

the life cycle of cardamoms from seed to seed varies from 5 to 7 years. As such, the breeding work in this perennial crop is bound to be slow.

Another method by which production can be improved is by reducing loss caused by pests and diseases. The cardamom thrips (*Taeniothrips cardmoni*, 'Ramakrishna') was responsible for a considerable loss in the production of cardamoms. Experiments conducted by this scheme have proved that Nicotine sulphate (0.05%) as a spray and Gammexane D. 025 as a dust are quite effective in controlling the pest. These measures are advocated and are popular. A paper on the control measures was presented at the College Day and Conference 1951 and has been published in the April 1952 issue of the Madras Agricultural Journal.

### Growing of Kolukkattai Grass (*Cenchrus ciliaris*) Under Irrigated Conditions

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**Introduction:** Kolukkattai grass is an indigenous popular fodder grass of the Madras State. It is the staple pasture grass for the Kangayam breed of cattle. (Chandrasekara Iyer & Daniel Sundararaj — 1950). The grass has spread throughout the state either through the Agricultural Department or private agencies.

Although the value of the grass is known as a pasture grass under rainfed conditions, its economic worth as an irrigated crop has not been studied so far. This paper presents the yield-behaviour of this grass under irrigated conditions as compared to the three other popular grasses of the state over a period of three consecutive years.

**Materials and Methods:** The seed material for the trial were obtained from the Government Lecturing and Systematic Botanist, Agricultural College and Research Institute, Coimbatore. Four popular grasses of the state, namely, (i) Kolukkattai grass (*Cenchrus ciliaris*)



(ii) Buffalograss (*Brachiaria mutica*), (iii) Guinea grass (*Panicum maximum*) and (iv) Australian grass (*Panicum antidotale*), were grown at the Agricultural Research Station, Koilpatti. The area occupied by each grass was nearly 10 cents. The soil on which it was grown, was medium-fertile red-loam. The depth of soil of the field was only one foot and that of sub-soil, two feet, which consisted mostly of gravel. Immediately below the gravel layer, hard granite-rock was found.

The date of sowing, seed-rate and method of planting are presented in Table I.

TABLE I

Name of grass	Date of sowing	Seed material used	Seed-rate per acre	Method of planting
1. Kolukkattai grass	14-10-1948	Seeds	10 lb.	Beds 6' x 6'
2. Buffalo grass	6-11-1947	Cuttings 6" long	28,000 cuttings	Beds 6' x 6' (Planted 1'-3" apart either side)
3. Guinea grass	7-11-1947	Slips	10,000 slips	On ridges 3' apart. Distance between plants 1'-6".
4. Australian grass	6-10-1948	Seeds	5 lb.	Beds 6' x 6'

As the grasses were planted on different dates, a common date namely, 1st July, 1949 was taken as the starting point for the study of yields. The particular date was fixed as at that time all the four types of grasses had reached their full productivity. The yield data for the three consecutive years from 1949 are presented here-under.

TABLE II

Years	Koluk- kattai grass	Buffalo grass	Guinea grass	Australian grass	Annual * rain- fall
1949-'50	1,73,970	89,700	95,245	79,000	28.12"
1950-'51	1,06,860	61,925	53,495	53,300	19.64"
1951-'52	92,550@	99,625	91,495	61,900	21.24"
Average	1,24,426	83,750	80,078	64,733	
Average No. of cuttings per year	11	9	11	9	

Note: \* The average annual rainfall for the station is 30"

@ During the year 1951-'52, Kolukkattai grass had to be renovated in patches.

Records of yields obtained in the various cuttings were maintained.



The normal height of Kolukkattai grass under rainfed condition is only about a foot. Under irrigation, it was found to reach a height of two and a half feet when conditions were favourable.

Regarding manuring, farm yard manure at the rate of 20 tons per acre was applied annually, uniformly to all the four grasses, during the months of October. Irrigation was given once a week during summer months and once in every ten days in winter months. When there were heavy rains, no irrigation was given. Weeding was periodically done in all the four grass plots. The Guinea grass was quatered and earthed up annually during the manuring time. The other three grasses received hand hoeing once annually to incorporate the farm yard manure.

The quality of Kolukkattai grass was analysed by the Government Agricultural Chemist, Coimbatore. The data and the remarks by the Government Agricultural Chemist, are presented below.

TABLE III

The feeding value of Kolukkattai grass grown under different conditions  
(Results on air-dry basis)

Lab. No. 148 - 49.

No. head of analysis	Irrigated red soil area	Rainfed red soil- area	Rainfed black soil area
1. Moisture	8.62	5.93	4.99
2. Ash	12.72	11.91	14.92
3. Crude Proteins	12.15	9.23	9.04
4. Ether extractives	2.92	2.65	2.46
5. Crude Fibre	22.66	26.81	41.73
6. Carbohydrates (by difference)	40.93	43.47	27.36
7. Total	100.00	100.00	100.00
8. Lime (Ca O)	Per cent 0.412	0.445	0.610
9. Phosphoric acid ( $P_2O_5$ )	„ 0.519	0.573	0.560

*Government Agricultural Chemist's Remarks:* "Compared to samples of the same grass taken from Kangayam tract, the Koilpatti farm samples contain higher percentages of proteins and also minerals especially phosphoric acid. Kolukkattai grass raised on the red soil area under irrigated conditions has higher content of proteins and ether-extractives and less of fibre. That grown in the black-soil area under rainfed conditions contains higher proportion of lime and fibre. There is not much variation in the  $P_2O_5$  contents of the three samples.

All the three samples are of good quality from the point of view of the protein and mineral content. The grass grown in the red soil area under irrigated conditions is the best, containing as it does more of proteins, and less of fibre."



The grasses were cut as the panicles emerged. The Buffalo grass did not flower. The Guinea grass flowered but did not set seeds. The Kolukkattai grass and Australian grass were found to set seeds; but they were not allowed to do so in the experimental plots.

**Discussions:** A study of the yield for the past three years shows that Kolukkattai grass gives more yield than either Guinea grass or Buffalo grass. It also gives an average of 11 cuttings annually which is the same as that of Guinea grass. The Kolukkattai grass even when grown under rainfed conditions yields a fodder of high quality. This quality is further improved by irrigation as seen from the Government Agricultural Ceemist's remarks. According to him under irrigated conditions the protein and ether-extractives are increased and the quantity of fibres get reduced.

From Table II it can be seen that the productivity of the Kolukkattai grass gets steadily decreased year after year. This may be either due to the exhaustive nature of the crop or due to the drought that prevailed during the subsequent years. This has to be confirmed.

**Summary and conclusions:** Whenever copious irrigation facilities exist it is possible to grow Kolukkattai grass and get a higher yield than the popular Guinea grass. Three consecutive years of trial at the Agricultural Research Station, Koilpatti has shown that Kolukkattai grass yields 1,24,426 lb. of green fodder as against Buffalo grass, Guinea grass, and Australian grass, which have given 83,800 lb. and 64,700 lb. of green fodder respectively.

**Acknowledgements:** The authors are indebted to Sri. S. M. Kalyanaraman, Cotton Specialist, Agricultural College and Research Institute, Coimbatore who commenced this experiments and gave helpful suggestions throughout the course of it. The authors are also thankful to the Government Agricultural Chemist in analysing the grass samples and offering a candid opinion on the quality of the fodder.

#### REFERENCE

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Daniel Sundararaj D.

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