

GRASSLAND AND CATTLE IMPROVEMENT

BY

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Grassland and cattle improvement go hand in hand especially if a herd of 50 animals or more is maintained. Young growing stock require plenty of exercise; if they are turned out to grass, they naturally get this. In a district like Hosur where rainfall is distributed over six months or so, where in some years showers are received from April to November, concentrates can be reduced considerably and money saved in cooly labour carting, etc.

Cattle should be turned out to graze after the first showers, when the young grass is about 3 to 4 inches high. The system of close rotational grazing must be followed and the stock kept in one paddock. After ten days, the stock should be moved to another paddock and so on. Sheep may follow cattle in certain fields as they eat closer than cattle. Chain harrows are passed over these fields each day to break up and spread the droppings.

For close grazing $\frac{3}{4}$ —1 acre per animal is enough as all the grass is eaten and no patches left. At Hosur we allocate about 1 acre per adult animal for grazing and the remainder is utilised for hay production. Fencing is not necessary if two or three boys are engaged to stop the cattle wandering out of the paddock. We consider Spear grass in its young stage quite good for young cattle and cows in milk. Our young stock seem to thrive and grow on a concentrated ration of 1 lb. cake and 1 lb. rice bran.

STUDIES IN THE COST OF PRODUCTION OF CROPS

We are indebted to Mr. D. G. Munro for a series of accounts he has forwarded on costs of production of sugarcane and paddy. We heartily approve of his suggestion to make the publication of studies on crop-production a normal feature of this Journal and gladly commence with sugarcane. We hope to publish similar articles in future on important food and industrial crops of this Presidency as time permits. We are aware that details given in the present article could be condensed to a large extent but feel that we may not carry with us our readers who may be eager for such information. We would therefore request them to give us the benefit of their views about the necessity for full details being made available. The accounts appearing in this number are of sugarcane crops in two localities. These were not raised under ideal conditions and have suffered from causes which have been detailed in the course of the account. They, however, serve to indicate the directions where improvement is possible. We would request our readers to send in similar accounts on crops of value and relate their own experiences so that fuller knowledge may be gathered of such crops grown under varying conditions of soil, climate, season and economic status of the ryot. (Ed. M. A. J.)

* Name of Crop: Sugarcane. Area: 3.00 Acres.
Village: Vellalur (Coimbatore Taluk).
Survey No. of field: Portions of 691 and 701.

General notes. The crop was cultivated jointly by two partners, each contributing his share of capital and labour for the cultivation of the crop. They had, besides the sugarcane, other individual interests. Each had his own set of permanent coolies and cattie which were put in for the sugarcane crop whenever required. A common cooly was also maintained on Rs 10 a month; but this cooly was very often taken for work elsewhere when there was no work in the sugarcane field. Each of the partner's had his own betel garden in Vellalur and Singanailur. One of them cultivated in addition (with a different partner) crops of Cambodia cotton, Terai, Fodder cholam, etc. He was also trading in betel leaves in which connection he was regularly away from headquarters for nearly half of every week, visiting shandies in Palghat. This ryot was the active partner all the same. The other partner owned a coconut tope and managed the same in addition to the betel and sugarcane. This ryot died in July during the year. Work in the fields was to a very large extent supervised by the wives of the two partners. Other members of the families of the two ryots took little interest in the management of affairs.

Three pairs of bullocks were used in the fields; but one out of the two was a cart pair intended mainly for going to shandies for betel trade. In allowing for depreciation for the bullocks the value of this shandy pair was not taken into consideration. The permanent coolies of the individuals were

* Names of ryots omitted, but can be ascertained from the Editor.

changed a number of times during the year and they were paid at rates Rs 7 to Rs 12 per month. For purposes of cultivation their daily wage has been taken as 7 annas.

The field under sugarcane is compounded wetland, the soil being clay loam and considered medium rich in quality. It was commanded by two mhotes from a common well provided with four mhotes.

Figures for preparatory cultivation were taken down as given by the ryot. The cost is likely to be a little higher than the actuals because of the difficulty of getting at correct information regarding the exact amount of permanent labour expended.

Manuring was not done as the crop followed Betel vine.

Planting was not done properly because of channel water not being available at the time. Majority of the setts were not properly pressed into the soil and required to be covered later. Blanks also occurred for the same reason as well as due to grazing by sheep penned by the neighbour in his field.

Fencing done was not quite thorough and a certain amount of jackal damage was noticed and after cultivation was also slipshod. Only one earthing and one weeding were done. The weeding was not thorough. A certain amount of weeding was done by family labour which has not been charged.

From start to finish irrigation for the crop was scanty on account of failure of water in the irrigation source. Supply from the well was also defective for nearly two months. Two pairs—mhoting continuously were not able to irrigate the crop adequately.

Onions were planted late and had to be harvested early. Bulbs were not developed properly and sufficiently. Its yield and quality were poor. The cleaning and sale was done by women in the house during leisure hours and this work has, therefore, not been charged for.

Milling of canes was started early and cubes were first made. But the jaggery was very bad and could not be marketed. There was, therefore, a break in the middle for eighteen days. When resumed the cubes previously made and crop subsequently cut was all converted into balls. The whole of the jaggery was sold away at Rs 30-31 per pothi of 310 lbs.

Lease term expired with the end of the sugarcane crop and final levelling of land was done by owner of the field as the tenant was slack in this respect. The owner charged him Rs 15 for this work and this amount is shown in the account.

On the whole, the cultivation was of a low standard and did not receive much personal attention on the part of the ryots. The profits are, therefore, poor.

Cost of Cultivation etc.

ITEMS OF EXPENDITURE	COST PER PLOT			COST PER ACRE		
	Rs	A	P	Rs	A	P
Preparatory Cultivation	145	0	0	48	5	4
Seeds and Sowing	275	1	0	91	11	0
Fencing and after cultivation	101	5	0	33	12	4
Irrigation	305	6	2	101	12	9
Harvesting, cleaning, etc.	222	1	0	74	0	4
Depreciation on two pairs of bullocks— valued @ Rs 130 and 120 @ 10 per cent for 6 months	12	8	0	4	2	8
Depreciation on tools, implements, etc., (lump sum)	25	0	0	8	5	4
Rent on land	315	0	0	105	0	0
Total	1,401	5	2	467	1	9

Cost of Produce and profit

NAME OF PRODUCE	PER PLOT			PER ACRE				
	Produce	Value		Produce	Value			
		Rs	A	P		Rs	A	P
1. Jaggery @ Rs 30 and 31 per pothi of 310 lbs.	14,880 lbs.	1,463	4	10	4,960 lbs.	487	12	3
2. Whole canes	41	4	8	0	14	1	8	0
3. Sugarcane setts	13,000	52	0	0	4,333	17	5	4
4. Onion bulbs	25	5	0	0	8½	1	10	8
	* Vallams				Vallams			
Total		1,524	12	10		508	4	3

Net profit { Per Plot ... Rs 123 7 8
 { Per Acre ... Rs 41 2 6

* Vallam = 2 Madras measures.

Details of Cultivation and charges

Date	Particulars of work	LABOUR						Cost Rs A P	
		Permanent		Casual		4 as	5 as		4 as
		Pairs 6 as	Men 7 as	8 as	7 as				
1928	<i>Preparatory Cultivation</i>	...	...	...	...	...	...	...
June and July	Breaking ridges and filling up trenches	...	...	...	...	...	...	90 0 0
	Levelling	...	...	...	...	...	...	10 0 0
	Ploughing	...	...	...	...	...	...	20 0 0
	Forming ridges and channels	...	...	...	...	...	...	10 0 0
	Trimming bunds	...	...	...	...	...	...	15 0 0
	Total	...	...	...	...	...	...	145 0 0
	<i>Seeds and Sowing</i>	...	...	...	...	...	...	...
	Carrying setts and planting	...	...	...	...	...	...	25 14 0
	Cost of 80,000 setts (own) @ Rs 2-8 per 1,000	...	...	...	...	...	...	200 0 0
	Covering exposed setts	...	...	...	...	...	...	13 15 0
	Planting Onion bulbs	...	...	...	...	...	...	1 8 0
	Cost of 1 bag (25 vallams) onions	...	...	...	...	...	...	1 4 0
	Filling up blanks in canes	...	...	...	...	...	...	2 8 0
	Cost of 12,000 setts @ Rs 2-8 per 1,000	...	...	...	...	...	...	30 0 0
	Total	275 1 0	

Figures as furnished
by the ryot
from his accounts

Aug. 1 - 28

11 - 16

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Details of Cultivation and Charges—(Continued)

Date	PARTICULARS OF WORK	LABOUR						Cost	
		Family		Permanent		Casual		Rs	A P
		Women @ 4 as	Pairs @ 6 as	Men @ 7 as	Men @ 8 as	Boys @ 4 as			
	<i>After cultivation and fencing</i>								
1928									
Aug. 23	Burning wild cane on bunds ...	...	...	½	...	...	...	...	0 3 6
" 24	Trimming bunds ...	...	...	...	4	...	...	...	2 0 0
Sept. 16, 17	Weeding ...	...	...	...	...	19	...	...	4 12 0
Oct. 3, 5, 6, 21 and 22	Earthing up ...	...	...	5	49	33	...	...	37 0 0
Sept. 6-12	Planting wild Castor stumps and fencing with thorns— collected locally ...	...	...	5	...	...	...	...	2 3 0
Dec.	Bringing 4 rolls by one of the partners from Pallacheri, while returning from Parai after sale of betel leaves (net free of rent from a friend)	...	...	...	...	...	...	...	...
	Hire on own cart sent to Pannimadai (17 miles) with one of the partners a permanent cooly for wire net, ₹ normal rent for being own cart	...	...	...	...	...	...	...	3 0 0
	Brokerage to a blacksmith for arranging loan of wire net.	...	...	...	...	...	...	...	1 0 0
	Hire on 2 empty carts sent to Walayar for fence posts ...	...	...	...	...	...	...	...	1 0 0
	Carting bamboo-posts (19th evening to 22nd morning) accompanied by owner's son and a friend (2½ days) ...	...	2½	2½ (plus 8 as exp.)	...	...	...	...	2 8 6
	Cost of 200 bamboos @ Rs 4 (½ cost only debited here).	...	...	...	...	...	...	...	1 0 0
	Fixing wire net posts, etc. inclusive of cutting hooked pegs for same ...	...	...	12	13	...	...	...	11 0 0
	Hire on 6 rolls wire net brought from Pannimadai for 6 months only at Rs 6 per mensem ...	...	...	...	...	...	...	...	36 0 0
	Total ...	2½	25	66	33	19	101	11	0

Spare time labour not charged.

Details of Cultivation and Charges—(Continued)

Date	PARTICULARS OF WORK	LABOUR			Cost		
		Pairs @ 6 as	Men @ 7 as 8 as		Rs	A	P
	<i>Irrigation</i>						
1928							
July 21-24	Irrigation ... ..	...	2½	...	1	1	6
Aug. 15	Do ... ..	...	1	2	1	7	0
„ 27	Do ... ..	...	1	2½	1	9	8
Sept. 5	Do ... ..	...	1	...	0	7	0
„ 22	Repairing mhote parts and irrigation	1	2	...	1	4	0
July 29 and Sept. 28	Mhoting and irrigations	265	437	...	298	9	0
	Channel watch in January 1929 ... ..	...	...	...	1	0	0
	Total	266	444½	4½	305	6	2
	<i>Harvesting cleaning, etc.</i>						
Oct. 21, 22 1929	Lifting Onions ... ..	...	...	...	1	14	0
July-Aug.	2 pongal presents to milling coolies (Rs 5 plus Rs 3) ... ..	...	...	...	8	0	0
	Carting mill, pan, etc.	1	1	...	0	13	0
	Hire on mill pan, etc., for 35 days (without jaggery moulds) ... ..	...	...	...	22	8	0
	Milling charges (5 pothies @ Rs 2, 4 pothies @ Rs 1-12-0) and rest free (for Pongal given) ... ..	...	...	...	81	12	0
	Cutting 13,000 setts at 4 annas per 1,000 ... ..	...	...	...	3	4	0
	Pairs for milling 70 own pairs and hired pairs on 16 pothies at Rs 2 per pothi	70	{ 70 plus hired pairs }		88	14	0
	Levelling ridges after harvest ... ..	...	...	...	15	0	0
	Total	71	71	...	222	1	0

II

Name of crop: Sugarcane. Area: 2.00 Acres.
 Village: Vellalur (Coimbatore Taluk).

General notes. The cultivator had besides the 2 acres of sugarcane an additional area of $3\frac{1}{2}$ acres of own land and half an acre of rented land. On his own land he raised crops of paddy, tenai and fodder cholam. The rented land was under betel.

The ryot had two sons, a wife and a daughter-in-law to work in the fields. He maintained a pair of old bullocks and a young pair just broken to work. Before the planting of canes he had two permanent coolies—both boys—on Rs. 6-8-0 and Rs. 4 respectively per mensem. For two months at the beginning he worked without any permanent coolies when again he engaged one on Rs. 12 a month.

The ryot lived in his field and served to watch the crops and attend personally to all works. The other members of the family lived in the village. The family members worked freely in the fields. Whenever they put in a full day's work their wages were reckoned at annas 8 for men and annas 4 for women; part time family labour was assessed at half the above rates on the merits of each item of work. The permanent cooly is charged at 7 annas per day and cattle at 6 annas per pair. No depreciation was allowed on bullocks—the depreciation on the old pair being considered to balance the appreciation on the young pair.

The soil was red loam. The field is commanded by two mhotes out of the common four mhote well.

Previous crop in the field was paddy. 10,000 sheep were penned over which a dressing of nearly 100 cartloads of tank silt was applied as manure to the crop. Land was ploughed four times. Canes from his own previous crop were cut and planted.

Planting was late and the crop was poor even from early stages. A subsidiary crop of onions was also raised. The field became very weedy and two weedings were done. This, however, was not thorough. No fencing was done. The crop was earthed up only once. There was defective water supply in the tank and well irrigations were not adequate. With his two pairs he had to irrigate also his betel and other crops for which he had often to borrow a pair from his eldest son who has severed his connection with the family. The irrigation bill was very high on these counts. Harvesting and milling of canes was done by contract labour as is usual in the locality. Jaggery was made into balls and was fair in quality better than the produce of others in the localities. Harvest of onions was done entirely by family labour on shandy days in small lots. The labour has not been charged in the sheet. Final levelling was not done as the stubbles were left to ratoon.

Cost of cultivation, etc.

ITEMS OF EXPENDITURE	PER PLOT			PER ACRE		
	Rs	A	P	Rs	A	P
Preparatory cultivation ...	31	11	0	15	13	6
Manures and manuring ...	91	12	0	45	14	0
Seeds and sowing ...	214	14	0	107	7	0
After cultivation ...	43	12	0	21	14	0
Irrigation ...	285	15	6	142	15	9
Harvesting, cleaning, etc. ...	149	14	6	74	15	3
Assessment on land ...	17	14	1	8	15	0
Depreciation on tools and implements (lump sum) ...	25	0	0	12	8	0
Total ...	860	13	1	430	6	6

Cost of Produce and Profit

NAME OF PRODUCE	PER PLOT		PER ACRE		
	PRODUCE	VALUE	PRODUCE	VALUE	
				Rs	A P
Jaggery ...	11,200 lbs.	1,096 4 0	5,600 lbs.	548	2 0
Cane setts ...	3,500	14 0 0	1,750	7	0 0
Onions (<i>Vallams</i>) ...	63	11 13 0	31½	5	14 6
Total ...		1,122 1 0		561	0 6

Net profit per acre ... Rs 130 10 0.

Details of Cultivation and Charges

Date	PARTICULARS OF WORK	Men @ 8 as	Pairs @ 6 as	Men @ 7 as	Boys @ 4 as	Rs A P
1928						
August 15	Irrigation	3	...	...	...	1 8 0
August 27	Do	2	...	...	...	1 0 0
September 4	Do	2	...	...	...	1 0 0
September 23 to October 1	Do	6½	11	13	...	13 1 0
October 7, 8	Do	2	4	4	...	4 4 0
November 25	Do	13	...	1	...	1 15 0
	Present to 'Nirkatti'	...	...	...	...	1 0 0
December 18 to 21 and 24 to 26	Do	13	13	6½	...	15 7 6
December 27 to 30 and January 3, 1929	Do	13	13	4	...	14 6 0
January 7 to 12	Do	12	12	6	...	13 2 0
January 15, 16, 18, 19, and 21, 23	Do	14	14	7	...	15 5 0
January 24 to 26	Do	8	6	4	...	8 0 0
February 1929	Irrigations	42½	41½	20½	...	45 6 6
March	Do	45	45	22	...	49 0 0
April	Do	40	40	20	...	43 12 0
May	Do	39	39	21	...	43 5 0
June	Do	9	9	4½	...	9 13 6
July	Do	4	...	6	...	4 10 0
	Total	258	247½	139½	...	285 15 6

Details of Cultivation and Charges—(Continued)

Date	PARTICULARS OF WORK	Men @ 8 as	Pairs @ 6 as	Men @ 7 as	Boys @ 4 as	Rs A P
1929	<i>Harvesting, Cleaning, etc.</i>					
August	Pongal present for milling coolies	...	...	...	...	5 0 0
	Milling charges on 35 pothies at Rs 2. (Contract work).	...	...	...	...	70 0 0
	Extra coolies for carrying canes to mills	...	...	...	18	4 8 0
	Bullocks for the milling	20	40	20	...	33 12 0
	Bullocks hired at Rs 1-12-0 per pothi on 12 pothies	...	...	...	...	21 0 0
	Hire on mill and spare for 20 days @ 12 annas	...	...	...	...	15 0 0
	Returning mill to owner (Mill, etc., were brought and installed by another ryot using them previously in the same place)	1	1	1	...	0 10 6
	Total	20½	40½	20½	18	149 14 6

THE INDIAN SCIENCE CONGRESS, ALLAHABAD, 1930

The seventeenth session of the Indian Science Congress was held at Allahabad from the 2nd to the 8th January both days inclusive. The attendance was as usual large and representative of the different scientific activities in all parts of India.

Rao Sahib Y. Ramachandra Rao, Government Entomologist, Mr. G. N. Rangaswami Ayyangar, Millets Specialist, Mr. V. Narayanaswami Ayyar, Systematic Botanist and Rao Badadur B. Viswa Nath, Government Agricultural Chemist, were the representatives from the Agricultural Research Institute, Coimbatore.

Col. S. R. Christophers, C.I.E., O.B.F., K.H.P., F.R.S., L.M.S., F.A.S.B., Director-General, Central Research Institute, Kasauli was the general President of the Congress.

The Sectional Presidents were :

1. *Agriculture* ... George Clarke, Esq., C.I.E., F.I.S., F.C.S., M.L.C., Director of Agriculture, *Lucknow*.
2. *Mathematics and Physics* ... Professor B. Venkatesachar, M.A., Professor of Physics, Central College, *Bangalore*.
3. *Chemistry* ... Professor P. V. Mitter, M.A., Ph.D., 92, Upper Circular Road, *Calcutta*.
4. *Zoology* ... Dr. S. L. Hora, D.Sc., F.L.S., F.Z.S., Indian Museum, *Calcutta*.
5. *Botany* ... Professor P. Parija, M.A., B.Sc., Professor of Botany, Ravenshaw College, *Cuttack*.
6. *Geology* ... Dr. David Penman, D.Sc., F.R.S.F., M.I.M.E., Principal, Indian School of Mines, *Dhanbad*.
7. *Medical and Veterinary Research* ... Lt.-Col. R. Knowles, B.A., M.R.C.S., L.R.C.P., I.M.S., F.A.S.B., Professor of Tropical Medicine, Carmichael Hospital for Tropical Diseases, Central Avenue, *Calcutta*.
8. *Anthropology* ... The Rev. P. O. Boddington, M.A., F.A.S.B., *Mohalpakhari, S. P.*
9. *Psychology* ... Dr. A. S. Woodburne, M.A., B.D., Ph.D., Madras Christian College, *Madras*.

The Presidential address of the section of Agriculture and notes on some papers of interest to practical agriculturists presented to the Agricultural section are given below :