at a heavy loss for about two years, but that it works at a profit now, because of expert supervision. Mr. M. Krishnaswami not only deserves to be congratulated on his effort at Mysore but needs more encouragement in his present endeavour to organise the milk supply of Bangalore.

By this system it is seen that the existing milk-men are not adversely affected and a large amount of capital is not tied up and there is no necessity for the concern to take the risk etc., of managing cows. The milk-men are sure of selling their milk to the factory and in time the two industries become inter-dependant. The type of cows that supplies Mysore are *Hallikars* and cross-breeds. The former is said to

yield only 6 lb. per day on the average. In spite of this, the ryots are increasing their milch-cows to supply the factory which acts as an incentive for high milk production.

There is no doubt that the problem of milk supply of other cities can be solved on the lines suggested above, provided trained young men have the initiative to organise industries or co-operative societies; or capitalists could employ these men for running the factory efficiently. In the latter case unless managers of factories are paid satisfactorily it will be difficult to expect a high standard of work.

My thanks are due to Mr. M. Krishnaswami for permitting me to go through his factory and furnishing me all details without hesitation.

#### Reference.

1. T. MURARI. The cost of milk production at Hosur and Madras City. (*Madras Agricultural Journal*, Vol XIX, No. 12.)
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## CULTIVATION OF KORAI (*CYPERUS TEGETUM*) OR MAT GRASS IN NORTH ARCOT DISTRICT

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**Introduction.** *Korai* is one of the few crops that can profitably be grown on heavy clay soils, deficient in drainage and consequently regarded as unfit for cultivation. Low-lying lands below tanks and also swampy and saline lands could successfully be planted with this crop. The culms of this grass, supply raw material for the manufacture of mats, so commonly in use in almost every Indian household. The cultivation of this crop in India is however limited to a few places in the Bengal and Madras Presidencies. In the District of North Arcot, there is a fairly large area under this crop in Cheyyar and Wandiwash Taluks, the villages of Vadanangur in Cheyyar Taluk and Tennangur in Wandiwash Taluk contributing the largest portion. In recent years the area has considerably decreased due to scarcity of water. Though the industry has to some extent suffered in common with others in the general trade depression, it has however not been so much affected since it is not influenced by the fluctuations of foreign markets.

**Details of cultivation.** *Soil*—The cultivated species of *Korai* comes up well in a heavy clay soil with abundant and perennial water supply. It thrives in sandy soils also, but the land is liable to be infested with weeds which gradually suppress the growth of *Korai*, thus necessitating the renewal of the crop by fresh plantation at shorter intervals. In heavy clay soils, kept free from weeds, the crop yields for about ten to fifteen years when once planted. Though the grass is not affected by water-logging it is believed that stagnant water affects the