

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.

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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

colour of *Korai*, the bottom portions of culms turning black and the rest failing to get the desirable golden or white colour.

Preparatory Cultivation:— The soil is first dug with *manmatty* or sometimes with crowbar to a depth of 7 to 8 inches. It is then ploughed four or five times, puddled and then levelled with the levelling plank before planting.

Manuring:— In addition to about 100 headloads of green manure or green leaf, about 40 cartloads of ash are usually applied per acre. Cattle manure is never applied as it is believed that such application results in the formation of holes in the culms of *korai*. In some cases, instead of ash, castor cake at one cwt. per acre is being used quite successfully especially for subsequent manurings which are given after each cutting.

Seeds and sowing:— About 16,000 bundles of *korai* (each containing 10 to 15 slips) are required to plant an acre. Slips with bulbs (nuts) having about 9 inches of shoot are selected and planted 4 to 5 inches apart.

After cultivation:— Two to three weedings are given during the first year and in subsequent years one weeding after each cutting. Manure is applied after each cutting.

Harvesting:— The first cutting is done about ten months from the time of planting. The produce of the first cutting is of inferior quality, being thick and coarse and is also poor in quantity. Thin and superior *korai* is obtained only from later cuttings. Two cuttings per year on the average are taken in subsequent years, depending on the growth. *Korai* is cut before the flower heads dry up.

After harvesting, the produce is first removed to the drying floor, the damaged and waste culms are rejected, flower heads cut off and the culms are sorted into 8 different lengths. They are then dried for two or three hours and then split into two by a special knife called '*korali*'; it is possible to split twenty pieces of grass at one time, by the use of this knife. After a further drying for a day or two the grass is finally stacked.

When required for sale, the stacks are opened and bundles of uniform size are made, five such bundles making a head load and twenty such headloads filling a cart. The whole labour involved in the operation from harvesting to the preparation of such headloads is done on contract at twelve annas to Rs. 1-4-0 per headload.

Marketing. *Korai* is marketed either as raw material in units of headload or as finished product, mats. Muhammadans engaged in manufacturing mats, purchase *korai* culms and weave them into mats. A number of Muhammadan families engaged in this craft are living in and around Vadanangur and Tennangur villages. Tinnevely is an important market for *korai* culms produced in these places. The chief

market for mats manufactured in North Arcot district is Madras, though places like Vellore and Tiruvannamalai have also minor markets.

The price realised for *korai* depends on the quality and length of the culms. The produce from the first harvest being coarse always fetches less price. As already mentioned, *korai* culms are sorted into eight different lengths before they are sold. The first sort will be 4¼ feet long, the second 1½ inches less than the first, the third 1½ inches less than the second and so on. The third sort (4 feet long) is the standard on which prices are based, the sorts above and below fetching proportionately higher or lower price. The variation between each sort may be about Rs. 10 per cartload. The present price of standard quality of *korai* culms (4 feet long) is Rs. 90 per cart of 20 headloads.

Cost of cultivation :

	Per acre
	Rs. A. P.
1st year	
Digging—100 men at 4as. each.	25—0—0
Ploughing and puddling—32 pairs at 5as. each.	10—0—0
Green manure—100 headloads at 2 as. each.	12—8—0
Ash manure—40 cartloads at 1—8—0 per cartload and spreading at 4 as. per cartload.	70—0—0
Seeds—16,000 bundles of slips at 200 per Re.	80—0—0
Planting—40 women at 2 as. each.	5—0—0
2 weedings—120 women at 2 as. each.	15—0—0
Harvesting, sorting, drying, splitting, bundling, etc.—Labour on contract at Re. 1 per headload—100 headloads.	100—0—0
Total expenses for the first year. ...	317—8—0
2nd year. (same in subsequent years also)	
2 manurings—60 cartloads of ash at 1—8—0 each and spreading at 4 as. per cartload.	105—0—0
2 weedings—160 women at 2 as. each.	20—0—0
Harvesting and other operations of getting the <i>korai</i> ready for the market—2 cuttings—contract labour—200 headloads at Re. 1 each.	200—0—0
Total expenses for the 2nd year. ...	325—0—0

Taking the average life of the crop to be 10 years and the total number of cuttings to be 20 at 2 per year on the average, the cost of cultivation per year will be Rs. 325 plus 1/10 of 1st year's expenses (Rs. 31—12—0) plus annual lease at Re. 1 per cent of land (Rs. 100).

	456—12—0
Produce per year—2 cuttings—10 cartloads—value at Rs. 75 per cartload.	750—0—0
Net profit per acre per year.	Rs. 293—4—0

Rotations followed :— When a *korai* plantation becomes too weedy or shows heavy reduction in yield, a fresh plantation is opened. Two or three crops of paddy are raised between two successive crops of *korai*. The paddy crop that follows a crop of *korai* yields well due

to the residual effects of the heavy dose of manure applied to *korai* crop every year and also to the decomposed *korai* bulbs left in the fields.

Uses. The main use to which *korai* is put is the manufacture of mats. Waste *korai* unfit for making mats is used for thatching purposes and also as fuel.

Reasons for localisation of *korai* crop. The most important factor for the limitation of the cultivation of *korai* to certain special localities appears to be the distribution of that section of Muhammadan population engaged in the manufacture of mats. From time immemorial people of other castes have looked upon manufacture of mats as an exclusive profession. Other factors for the localisation of *korai* crop are the availability of suitable clayey soils, assured water supply, knowledge and practice of the cultivation of crop and the preparation of raw material.

Suggestions for improvement. The following steps may be taken to improve the crop:—

(a) Finer and heavier yielding species of *Cyperus* from other parts of the world may be introduced.

(b) Artificial manures may be tried to find out whether the quantity of the produce is increased and the quality improved.

(c) Fresh plantations at shorter intervals may be raised to test the effect on the quality and quantity of raw material.

(d) Where facilities exist, the cultivation of *korai* may be encouraged.

(e) Co-operative societies may be organised to help and finance people engaged in the cultivation of *korai* and manufacture of mats to purchase manure, meet cultivation expenses and market the produce.

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Research Notes.

The nutritive value of Teosinte flour.

Teosinte, (*Rena luxuriana*) a profusely tillering fodder plant has proved to be extremely suitable for making silage. Apart from its value as a green fodder, no trials have so far been made by including the Teosinte grain in a ration for cattle, probably because it is found to be very hard. Below are given figures relating to trials made with Teosinte flour, used as a ration for cattle, in place of *Ragi* flour.

Two *Sind* bulls and two *Kangoyams* were selected as experimentals and a similar number to serve as controls; while the controls got 1 lb. of *Ragi* flour, the experimentals got 1 lb. of Teosinte flour. Weights of the animals were taken at periodical intervals—once in ten days—throughout the period of the experiment—7—2—1934 to 21—8—34. The results, tabulated below indicate that Teosinte flour can be utilised in the ration to a limited extent.