

A NOTE ON THE IMPROVEMENT OF SUGARCANE CULTIVATION IN THE GOLUGONDA TALUQ VIZAGAPATAM DISTRICT

BY P. I. NARASIMHAM

The sugarcane crop in this taluk is mostly concentrated along the course of the River Varaha and its main tributary, the Kothakota river, occupying an area of about 1,500 acres. This tract possesses good facilities for both flow and lift irrigation. The crop is cultivated mostly on wet lands in rotation with paddy (once in 3 years), but in a few places it is also raised on garden lands entirely under lift irrigation. The sugarcane tract may, for convenience in dealing with the improvement of the crop, be divided into 6 areas, viz.,—

1. The Kothakota area.
2. The Komaravolu area.
3. The Kusarlapudi area.
4. The Makavarapalem area.
5. The Uratla area.
6. The Gottivada area.

The Uratla area is the best portion of the sugarcane tract. Here the cultivation is mostly in the hands of 'Gavaras' a hard-working agricultural class. The Makavarapalem is the next best area where also good sugarcane crops are grown. In the Gottivada tract the crop is cultivated in garden lands also. In the Kusarlapudi and Makavarapalem areas sugarcane is said to be under cultivation from an earlier date than in the others.

In the Kothakota area the soil is a sandy or red loam with good drainage, and the water supply being fair, conditions may be said to be more or less ideal. In the Gottivada area it is more reddish, while in the Makavarapalem area it is mostly loamy, slightly heavy soils also occurring under the Pydipala tank. In the Kusarlapudi area the soil is somewhat similar, but it is said to be badly deteriorated on account of the frequent cultivation of sugarcane as well as of 'punasa' and—'paira' crops, as a result of which not only is the sugarcane crop poor but also paddy. The Uratla area also consists of somewhat loamy or sandy loams, the soils in the northern portion being heavier than those in the southern. The Komaravolu area contains the heaviest soils liable to suffer from the effects of poor drainage.

Prior to the introduction of 'Mauritius' and 'Barbadoes' varieties of sugarcane by the department, a number of varieties, Chittibonta, Namalu, Valu, Keli, Bombaye, Vedurujanam and Palabontha were under cultivation, the last one having been the latest to come in and to win the greatest popularity, quickly ousting out most of the others. Attempts were made to trace out the history of these varieties but correct information was not forthcoming. Palabontha, however, is said to have come about thirty years ago. B. 208 was brought in, about the year 1910, from the Godavari District, where it had been introduced by the Department from the Samalkot Agricultural Station. About ten years later, Purple Mauritius is said to have been brought in from the same district, when both Palabontha and B. 208 showed signs of disease. The latest variety to be introduced was J. 247 from the Anakapalli Agricultural Station in 1923. And with this, commences the improvement of sugarcane cultivation in this taluk.

In the Kusarlapudi and Uratla areas the cane crops were in a deplorable condition during the years 1920 to 1923. 'Palabontha' which was the chief variety then under cultivation having been badly diseased, the average yields fell from about 10 to 12 candies per acre to 3 to 5 candies. It was under these conditions that it was felt necessary to introduce a hardier variety, and J. 247 was pitched upon. It was first introduced in Tadapala in the Kusarlapudi area in 1923, in a small area. As this was found to resist disease as well as drought, it soon came to be appreciated by the ryots and in the course of a couple of years practically the whole area was cultivated with this variety. In the Uratla area this variety was first introduced in 1925 in about 25 cents amidst 2 acres of 'palabontha' crop and it was found that this patch of J. 247 was the only area that was not affected by 'red tot,' though even in this there were a few attacked clumps. These diseased clumps were removed and the rest of the crop used for seed in the next season, during which three more ryots took to its cultivation. In the following year, 1927, there was material to plant about 50 per cent of the area in this locality and by 1928, 99 per cent of the area was brought under this variety. Besides, being resistant to drought and disease this variety has also been found to progress fairly well under less liberal treatment, while at the same time capable of responding to a more liberal one, so that both the poor ryot as well as the rich landlord have been benefited by its introduction. J. 247 was introduced in the other areas also from 1926 onwards. In the Gottivada area it has largely replaced Palabontha and B. 208. In the Makavarapalem area also, it has made fair progress, 60 per cent of the area being under this variety. But in the Komaravolu and Kothakota areas it did not make much progress. In the latter place 'Palabontha' and B. 208 are still doing well especially in the lands recently brought under cultivation, and J. 247 has been given up after a trial, the ryots having found it no better than the varieties under cultivation.

In the Uratla area where conditions are good, the average yield of J. 247 may be said to be about 18 candies i.e., 50 per cent more than the average of the yield of 'Palabontha,' where it did best. In 1928, a record yield of 33 candies per acre was noted from J. 247, the average weight of cane being about $4\frac{1}{2}$ pounds. In the Makavarapalem area also fairly good yields of 10 to 15 candies of jaggery per acre are obtained but in the Kusarlapudi area the growth of the crop is poor in general on account of the worn out condition of the soil referred to already. But even here, J. 247 yields much better than others. The crops in this tract, however, seem to have improved considerably since the floods of 1928, which appear to have renovated the soil of the area, and now there is a better response to manures. In the Komaravolu area, the crop grows quickly in the earlier stages but ceases to grow well from September to December, and sometimes, the cane assumes such a stunted growth that very meagre progress is visible even after the cold season is over. The soils of this area are the heaviest in the taluk and ill-drained and this may explain the poor growth referred to above. To summarise the work done on this item of improvement, it may be stated that J. 247 now occupies no less than 60 per cent of the total area of the cane cultivated in this taluk.

Another chief item of improvement effected in this tract is the introduction of the 'line system' of planting setts. At first, it was done with the aid of ropes but this was found cumbersome, and did not appeal to the ryots; in 1928 planting in plough furrows was started and it was found labour saving, quick, and economic. In 1929 it was introduced into 20 per cent of

the area under cane in the Uratla area, and it is now spreading into the other areas. But the ryots persist in having the lines closer than desirable,—two to two and a half links apart. Attempts are being made to induce them to adapt a spacing of three to four links. The chief advantage of this system of planting is that irrigation is greatly facilitated, especially at the time of planting, enabling the operation to be done quicker. Further irrigations are also more effective, the young plants thereby standing drought better. Even when there is heavy rain after planting, the germination does not suffer as much as in the local system, since the soil that is irrigated along the furrows alone is not so wet to start with, the dry ridges absorbing the excess of moisture. Where the ryots adopt a spacing of three and half to four links, there is also a considerable saving in the number of setts required which may be estimated at 4 to 5 thousands per acre, worth about Rs 20—25. With the introduction of this system, the growth of the crop has also improved and better wrapping and propping being, therefore, found necessary, the ryots are being persuaded to do this.

A beginning has been made in the Gottivada area to improve the seed material by raising short crops. No other improvements have been found feasible, but it may not be out of place to note a few other points of interest regarding other aspects of sugarcane cultivation in this tract.

No cakes or other concentrated manures are generally used in the tract. Thirty to forty cart loads of cattle manure are applied before planting in addition to the penning of three to four thousand sheep per acre. After planting, green leaf (wild indigo) is applied and hoed in up to about five thousand pounds per acre in one or two doses, after the first hoeing or before trenching.

Under the Pydipala tank in the Makavarapalem area where soils are heavier, it has been noticed that the crop does better than elsewhere in the same tract with light soils, when it receives good irrigation in summer (especially where there is good drainage) and the same thing has also been noticed in other tracts with fairly heavy soils. J. 237 no doubt withstands drought but responds to better irrigation in summer.

In Gottivada area, most of the crop is planted in lines but trenching is not done as most of the crop is grown under garden land conditions and there is good drainage.

The cost of cultivation of sugarcane in the tract is not much, as most of the operations are done by the ryots themselves. He does not spend money except for sheep penning, purchase of wild indigo leaf, extra labour for trenching, and the last few wrappings which require the operations to be done with the aid of ladders, stools, purchase of bamboos, and sometimes hire on the mill and pan. These come up to Rs 130 to 175 per acre depending upon the rates of labour and cost of bamboos. Taking an average crop to yield about 15 candies and the market rate at Rs 35 per candy, the ryot makes a profit of about Rs 350 to 400 per acre. Very few capitalists cultivate sugarcane in this tract, as it leaves very little or no profit considering the high cost of cultivation when the whole labour is to be paid for, and the market is dull.

STUDIES IN THE COST OF PRODUCTION OF CROPS

(Continued)

By D. G. MUNRO

VII

Name of Crop :	Paddy (Poombalai).
Area :	90 Cents.
Locality	Pottipuram village, Omalur Taluk, Salem District

This tenant cultivated the lands on *Varam* system— $\frac{3}{5}$ share of grain and the entire straw were given to the tenant, while $\frac{2}{5}$ of the produce of the grain was taken by the landlord. The tenant bears all cultivation charges himself.

As per details given in the previous tenant's crop, the paddy seed was sown at the end of July. The seedlings were transplanted when they were $2\frac{1}{2}$ months old, and harvesting was done at the end of January. Thus the crop has taken practically 6 months from the time of sowing in the seed bed up to the time of harvest. The lands in question were commanded by the tank which had only 2 to 3 months' supply of water. This year, there was water only for about a month. Puddling was started immediately after the rains were received in October and the planting was completed hurriedly. Variety of paddy—Poombalai—was supplied by the Department. Irrigation charges were not heavy as the cultivation was started late in the season.

Details of cost of cultivation, etc.

PARTICULARS	Men	Women	Pairs	Amount		
	@ 2 & 3 as.	@ 3 & 4 as.	@ 3 as.	Rs	A	P
<i>Seeds and Sowing (Nursery)</i>						
Preparing seed bed, irrigating, etc. ...	3	...	3	0	15	0
Irrigation for 12 days	6	...	6	1	14	0
Application of 5 bundles of Kolinji leaves and transplanting, etc. ...	...	5	...	0	15	0
Cost of seed	...	...	...	4	0	0
Pulling seedlings and transplanting ...	...	21	...	5	4	0
Total ...	9	26	9	13	0	0
<i>Preparatory cultivation</i>						
Ploughing for 10 days (2 pairs per day), levelling, etc. ...	20	...	20	6	4	0
Trimming bunds, etc. ...	8	...	...	1	0	0
Total ...	28	...	20	7	4	0
<i>Manures and Manuring</i>						
Bringing all kinds of leaves—70 bundles of 50 lbs. each ...	8	6	...	2	2	0
Trampling leaves ...	3	3	...	0	15	0
Total ...	11	9	...	3	1	0
<i>Irrigation</i>						
Irrigating for 80 days ...	80	...	80	25	0	0
Cost of Mhote buckets, mhote ropes, etc. ...	...	...	...	14	0	0
Wages of chuckler, carpenter, etc ...	...	...	...	3	0	0
Total ...	80	...	80	42	0	0
Interest on value of cattle (on Rs. 200 for 6 months)	...	...	...	12	0	0

Details of cost of cultivation, etc.—Continued

PARTICULARS	Men	Women	Pairs	Amount		
	@ 2 & 3 as.	@ 3 & 4 as.	@ 3 as.	Rs	A	P
<i>Harvesting and Threshing</i>						
Harvesting, bundling etc. ...	...	{ 15	...	3	12	0
Cattle threshing ...	3	{ 3	...	0	9	0
		3	4	1	14	0
Total ...	3	21	4	6	3	0
Landlord's share of produce or 3 khandagams at Rs. 13 per khandagam of 90 M. M.	...	...	...	39	0	0
Grand total ...	...	...	...	129	8	0

Statement of Yields and Value

				Per Acre		
				2025 lbs.	2250 lbs.	
				2400 lbs.	2667 lbs.	
				Rs	A	P
Paddy—per plot (90 cents) ...	...	...	...	117	0	0
Straw per plot (90 cents) ...	...	...	...	24	0	0
Grain ...	...	...	...	141	0	0
Straw ...	...	...	...	156	10	0
Total ...	...	...	...	11	8	0
Net profit ...	...	...	...	12	12	0

Note. (1) Grain valued at Rs 13 per khandagam of 225 lbs. and straw at 100 lbs. per rupee.

Note. (2) Owing to late planting the yield has been rather low. This is found much better than the Sadai Samba variety of paddy. As the tenant in question is a poor ryot, he managed to graze the cattle and hence the charges of maintaining them have been very low. Wages of the tenant and those of his relatives have been calculated as per minimum amount required for their maintenance.

VIII

Name of Crop :	Paddy.
Area :	1 $\frac{3}{4}$ Acres.
Locality :	Pottipuram village, Ottaiur Taluk, Salem District

Paddy was cultivated by this ryot in 1 $\frac{3}{4}$ acres of land, commanded by the tank. Though it was a wet land, water was found insufficient and could be used only for a few days. Hence water from the well had to be baled almost throughout the season.

The ryot cultivated under his direct supervision with his farm servants employed on monthly wages. The cattle were given either green fodder or grazed and no concentrated food was given and the charges of maintenance of cattle came to Rs 0-3-5 per pair and the wages of the cooly attending to the animals come to Rs 0-2-5. The animals had work almost all through the year, because the ryot had different types of land, viz., dry garden, and wet.

2 varieties of paddy were planted, viz., G. E. B. 24 and local *Karthikai Samba*. These were again planted each in 2 different times, according to the rains received. Thus the growth of the crop was very much varied in character. 2 seed beds were prepared—one seed bed of *Karthikai Samba* was sown about the 20th of July. Half an acre was planted when the seedlings were 30 days old— $\frac{1}{2}$ acre when the seedlings were 60 days old.

G. E. B. 24 paddy was sown in another seed bed on the 10th August, and the seedlings were planted when they were 60 days old. Though seedlings were ready for planting, larger area could not be cultivated due to deficiency of water supply in the well. The seedlings having been found insufficient, the ryot had to purchase seedlings from outside and plant the same. Thus, the block had to be planted in 4 stages. The forest block showed good growth and produced satisfactory yield. During the growth of the crop, the plants were found diseased, and the ryot applied Ammonium-sulphate as top dressing. Large quantities of green-manure leaves, e.g., *Kolinji*, were purchased and applied as manure for the crop. A few days before harvest the mhots in the well collapsed and in consequence, about $\frac{1}{2}$ an acre could not be irrigated and hence the crop suffered badly and thereby the yield was affected to some extent.

Details of cost of cultivation, etc.—Continued

PARTICULARS	Men	Women	Pairs	Amount		
	@ 2½ as.	@ 3 as.	@ 3½ as.	Rs	A	P
<i>Preparatory cultivation</i>						
Ploughing, irrigating and levelling 1st Block ...	30	...	30	11	4	0
Ploughing, irrigating and levelling 2nd Block ...	15	...	15	5	10	0
Ploughing, irrigating and levelling 3rd Block and irrigating with tank water etc. ploughing for 10 days with 3 pairs ...	30	...	30	11	4	0
Total ...	75	...	75	28	2	0
<i>Seeds and Sowing (Karthigai)</i>						
Purchase of seed, ploughing, etc. ...	5	...	5	1	14	0
Cost of 4 big bundles of <i>Kolinji</i> ...	...	...	...	1	0	0
Trampling leaves ...	1	...	...	0	2	6
Further ploughings ...	7	...	6	3	6	6
Cost of seed <i>Karthikai Samba</i> ...	...	...	...	4	0	0
Cost of seed—G. E. B. 24. ...	...	...	...	5	0	0
Cost of <i>Karthikai Samba</i> seedlings and transplanting charges ...	...	...	...	11	0	4
Pulling seedlings and transplanting (contract rate) ...	...	...	...	5	8	0
Total ...	13	...	11	32	3	0
<i>Manures and Manuring</i>						
Green leaves—1st Block—64 bundles @ 2 as. ...	8	...	...	8	0	0
Trampling ...	...	...	...	1	4	0
2nd and 3rd Blocks—Leaves of all sorts at 1 anna per bundle of 64 bundles. ...	...	...	...	4	0	0
Trampling ...	...	12	...	2	4	0
Application of artificial manures. 1 cwt. of Super and 80 lbs. of Ammonium sulphate ...	...	...	...	12	0	0
Total ...	8	12	...	27	8	0

Details of cost of cultivation, etc.—Continued

PARTICULARS	Men	Women	Pairs	Amount		
	@ 2½ as.	@ 3 as.	@ 3½ as.	Rs	A	P
<i>After-cultivation (by contract)</i> ...	...	...	...	2	0	0
<i>Irrigation</i>						
1st Block for 50 days from 25-8-1929.	50	...	50	18	12	0
1st Block again for 40 days ...	40	...	40	15	0	0
2nd Block irrigating ...	10	...	10	3	12	0
2nd Block irrigating with tank water.	30	...	30	11	4	0
3rd Block for 80 days at ½ pair a day....	40	...	40	15	0	0
Cost of mhote buckets ...	...	...	...	15	0	0
Mhote and tail ropes ...	...	...	...	10	0	0
Preparing charges of buckets ...	...	...	...	5	0	0
Carpenter wages, etc. ...	...	...	...	1	8	0
Total ...	170	...	170	95	4	0
<i>Harvesting</i>						
By contract—40 <i>vallams</i> of 2 M. M. each. ...	16	...	...	13	0	0
Permanent labour—cattle threshing... ..	...	8	...	2	8	0
Permanent labour—cattle threshing ... ..	...	8	...	1	0	0
				16 8 0		
<i>Miscellaneous</i>						
Interest on the capital outlay spent on the purchase of cattle, wages paid to labourers etc., for 6 months on Rs 450 at 12% ... ..	...	...	...	27	0	0
Rent on land ... ..	...	...	...	7	0	0
Miscellaneous ... ..	...	...	...	2	7	0
				36 7 8		
Grand Total ... ..	...	...	...	238	0	0

Statement of Yields and Value

	Rs	A	P
22 <i>khandagams</i> of paddy at Rs. 12-8-0 per <i>kandagam</i> of 225 lbs. ...	275	0	0
4,000 lbs. of straw at 100 lbs. per rupee ...	40	0	0
Total ...	315	0	0
Less Expenses ...	238	0	0
Net profit per plot ...	77	0	0
Net profit per acre ...	44	0	0

The yield of straw was poor due to late planting and also planting of G.E.B. 24 (*Karthikai Samba*) strain.

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