

AVERAGE OF THREE TONS OF CANE PER ACRE PER MONTH AT HILLCREST

By K. DYMOND

"Sugar Bush", Hillcrest

To write a paper of this nature needs great courage, when it is known that so many growers do better than three tons per acre per month and that the paper contains little that hasn't been said before. The author is persuaded to do so, however, by the thought that as it is written by a grower, rather than by one of our experts at the Experiment Station, a few colleagues may benefit.

The title of this paper was chosen deliberately, as once a variety has been decided upon there is little one can do about sucrose. Therefore, there is no point in talking of tons of sucrose per month.

The farm is situated in an area which has an average rainfall of 41 inches, the altitude is 2,000 feet and the soil is derived from Table Mountain Sandstone. Part of the farm was under wattle, part under gum, and the rest was virgin veld. Portions were too steep to plough except with mules. The

higher altitude area.

The harvest data are shown in Table I. In 1966/67 all of the crop was plant cane, and in 1967/68 33 per cent of the area harvested was plant cane and 67 per cent first ratoon. On the average, 70 per cent of the area has been harvested each year, but the intention is to increase this to 75 per cent or more to give an average yield of about 45 tons of cane in 15 months. Rainfall over the past four years was as follows:

1964 ... 47 in.
1965 ... 39 in.
1966 ... 35 in.
1967 ... 43 in.

A farm mean peak of 4,157 tons of cane has been established on 95 acres of cane land.

The author is convinced that the main reason for the higher than average yields is control of weeds.

TABLE I
Summary of crop yields for 1966/67 and 1967/68 seasons

Field Nos	1966—67						1967—68					
	Stage	Acres cut	Ton-nage cut	Age in months when cut	T.P.A.	Tons of Cane/acre/month	Stage	Acres cut	Ton-nage cut	Age in months when cut	T.P.A.	Tons of Cane/acre/month
1	Plant	13.5	1,269	25	94	3.8						
2	Plant	8.1	502	23	62	3.0						
3	Plant	9.6	585	27	60	2.2	1st Rat.	9.6	471	16	50	3.1
4	Plant	6.4	386	26	58	2.5						
5	Plant	.8	80				Plant	3.6	264	20	73	3.4
6	Plant	13.0	868	26	67	2.6	1st Rat.	13.6	659	17	48	2.8
7							Plant	5.6	392	21	73	3.5
8							Plant	1.9	110	21	51	2.4
9	Plant	4.6	295	18	64	3.5	1st Rat.	4.6	184	15	40	2.9
10	Plant	2.8	182	18	69	3.5	1st Rat.	2.8	112	14	40	3.0
11	Plant	2.0	132	19	65	3.4	1st Rat.	3.0	142	15	50	3.3
12	Plant	5.9	340	18	58	3.2						
13							Plant	6.2	330	20	53	2.7
14							Plant	2.2	117	19	50	2.6
15	Plant	6.7	517	26	77	3.0	1st Rat.	6.7	357	16	53	3.3
Total/Ave.		73.4	5,156	23	72	3.07	Total/Ave.	59.8	3,158	18	53	3.00

gum land could only be cultivated by hand-hoeing in between the stumps. The variety planted was N:Co.376, and in order to save time no fungicide was used. Some of the seedcane was heat treated. Superphosphate at 1,000 lb. per acre was banded in the furrow, and a top dressing of 600 lb. of 1.0.1 mixture was used. The first ratoon received 800 lb. of 1.0.1 mixture per acre. The row spacing was 3 ft. 9 in. This was normal procedure following the advice of the Experiment Station. The closer than normal spacing was considered to be suitable for a

All other aspects of good husbandry are important, but weeds can nullify them. The Experiment Station has shown that a loss of 60 per cent of yield can result from lack of weed control.

No weeds were allowed to grow at any stage. This is elementary. But so is the cut in the side of the cotton reel, and the inventor became a millionaire through it.

Do growers control weeds? A drive through the cane belt in January is sufficient to enable one to observe thousands of acres of grass growing higher

than the cane. It will be said that it is easy to keep only 95 acres clean, but what about 2,000 acres? The answer is that 2,000 acres is 20 farms of 100 acres. The author is convinced that if a grower cannot keep his whole farm clean, it would be better for him to farm only half of it, and make double the net profit per acre. It is no use saying, and how often it is said: "Isn't it marvellous? The drought has broken at last, but now the weeds have caught up on me."

It is not the object of this paper to discuss the best method of weed control. Enough has been written on this subject in the past. Whether a grower chooses weedkiller, mechanical or hand-weeding, or a combination of these, one aspect must be stressed, and that is early control. Because of the steep terrain and lack of grazing for mules only hand-hoeing could be done at Hillcrest. By starting to weed before any weeds appeared, or, in other words, by merely dragging the hoe over the ground, tasks ranging from 1,000 yards to 2,000 yards per day were possible. A distance of 1,000 yards at 3 ft. 9 in. spacing, means four units an acre. At 35c per unit, this means R1.40 an acre per weeding. At the peak period of weeding, only 30 acres needed to be weeded. On the rest of the farm the cane had already canopied, or had not yet been cut. Therefore, the maximum number of units needed at the peak period in order to be able to weed the fields every fortnight was ten.

Only ten units per 100 acres for weeding and, despite the drought, the results became obvious.

The cane grew very fast and soon canopied, resulting in no further weeding being necessary.

If weeding is delayed, the task gets smaller and smaller as the weeds grow until a weeder can do no more than 100 yards per day. The problems to be faced may be outlined as follows:

1. Labour will become scarce. Although the energy used to weed 100 yards of tall grass may be the same as that for 1,000 yards of very small weeds, an African will not consider it to be so. His heart will sink at the sight of the tall grass, and he will immediately say "Ngihluleka". The Swazi will say "Gute", which stands for anything from "I don't know where it is" to "This task is ridiculous".
2. The weeds may use up to 60 per cent of the fertiliser. (800 lb. of 1.0.1 mixture is worth R28. 60 per cent of R28=R17 per acre.)
3. The weeds may use up to 60 per cent of the rainfall. Instead of 40 inches, the cane will get only 24 inches.
4. The number of weeders needed per acre for a task of 100 yards is 40, which will cost R14 per acre.
5. The number of weedings needed increases as the cane takes longer to canopy. The snow-balling effect goes right through to the extra harvesting cost for shorter cane and discontented labour. The profits disappear.

Before a grower starts thinking of fungicides, hot-water treatment, trace elements or cutting machines he should first of all give his attention to the most significant factor in the economics of growing sugar-cane—weed control.

Discussion

Dr. Dick (in the chair): It is rather remarkable that a farmer in an area that we consider marginal should have been able to produce cane at one and a half times the average return for the industry. I do not believe this was entirely due to weed control but that Mr. Dymond's overall management must have been excellent.

I think he was rather lucky in getting away with not treating his plant material with fungicide.

Mr. Morrow: Why was the cane cut at the ages shown in Table I?

Mr. Dymond: As a new grower there was no point in my cutting at eighteen months or so. The cane was left over to the following year so I could achieve a farm mean peak and that is why the cane is so old. The cane was cut in the order planted.

Mr. du Toit: In an earlier paper I referred to average yield per acre per annum. Pongola, which is considered a peak producing area, gave 31.4 tons cane per acre per annum under cultivation against Mr. Dymond's figure of 36 tons, without irrigation, on T.M.S. soil, on a hilly site. This is an outstanding result and although I agree with you, Mr. Chairman, that this cannot only be attributed to weeding I think Mr. Dymond has stressed the most important factor, weeds. Although bad fields may suffer through lack of fertilizer or for some other reason the worst fields will undoubtedly be suffering from weeds. If you have weeds you are wasting your time with both fertilizer and irrigation.

Mr. Main: Were the cane yields on Mr. Dymond's farm different in the three areas that had been respectively under wattle, under gums and virgin veld? In the Midlands we have been getting tremendous yields from old wattle lands.

Mr. Dymond: No difference at all. Wattle being a legume will supply sufficient nitrogen for at least the plant crop. When grass land is ploughed in, sufficient nitrogen is needed to assist not only in the rotting down of the organic material but also for the cane crop. If this is not done then there will be a difference in yield between ex grass and ex wattle land.

Mr. Wise: Why does Mr. Dymond contemplate cutting at 15 months when his cane at 23 months gave him 36 tons per acre per year, as did his 18-month cane and as he now expects to get at 15 months. What is the point? You will merely weed more often and fertilize more often to get the same end result.

Mr. Dymond: This is a very important question. Perhaps the answer is young cane is easily handled, 40 tons per acre being the ideal tonnage to cut. There is also a slight saving in insurance cost under

eighteen months and there is greater tons per acre over a period.

Against it of course is the fact of more weeding.

Mr. du Toit: This question of Mr. Wise's as to the point of cutting early for the same yields is intriguing. I think Mr. Dymond is right, that we should disregard age and aim at cutting a certain tonnage — say 40 to 45 tons per acre.

Mr. Wise: In the Umhlali area the bulk of the growth is in the first twelve months whereas in the Midlands it is in the second twelve months. Mr. Dymond's figures do not show that the main growth is in the first twelve months. Even if cutting early makes for easy cutting at 40 or 45 tons per acre I do not think it compensates for the extra labour and extra weeding required, if the end result is the same.

Mr. Wilson: The experiment station would recommend cutting at 40 to 45 tons cane per acre as the advantages outweigh the disadvantages.

Fertilizer use should not be affected as it should be based on crop requirement.

Mr. Bartlett: I am a neighbour of Mr. Dymond's and in my first year I averaged 2.03 tons per acre per month but with poor weed control. With my ratoons I followed Mr. Dymond's example and raised the figure to 2.58 tons cane per acre. I do not think that his figure of 3 tons of cane per acre per month can be attributed to growth on old wattle land as one of my fields was old mealie land and gave 3.2 tons cane per acre per month, a 16-month old ratoon crop.

Mr. Pearson: Mr. Dymond's figures are particularly creditable as they include in the second year the harvesting of some ratoon cane where one might

expect a decrease in yield, but the tons cane per acre per annum are in the region of 36 tons for both years of harvesting.

Mr. Aucock: You can cut at 12 months depending on what time of the year the previous harvest was. If you cut in May you can do so again next May but if you cut in December then you should not cut in the following December.

Mr. Morrow: If 4' 6" row spacing on a slope is equivalent to 3' 9" on the flat then it might be more economic to farm on sloping land.

Mr. Dymond: The ground slope is seldom more than 25° and therefore makes very little difference to the average. In fact my aerial photograph shows only 0.4 acres difference from the ground survey.

Mr. Boyce: Mr. Dymond says that no weeds were allowed to grow at all and I would like Dr. Thompson's comments on this.

Dr. Thompson: I certainly agree that if possible you should prevent weeds appearing, but in estate practice we made the limit three man days per acre which agrees fairly well with Mr. Dymond's figure.

I think Mr. Dymond's rainfall efficiency of 88% is very good and if it was as a result of following experiment station advice it is very gratifying.

Mr. Stewart: If one, by cutting at younger cycles, is trying to get more tons sucrose per acre, the opposite effect can be induced if this is taken to extremes.

Mr. Morrow: I think this question of when to cut could be dealt with as a problem in programming, by the experiment station with the co-operation of an estate, and the results reported at our next congress.