

THE FOOD PRODUCTION DRIVE AND THE SUGAR INDUSTRY

By P. FOWLIE.

In view of the food position throughout the world at the present time, no apology is required for raising this subject.

The sugar industry has made the sugar belt of Natal and Zululand one of the most productive, if not the most productive, part of the Union of South Africa. Although this is so, and it is desired to give full credit for what has been done, there are still possibilities of expansion, and the purpose of this paper is to examine and discuss some of these possibilities.

Increase Sugar Production.

The best contribution the sugar belt could make to the world's food supply would probably be to increase the output of sugar. As this is the subject of negotiations between the industry and the Government, and in any case would be likely to take years to bring about, it is not intended to elaborate on it; but the writer would like to mention that, in his opinion, it would be possible to increase the output of sugar considerably from the present sugar farms. In addition to that, there are considerable acreages of land not at present used as sugar farms that could be put under cane if it became necessary or desirable. However, the propagation of cane takes time, and it is in the near future that the need for more food for both people and domestic animals is expected to be most urgent. Let us, therefore, consider what might be done this year to help in the food production drive. Some of the suggestions which follow might be fitted into a long-term policy for certain sections of the industry, others are only suggested for consideration under the present exceptional circumstances.

Cattle Fattening.

Cattle fattening is a branch of food production that could be made to work in with sugar farming. At present beef is plentiful and there are more slaughter stock on offer than can be dealt with at the principal abattoirs in the large towns. Consequently cattle coming off the veld now in fair condition but not fat are difficult to sell and can be bought at lower prices than those ruling a few months ago. The present glut of slaughter stock is not likely to continue throughout the year. Cattle-fattening in the winter requires supplies of suitable foods, and these are going to be unusually scarce this winter. Maize, which is the great standby in an ordinary season, is going to be largely required for feeding the human population, and all other grains and grain by-products are scarce

and dear. Dairy cows have a first claim on such concentrated feeds as there are, so the outlook for fattening cattle during this winter is distinctly unfavourable.

The sugar industry can help in a small way. It has two very useful feeds for mature cattle that in the past have not been made full use of. These are cane tops and molasses. It is suggested that oxen should be purchased from those parts of the country that are free from restrictions on the movement of cattle and run in the canefields to follow up the cutting gangs and feed on the freshly-cut cane tops. When they have settled down to their new conditions, arrangements should be made to give them molasses in addition to the cane tops. Only a small ration of molasses should be given at first; but in a couple of weeks, when the animals have become accustomed to the molasses, they can be allowed free access to as much as they care to take. Such a ration is far from being an ideal one, as it is deficient in protein substances, but it has been proved that if mature oxen whose teeth are in reasonably good condition are fed in this way they will gain in weight through the winter months and be fit to sell as slaughter stock in the spring when beef is scarce and prices are high. Of course, if the fattening oxen can have some legume hay or other protein-rich food to balance up the cane tops and molasses feed, they will make better gains, but the game is worth while even if such feed is not available.

That is the method which may be called taking the ox to the feed. There is another way open to the sugar industry with regard to molasses. That is to take or send the feed to the ox.

Molasses as Cattle Feed.

A short time ago there appeared in the newspapers an announcement that one of our sugar companies had taken up the old process of mixing molasses with some kind of vegetable matter and intended putting a new stock feed of this sort on the market. The writer has no information about this feed except what appeared in the press. There may or may not be some secret about its composition or preparation to entitle it to be called a new feed.

However that may be, the main facts about the preparation of such feeds have been known for at least fifty years, probably longer.

The first thing is to decide what kind of vegetable matter is to be used to dry up the moist stickiness

of molasses. If the vegetable matter can be a hay or something having considerable feed value in itself, so much the better, but this is not always considered to be absolutely necessary. One proprietary mixture which was widely advertised and sold in large quantities in both Europe and America many years ago, was reputed to consist of finely ground dry peat impregnated with molasses. The first thing to do in making a molasses mixture after choosing the vegetable matter to be used, is to chop or grind it fine and have it as dry as possible before mixing it with molasses.

The amount of dried vegetable matter to be added to a given amount of molasses will naturally vary, depending on the absorbent nature of the kind of vegetable matter used and the density of the molasses. The American book, "Feeds and Feeding," by Henry and Morrison, gives several analyses of molasses feeds, and these indicate that the percentage of vegetable matter added to molasses to form the mixture is roughly from 25 to over 30 per cent. of the final mixture.

The feed mixture must be dry enough to be transported in bags, and if it has a granular texture it is easily handled when used.

If farmers throughout the country could buy molasses feed at a reasonable price at the present time, they would be after it to feed their dairy cows and other good quality cattle like bees after syrup. As a feed it is deficient in proteins unless a high grade material like lucerne hay has been included in the mixture, but the sugar in molasses has a high feed value as it is practically all digestible, and the solid matter in molasses definitely have a tonic value.

Molasses is purchased in drums and used on many farms now, but usually on a very limited scale on account of transport difficulties. Where it can be transported right to a farm siding and run into a tank from the railway molasses truck it is a very cheap feed. The writer knew a farmer twenty-five years ago who built a tank to receive molasses in that way, and who used quite large quantities for a number of years. He fed it to all classes of cattle with very good results.

It is very unusual for a farmer to be able to obtain molasses in this way, and most farmers who have to transport molasses from the railway to their farms by road cannot handle such a large quantity as a tank truck at a time, so they are driven to obtain the little they do get in drums. It has been suggested that molasses tanks capable of holding two or three tank trucks might be built at stations or sidings in cattle districts and arrangements made for the surrounding farmers to take delivery of molasses in their own containers at stated times. This would probably allow farmers to obtain it at a reasonable price.

The following is a rough estimate of the value of

molasses as stock feed. According to its analyses, molasses has approximately two-thirds of the value of maize weight for weight. That means that 300 lbs. of molasses is equal to a bag of maize in feeding value. 300 lbs. of molasses is roughly 24 gallons. At the present price of maize, molasses is worth about 9d. per gallon on the farm. If it could be delivered on the farms for 6d. per gallon it would pay the farmer to use it and sell his maize.

The writer does not know how these prices compare with the prices obtained by the industry for molasses used for making alcohol, food yeast, etc.

Winter Crops for Food.

The usual dry winters, and especially the exceptionally dry seasons of the past two years, do not encourage cane farmers or others in the coastal belt to attempt to grow food crops in winter on any considerable scale. Yet it is well known that the climatic conditions which prevail in this area in winter are suitable for the cultivation of many things if the moisture difficulty can be surmounted.

Most cane farmers grow their own vegetables very successfully, either in naturally moist situations or by watering them when necessary. There are many small areas where water is, or could be, made available for vegetable growing, and under the present conditions it would be supplying a public need to largely increase the area under vegetables of various kinds, even if it did not prove a very profitable venture.

Potatoes have been very scarce and expensive throughout the country for the last two years. At present potatoes are more plentiful but they are still expensive, and it appears probable that they will remain so for this year at least.

The potato crop is a risky one if grown on dry lands in the coastal belt, but good crops are sometimes obtained without watering, especially if there are useful rains in the early spring.

If it is possible to irrigate a little, this crop is a fairly safe one on suitable free-working, loamy soils.

The main things to ensure success with the potato crop are:—

- (1) Obtain good healthy seed, preferably first crop from imported seed.
- (2) Plant on land that has not carried a diseased potato crop formerly.
- (3) Fertilize heavily with a complete fertilizer if possible.
- (4) Cultivate frequently till the young tubers begin to form.

Planting is best done during July and August, and several plantings at intervals spread the risk of the crop being damaged by unfavourable weather. Space the rows about three feet apart to allow the crop to

be cultivated by scarifiers. The writer considers it is better to ridge out the land and plant the potatoes in the furrows than to plant after the plough. About a fortnight after planting and before the shoots begin to show above ground, a harrowing should be given. Use the scarifier as soon as the potatoes show up in the lines, and again ten to fourteen days later, especially if there has been a shower. When the potatoes are about six inches high, earth up with a ridging plough. Within a fortnight run the scarifier through again, and follow up a few days later with the last earthing-up. If all this cultivation with scarifiers and ridgers is given, only a minimum of hand work ought to be required, but all weeds which escape these implements ought to be weeded out whilst small. If given great care and good conditions, the potato crop can be a very profitable one at present prices.

Both beans and peas can be grown as field crops during the winter. With them, too, a great deal depends on giving them good treatment. To give them a chance they ought to be planted in rows and cultivated as often as necessary, to keep the tilth right and to destroy weeds when they are small. Peas like a light, free-working soil, whilst beans will do on a stronger soil.

This kind of crop would have to take the place of the usual sunn hemp crop. As a preparation for the following cane crop, either beans or peas would probably give nearly as good results as sunn hemp, and either crop is capable of contributing materially to the food supply.

Then there is rice and early maize, and other crops will probably suggest themselves.

Only suggestions for the winter months have been made, because it is hoped that the present food situation will be greatly relieved before the summer, but should there still be need there are crops that can be cultivated in summer too.

Marketing.

There is one perennial problem which farmers who produce perishable foodstuffs for the market are up against. That is the marketing difficulty. The most promising method of tackling it appears to be along the line of co-operative depots. The sugar interests have been very successful in dealing with the disposal of their own product. Is it not possible that they might be able to assist in organising the marketing of other products?

Mr. DYMOND said that he had latterly been interested in the question of utilising molasses as a cattle feed. This subject was originally brought up by Mr. Fowlie some years ago, and Mr. Deenik also gave us an informative paper on the value of cane tops, cane top

silage and molasses in beef production. The speaker had tried to find out more about the process of manufacturing cattle feed from molasses and bagasse at Umfolozi, but had not been very successful. He would think, however, that it was essential to use fresh screened bagasse, as by screening a large proportion of undesirable rind fibre will be eliminated. He recommended, however, that the Experiment Station should carry out experiments in preparing a cattle feed from screened bagasse and molasses, and determine their feeding value and keeping qualities. This Station should also examine what extra materials were necessary to be added to get a properly balanced ration. Cane tops were considered a valuable cattle food, and he wanted to know in how far bagasse differed from cane tops in feeding value.

Mr. WILSON informed the conference that he had been approached by the Industrial Development Company for particulars about molasses, as that Company was considering a process in which the molasses could be sprayed on cattle food. The author of this paper considered the value of molasses as a cattle feed was about 6d. per gallon. Should farmers, however, be willing to provide their own containers for the molasses they could obtain it from the refinery at about 3d. a gallon, and refinery molasses were of a higher value than ordinary sugarcane factory molasses. The trouble was, however, to get the necessary receptacles for the molasses.

Mr. WOUTERS suggested that the South African sugar planters might well follow the example of some other sugar producing countries and practice more crop rotation. In some countries ratooning was not practised, but some other crop was planted and the soil was given a rest, which ultimately benefited subsequent sugarcane crops.

Mr. DU TOIT, in answer to Mr. Dymond, pointed out that the fibre content of bagasse was much higher than that of cane tops and it was very low in proteins. He did not have a complete analysis of fine-screened bagasse, but a large number of determinations on the feeding value of cane tops and young cane shoots had been made at the Experiment Station, and on the whole their value compared not unfavourably with some setaria grasses. Cane tops contained approximately 75 per cent. moisture, 1.8 per cent. ash, 1.5 per cent. crude protein, 12 per cent. protein, 0.4 per cent. fat and 8 per cent. fibre. It was evident therefore that cane tops were quite valuable as a cattle feed.

Mr. FOWLIE in reply to a question said that potatoes could, of course, be planted in March along the coast, but the purpose of this paper was more particularly to suggest means of alleviating the present food shortage. He thought that by next year the food position might have been improved. It should be remembered, however, that potato wilt is much more dangerous to crops planted in the autumn than to crops planted in winter and grown in early spring.

Mr. W. A. CAMPBELL said that some years ago Natal Estates Ltd., were part-owners of a factory producing a molasses-bagasse mixture called molassine meal. Bagasse was ground up fine, dried and then mixed with molasses and flavoured with a little salt. This mixture

was then bagged and put on the market. Peat imported from Ireland was also treated with molasses. There was a certain amount of demand for these preparations at first, but it gradually fell away, and eventually the manufacture had to stop as farmers felt that molasses could be bought much cheaper in drums and could then be used with hay produced on the farm. That was the reason why molassine was a complete failure.

He had been feeding 800 or 900 of his cattle now for some years on molasses, and was very satisfied with the results, but the difficulty was transport. A large amount of the molasses was lost in offloading through careless handling of the drums. He thought that if the industry could offer molasses in sealed drums, the demand would increase very appreciably.

Mr. PALAIRET agreed with Mr. Campbell that high cost of transport and careless handling were the greatest obstacles to the more general use of molasses. He believed that, were it not for these, consumption would rise steadily. The value of molasses in enriching high protein feeds had been proved by tests and experience, and he sincerely hoped that ways would be found to convey the molasses economically and effectively to the dairying and cattle raising areas, where a large market would be found.

Dr. DODDS fully agreed with Mr. Fowlie that the industry would be able to increase the production of sugar very appreciably in the near future. Before long, when adequate supplies of fertilizers were again available and when we have climatically more favourable years, we could expect, especially from some of the newer cane varieties, a further progressive increase in yields.

Cane tops were a very valuable food material and a natural asset to sugar farming which had not yet been fully utilised. He knew quite a number of sugar planters who had used the method advocated by Mr. Deenik some years ago, i.e. to bring cattle down to the coast during the winter months and then to feed them partly on cane tops. Some of these farmers had made good, but all planters were not experienced cattle farmers, and as cattle diseases were common along the coast and stock losses might reduce, or even wipe out all profit. He would welcome a fuller utilisation of cane tops, however, and advocated a systematic investigation of the valuable feed properties of tops.

Mr. ROBERTS gave his experience of using molasses as a stock feed. One disadvantage of using diluted molasses was that at times bees chased the cattle away from the

molasses. It was, however, very useful in making silage when the molasses was mixed with feeding stuffs rich in protein. Pigs, too, did very well on molasses, and he had found that it could be used up to 30 per cent. of the total ration. As a dry roughage to be mixed with molasses to form a meal, he suggested ground up monkey-nut shells, which were plentiful in the Northern Transvaal.

Mr. FOWLIE, replying to questions raised in the discussion, said that he agreed that fine, fresh bagasse should be used for mixing with the molasses and that the bagasse should, of course, be artificially dried before mixing.

He felt that by practising crop rotation to such an extent as to do away with ratooning altogether it might be possible to get a healthier crop of cane, but he was afraid that such a practice would be quite uneconomic in South Africa owing to the expense of such frequent replanting.

Conditions in the sugar industry and cattle industry were different to-day from those prevailing when the molassine meal described by Mr. Campbell was made. Mealies were then plentiful and could be obtained for about 5s. to 8s. a bag, whereas to-day they were simply not stock feed. Anyone who made a reasonably good stock feed to-day would have no trouble in disposing of it profitably. The sugar industry was very well situated to make such a feed, and provided the right men tackled the problem he felt sure that a success could be made of it. He thought the best way, however, was to bring the cattle to the feed.

Mr. Fowlie estimated that the sugar industry produced about 150,000 tons of molasses annually and that was equivalent in feeding value to 100,000 tons of mealies worth about a million pounds.

He agreed that cattle coming to the coast were liable to get gall-sickness and redwater, but these diseases were much more prevalent during the summer months than in winter. That was why he advocated bringing cattle down to the coast about May and keeping them to about October. By doing this the farmer would run the minimum risk of losing cattle as a result of disease; he would buy them at low prevailing prices and sell them when prices were about 50 per cent. higher per unit weight, and he would have the further advantage of utilising his cane tops profitably during the cutting season. Even if the farmer should lose one or two head of cattle he would still have a substantial profit.