

MORE PLANTERS' PROBLEMS

P. FOWLIE.

Last year the writer discussed some of the problems affecting the Sugar cane planter, all of them subjects of perennial interest.

The friendly reception given to last year's paper has encouraged him to try again.

It is only possible to touch briefly on each subject in a paper of this kind but it is hoped it will lead to discussion which will throw fresh light on these matters.

Fertilisers.

The fertiliser problem was dealt with at some length last year and this year, the writer only wishes to add a few notes on the nitrogen problem.

A number of experiments have been started under the supervision of the Experiment Station to test the effect of nitrogenous fertilisers on cane. In these experiments varying amounts of ammonium sulphate are being given, split up into four dressings. The first applied at planting time and the others at intervals later. The effect of the nitrogenous fertiliser on the young cane is quite marked at the present time.

An experiment on the fertilising of ratoon cane is reported by the Experiment Station Staff in another paper which shows a definite response to nitrogenous fertilisers. A large amount of work on the same problem is being carried out on the estates of the Tongaat Sugar Co., Ltd., and some of the experiments reaped there in 1937 gave definite and profitable increases in yield from the application of nitrogenous fertilisers both to plant cane crops and ratoons.

It is often stated that the effect of applications of nitrogenous fertiliser can only be expected to extend over a very short period.

For a long time the writer has thought that in our dry climate nitrogenous fertilisers could probably lie in the soil for quite a considerable period and be taken up by the cane crop when moisture and growth conditions became favourable.

This contention is supported by a small test carried out at the Experiment Station during the past year.

In March 1937, sulphate of ammonia at the rate of 1,000 lbs. per acre was applied to four lines of Co.301 2nd ratoon cane in the middle of a field used for supplying cane for planting. Rainfall was very scanty in 1937 and the four lines receiving the dressing of nitrogenous fertiliser appeared only a little better than the surrounding field.

The cane was again cut for planting material in October, 1937.

No attempt was made to weigh the cane from these four lines separately but it could be seen that it was heavier than elsewhere. When the ratoons began to come up again it was noticed that these four lines looked well, but up to the middle of December last there was not a great deal of difference in growth between them and the rest of the field. During the latter half of December good soaking rains fell followed by nice refreshing showers in January and in five weeks the cane in these four lines shot ahead of the surrounding cane.

Unfortunately the field then had to be ploughed out, but everyone, who saw the cane in January, wanted to know, why those four lines were so much better than the rest and the only explanation was the dressing of sulphate of ammonia nine months before.

Fertiliser Distributors.

An interesting development during the past year or two has been the work done by sugar estates and agricultural implement firms to devise improved methods of applying fertiliser to sugar cane both in the planting furrows and to ratoons. As a general rule this operation has been performed in a very haphazard manner in the past. The machines, which have been on offer to planters for this purpose, have not been very satisfactory and have been comparatively little used. The common method of applying fertiliser has been by hand. Anyone knowing our South African labourers will know that this has meant more or less uneven distribution.

Considerable advance has been made, and more than one machine now available is fitted with mechanical distributing gear capable of being set to deliver varying quantities of fertiliser per acre at a uniform rate so long as the fertiliser is in a dry friable condition.

All the machines the writer has seen of this type fertilise one row at a time.

For applying fertiliser to ratoons these are very satisfactory as the fertiliser has to be buried alongside the cane rows but for distributing fertiliser in the furrows before planting a small single row machine seems slow.

The writer feels there is a place for a machine to fertilise several furrows at a time and capable of taking say two bags of fertiliser each time it stops to refill. When in England in 1937 he looked at a

number of fertiliser distributors at the Agricultural Shows he visited. There are several makes of machines, from 8 ft. to 12 ft. in width between wheels, which will either spread fertiliser broadcast or gather it into rows by an arrangement of shoots. Such a type of machine could be easily fixed up with shoots to deliver into three rows and would be much cheaper to work than the single row distributor.

Cane Varieties.

At present the Indian varieties Co.281 and Co.290 are the two most largely planted canes. They are both good varieties for our conditions and planters are often in doubt as to which is the better one to plant. Slowly information is being accumulated to show the conditions under which the one is likely to do better than the other.

Experiments carried out by the S.A.S.A. Experiment Station on farms scattered throughout the sugar belt have shown that on the deep sandy soils along the coast and on some other deep well-drained soils Co.290 has given the highest yields, whilst on the stiffer class of soils and those poorly drained Co.281 has done best. On many soils they appear to do about equally well. Co.281 gives a somewhat higher sucrose per cent cane on the average. In experiments conducted by the Experiment Station 159 comparisons of these two varieties give an average sucrose per cent cane of 14.99 for Co.281 and 14.59 for Co.290, a difference of 0.4%.

At the Mills for the 1936-37 season the average was 13.42% Co.281 and 13.37 for Co.290 a difference of only 0.05%.

Both in the Experiment Station figures and the

Mill figures the sucrose per cent cane in these two varieties was a little in favour of Co.290 in Zululand, whereas South of the Tugela Co.281 usually had a higher sucrose per cent cane than Co.290.

P.O.J.2725 has proved easily the best of the four P.O.J. varieties released. It is now easily the most popular variety at Umfolozi where it is being much more widely planted than any other.

It was estimated by the Umfolozi Mill cane inspector that the average yield of approx. 12 months old P.O.J.2725 on the flats for the season just closed was over 40 tons per acre, and fields of over 100 tons per acre have been obtained there. It gives a higher sucrose per cent cane than any other released variety and this is a great advantage at Umfolozi where the sucrose per cent cane is often very low.

The largely increased proportion of this cane at the Umfolozi factory last season is probably one of the chief factors, which have enabled it to improve its recovery and increase its output as it has done.

P.O.J.2725 is also giving very good results in some other districts where there are alluvial flats, but on the average hillside land of the sugar belt it is definitely inferior to the Co. varieties.

Co.301 which was released less than two years ago has not yet had a chance to prove itself on a commercial scale. The plant cane crops of five experiments in which it was compared with the other Co. varieties have been harvested and in each case it did very well. The average yields of the five experiments comprising 30 comparisons of each variety were as follows:—

	Tons cane per acre	Sucrose % Cane	Tons Sucrose per acre	Fibre % Cane	Purity of Juice	Red. Sugar Ratio
Co.290						
Umfolozi	34.45	12.55	4.32	12.34	86.2	2.99
Cole's	38.86	16.44	6.39	11.70	89.3	1.25
Ladlau's	31.23	14.80	4.62	12.89	91.9	0.97
Wilton Park	35.04	13.65	4.78	15.39	87.9	0.80
B1	35.68	16.86	6.02	15.30	92.7	0.42
Average	35.05	14.91	5.23	13.52	89.6	1.29
Co.281						
Umfolozi	33.31	12.68	4.22	12.76	87.4	2.89
Cole's	41.29	16.90	6.98	13.73	94.1	0.83
Ladlau's	25.39	15.54	3.95	14.41	93.0	0.94
Wilton Park	34.36	15.22	5.23	16.01	90.8	0.50
B1	38.19	17.19	6.56	15.44	93.0	0.30
Average	34.51	15.61	5.39	14.47	91.7	1.09
Co.301						
Umfolozi	36.91	12.73	4.70	13.23	88.5	3.69
Cole's	45.26	16.32	7.39	12.52	91.0	1.75
Ladlau's	28.18	15.73	4.43	14.35	94.3	0.92
Wilton Park	40.76	15.14	6.17	13.01	90.7	0.64
B1	45.18	16.64	7.52	13.94	93.1	2.26
Average	39.26	15.39	6.04	13.41	91.5	1.85

These figures all represent the results from plant cane crops. Observation of plots in various parts of the country also gives a favourable impression of this variety. It stools out wonderfully well and also appears to be a very good ratooner.

Alternatives to Sugar Cane on Natal coastal farms.

The policy of restriction in the sugar industry has made many cane planters turn their minds to the consideration of other types of farming besides cane growing. It is not a question of giving up sugar cane in favour of other crops but of finding anything to enable them to profitably utilise those portions of their land not required to produce their quotas of cane. This is a wide subject and only a few parts of it can be touched on here. The sugar cane belt is eminently suited for the cultivation of numerous crops in almost every respect except one. The exception is its very uncertain and often deficient rainfall. This rules out some crops altogether and makes many others very speculative. The chief difficulty, however, is not to find crops that will grow but to find crops that offer a reasonable prospect of being remunerative to the grower.

Live stock is the basis of most systems of mixed farming. Cattle, pigs and poultry all thrive well in the Natal and Zululand coastal area under skilful management and are in various ways complementary to each other. The natural grazing is not of much value except when the grass is young and succulent, but it is possible to establish such grasses as *Paspalum*, Rhodes grass and Kikuyu. By liberal fertilising and rotational grazing they can be made to yield food for animals throughout a large part of the year.

There are many crops that can be grown during the summer months for the purpose of providing food for stock. Some of these such as pumpkins, cattle melons, mangels and members of the cabbage family are suitable for feeding in the fresh state. Others can be either fed in the green state or made into hay or silage. Grasses, maize, Napier fodder, various kinds of beans, cowpeas and other legumes come into the latter class.

Silage is a good standby against periods of drought, as it can be kept in a good silo for years if necessary. Maize or maize mixed with a legume is most commonly used for making silage in S. Africa, but various other crops can be used. With a well filled silo the stock-owner need not fear running short of bulky succulent food at anytime. The chief reason why mixed farming with stock has not been more largely followed in the coastal areas is a financial one. Except near the towns and villages where milk, eggs, and garden produce can be sold direct to the consumer, the income derived from this class of farming has not compared favourably with that obtained from sugar cane growing.

On a good many sugar cane growing farms a certain amount of mixed farming with stock is carried on but the large majority of planters seems to find that their cane requires all their energies. Still this class of farming seems to offer more chances of success if carried on along with cane growing than the cultivation of any alternate crop for direct sale.

There is one branch of stock farming which the writer has often thought might be made a profitable business along with cane farming.

That is the fattening of cattle for the market during the winter months. It could be made a seasonal business and would not require so much close and detailed supervision as the care of breeding and dairy stock.

The idea would be to buy oxen from highveld districts or anywhere they could best be bought, preference being given to animals having at least a strain of the imported beef breeds.

Buying would commence as soon as the cutting season started or earlier if food was available.

Oxen to be fattened would not require housing on the coast. They could be kept in open yards or paddocks preferably in small groups of not more than ten animals each. If small yards are used they can be constructed of rough wattle or gum poles. They ought to be placed on a well drained piece of land if possible. Shelter from the sun and wind is useful if available but not essential.

When the oxen are first penned up they can be fed on cane tops and exhaust molasses. About 2 to 3 lbs. of molasses per head per day can be given to commence with and the amount can be increased gradually to 10 lbs. or even more depending on the size of the animals. The molasses can be thinned a little with water and sprinkled over the cane tops but if waste is to be avoided only as much sweetened cane tops as the animals will clean up ought to be given.

An improvement on the above ration would be a supply of hay or silage to provide an alternative roughage in place of part of the cane tops. This could be provided by growing some of the crops already mentioned on the fallow lands in summer.

After two or three months on cane tops or other roughage and depending on when it is hoped to market the animals, a small amount of maize bran or roughly ground maize meal can be added.

Commence with about 2 lbs. per head per day and increase up to 4 lbs. More can be given but it ought not to be necessary as a rule. On the average the animals ought to be fat enough to fetch a good price on the local market by the time they have consumed 200 lbs. of maize. During the whole period the yards ought to be kept well bed-

ded with cane trash. This keeps the animals comfortable and forms a considerable quantity of valuable manure.

The financial results depend on being able to buy a suitable class of oxen at a moderate price in June and July and being able to sell them in the spring when beef is usually rather scarce and a fairly good price. It ought to be possible to have a difference of at least £5 per head between buying and selling price in most seasons.

Very much more could be said on the subject of developing and extending agriculture in various directions in this area.

There are, for example, the advocates of pig and poultry farming, who could make figures prove, that there are good profits in these branches, but the writer would prefer to leave these to others even were it not time to bring this paper to a close. It is hoped that many of the points missed in the paper may emerge in the discussion.

South African Sugar Association,
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The PRESIDENT: Opening the discussion stated this was another very informative paper from the Experiment Station.

Mr. LINTNER: Referring to the morning discussion on organic matter asked Mr. Fowlie if pig raising would incorporate organic matter in the soil satisfactorily.

Mr. PALAIRET: Asked if the present experimental results with nitrogen were not largely influenced by new cane varieties. He also pointed out that with the new forms of easily handled granulated fertilisers now available our attention could wisely be drawn to the utilisation of mechanical fertilizers.

Mr. P. MURRAY: Raised the question of daily variations in temperature in grassland management and of the adverse effect of rainfall on cut teff. Climate was a factor to be contended with in general farming and should not be overlooked by those

turning to other forms of agriculture than cane cultivation.

Mr. WOUTERS: Referred to the similarity of the soils on the Umfolozi flats with those of Java, both of which were particularly suited to P.O.J. cultivation.

Mr. DEENIK: Said that Mr. Fowlie had shown a difference of £5 per head between buying and selling prices of steers fattened on cane tops and molasses. Had this been done?

Mr. FOWLIE: First replying to Mr. Lintner hesitated to state whether pig raising would renovate kikuyu pastures by supplying the necessary organic matter.

Replying to Mr. Palaret he said that contrary to the point raised some of the most striking results had been obtained with nitrogen (and other fertilisers) on Uba. While the newer granulated fertilisers prevented clogging of machines, the ordinary fertilisers when in reasonably good condition could also be satisfactorily applied by machine. What was required was larger machines, if the work was to be done on a large scale. He suggested machines that would spread the fertilisers into as many as four furrows at a time.

Replying to Mr. Murray he said he would like to confirm the necessity for training in general agriculture. For example a cane farmer taking up dairying might find himself in trouble. The scheme outlined in the present paper did not require that specialised knowledge.

Cutting teff in summer was a difficulty which could be overcome by making this into silage.

With regard to Mr. Wouters' statement, Mr. Fowlie gave assurance that while P.O.J. canes grew well in very wet soils such as in Java, his experience showed they would not grow in stagnant water.

Replying to Mr. Deenik's question Mr. Fowlie said that from his experience of feeding animals on cane tops and other materials he was assured that cane tops were just as effective as maize hay and there would be no difficulty about obtaining the difference of £5.

The PRESIDENT: In concluding thanked Mr. Fowlie for his valuable paper.