QUEENSLAND.

Bureau of Sugar Experiment Stations

Division of Soils and Agriculture

FARM BULLETIN No. 3

Farm Fertility Trials

Results for the 1931 Season

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Issued by direction of the Hon. H. F. WALKER,
Minister for Agriculture and Stock.

BRISBANE:
By Authority: Frederick Phillips, Government Printer.

BUREAU OF SUGAR EXPERIMENT STATIONS

Farm Fertility Trials

Results for the 1931 Season

The first set of farm fertility trials was harvested during 1930, *and the results therefrom were reported in Farm Bulletin No.* 1. *Many of the trials were re-fertilized at ratooning time—the treatments, in most cases, being identical with those applied to the plant crop. In addition, a new series of trials was set out on selected farms, and the results of all experiments harvested during* 1931 *(both plant and ratoon crops), are included in the present pamphlet.*

EXPERIMENTAL METHOD.

THE plots which were carried over as ratoons from the 1930 season were continued, of course, on the old plan, as described in Farm Bulletin No. 1. Early in the work we discovered weaknesses in the method of selection of individual treatments, and with the trials begun in 1930 a modified plan was adopted. This is exemplified by the following diagram:—

N K	P K	C	N P K	N P
N P K	C	N P	P K	N K
C	N K	P K	N P	N P K
N P	N P K	N K	C	P K
P K	N P	N P K	N K	C

It will be observed that instead of the N plots of the earlier layout a P K treatment is substituted, giving again a trial of 25 small plots. The significance of the above letters, and the method of determining the response to the individual constituents, is as follows:—

C represents plots which received no fertilizer treatment.

N P represents plots which received—
Sulphate of ammonia (N);
Superphosphate (P).

N K represents plots which received—
Sulphate of ammonia (N);
Muriate of potash (K).

P K represents plots which received—
Superphosphate (P);
Muriate of potash (K).

N P K represents plots which received—
Sulphate of ammonia (N);
Superphosphate (P);
Muriate of potash (K).

The weights of the individual substances employed in the above mixtures were varied from trial to trial, and the actual amounts taken are shown in the respective tables accompanying results.

Calculation of Results.

The object of all these experiments was simply to determine which constituents of the fertilizer mixtures contributed to any increased yield due to their use, and hence the relative proportions of each required in a suitable fertilizer mixture for the particular soil type. The method of determining these relative increases is as follows:—

Suppose we have the results of 25 individual plots from a trial. We may group the yields in series of five plots under their respective treatment headings, and by taking the average of each series we have a measure of the relative yields of the five treatments. Suppose we found—

C—25 tons cane per acre.
N P—34 tons cane per acre.
N K—29 tons cane per acre.
P K—33 tons cane per acre.
N P K—36 tons cane per acre.

It is evident that the difference in yield between the N P K plots and those receiving N P is due to the potash applied in the former treatment —that is—

N P K — N P = influence of potash; and here 36 — 34 = 2 tons per acre.

Similarly for the treatments N K and P K in comparison with N P K, we find as follows:—

Relative values of—

N (sulphate of ammonia)	..	3 tons per acre increase
P (superphosphate) ..	..	7 tons per acre increase
K (muriate of potash)	..	2 tons per acre increase

These results indicate the need for a fertilizer mixture rich in phosphates, and with relatively lesser amounts of nitrogen and potash.

In attempting to secure information along these lines it must be remembered that no attempt is made to select the most suitable proportions of these materials in preparing our mixtures for the field plots; nor is any attempt made to select an economical dressing per acre in order to show profitable returns. Our object is to determine simply the relative needs for the three ingredient plantfoods. It is not suggested

that the economic side of the question must be lost sight of—for this is necessarily the aspect of the work in which everybody is chiefly interested—but the determination of this factor must follow the present type of preliminary trial. That is, considering the above-quoted results once more, when we know that the crop shows a pronounced response to an application of superphosphate (in combination with lesser amounts of the other ingredients), we set out a further experiment with, say, 200, 300, 400, 500, and 600 lb. of superphosphate respectively, and then deduce which of the five selected amounts gives the maximum payable yield.

We feel that we are now beginning to learn something of the relative requirements of certain of our soil types, and during the coming season we will set out a number of trials of the latter type in an attempt to determine the economic limits to which the treatments may be pushed. The fact that, in compiling the results which follow, a financial statement of the treatment and yields has been prepared is simply in response to requests from many growers who would like to have a clear picture of the economic side of the work.

Generalised Results.

In the following pages a discussion of the results from individual trials is given. There are, however, a number of generalisations to which the results as a whole contribute, and it might be worth while considering these briefly.

Plant v. Ratoons.—Sixteen of the trials have now been harvested as plant and ratoon crops, and a comparison of the average response to the best treatment in each year shows the following:—

Average response to fertilizer on plant crop	..	5·6 tons cane
Average response to fertilizer on ratoon crop	..	7·7 tons cane

In other words, the same fertilizer treatment showed much better results on the ratoon crop than it did on the plant. This is, indeed, just what might be expected. Following a fallow, the accumulated plantfood may be sufficient for the production of a reasonable tonnage without the use of outside fertilizer supplies; but when the ratoons are forced to gather in what plantfood remains after the plant crop is harvested the need for an artificial mixture to supplement the soil supply is urgently required. This is in accordance with the general findings on our experiment stations, and it indicates clearly one method by which the ratoon yields may be maintained, instead of falling away suddenly as is so often the case.

Another method of presenting the results for those who are not consistent users of fertilizers is to compare the average yield of the *unfertilized* plant crop with the average ratoon yield from the fertilizer treatment which gave the *highest profit* from the use of fertilizer. We find—

Average yield unfertilized plant crop	..	21·6 tons
Average yield fertilized ratoon crop	..	20·1 tons

Although the fertilizer treatment taken in arriving at these results is probably not that best suited to the particular set of conditions, yet we find that the average first ratoon crop is only 1·5 tons of cane per acre lower than the unfertilized plant crop.

When considering which fertilizer ingredient is most instrumental in contributing to increased crop yields, we meet an interesting situation. With regard to phosphate and potash, we find that sometimes one, sometimes the other, is of special value, and frequently both are comparable in their relative importance. This is a question which is ultimately linked up with the soil type; thus we find that the red volcanic soil responds chiefly to potash, while the acid alluvial soils require heavy dressings of phosphates. With our nitrogenous manure, however, it is found that practically all soils so far examined are markedly deficient in available supplies of this plantfood. Although the plant crop may exhibit little response to nitrogen, the ratoons will almost certainly do so, and in many of the returns from ratoon plots the influence of sulphate of ammonia is outstanding.

This latter aspect of fertilizer requirement stresses the importance of growing and ploughing under leguminous crops during the fallowing period; for these crops supply an abundance of available nitrogen for the subsequent plant crop of cane, and the use of sulphate of ammonia may be confined almost to that of top dressing ratoons.

As was indicated earlier, no attempt has yet been made to determine the maximum application of sulphate of ammonia for most profitable returns, but it would appear that dressings of 400 lb. per acre or more will be quite reasonable applications for ratoons in certain of our areas. Of particular interest in this respect are the soils of the Burdekin area. The only treatment on plant crops which suggests increased yields in this district is an application of sulphate of ammonia, and it is almost certain that the ratoons will exhibit this effect in marked degree.

Influence of Fertilizer on C.C.S. in Cane.

Many farmers are of the opinion that the use of fertilizers will be detrimental to a high sugar content of the crop. That there is some influence in this regard is brought out by a study of our two years' crop results. The effect is confined principally to the use of sulphate of ammonia and potash. The former appears to delay ripening of the crop, while the latter accelerates maturity. Hence we find that with early harvested crops the N P treatment shows a definitely lowered c.c.s. value, while treatments embracing potash (K) are not seriously influenced; the delaying effect of N is counterbalanced by the K treatment. For crops harvested in mid-season, all treatments show comparable returns, in general, and for crops harvested late in the season, the delaying of maturity by fertilizing is often a decided advantage, for the cane on non-fertilized plots may be over-ripe by this time.

Basis for Calculation of Value of Crop Returns.

As the final net price to be paid for the past season's crop is not yet determined, the estimated value of £17 10s. has been taken as a basis for calculation. Fertilizer prices are based on Brisbane quotations plus freight to the individual districts, while an allowance of 10s. per acre has been made for the cost of application.

NORTHERN DISTRICTS.

Location.—**L. R. Hearn's farm, Mossman.**

Soil Type.—Alluvial soil on Mossman River.

Variety.—Badila. Age of crop—Ten months. Nature of crop—First ratoon.

RESULTS.

	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 200 lb. Potash.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate + 200 lb. Potash.
Tons cane per acre	11·1	15·7	14·3	17·2	16·1
C.C.S. in cane	..	..	..	..	..
Value of crop	£18 17 0	£26 14 0	£24 6 0	£29 5 0	£27 7 0
Less harvesting costs	£5 3 0	£6 2 0	£5 14 0	£6 13 0	£6 5 0
Return	£13 14 0	£20 12 0	£18 12 0	£22 12 0	£21 2 0
Increased return due to fertilizer	..	£6 18 0	£4 18 0	£8 18 0	£7 8 0
Cost of fertilizer and application	..	£2 15 0	£3 13 0	£4 4 0	£5 2 0
Profit from fertilizer	..	£4 3 0	£1 5 0	£4 14 0	£2 6 0

It was unfortunate that grubs did considerable damage to this trial, and the results were robbed of much of their value. They do, however, bear out those of the plant crop in that they show a very definite response to nitrogen. Although not harvested as a lime trial, the results from the lime application which preceded the plant crop were plainly evident in the ratoons.

Location.—**Pringle Brothers' farm, Mossman.**

Soil Type.—Recent alluvial soil on the Mossman River.

Variety—Badila. Age of crop—Eleven and a-half months. Nature of crop—First ratoon.

RESULTS.

	No. Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 200 lb. Potash.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate + 200 lb. Potash.
Tons cane per acre	12·7	23·2	26·4	24·0	22·2
C.C.S. in cane	17·8%	17·7%	17·7%	18·0%	17·7%
Value of crop	£28 2 0	£51 0 0	£58 2 0	£53 18 0	£48 17 0
Less harvesting costs	£5 11 0	£9 0 0	£10 5 0	£9 6 0	£8 12 0
Return	£22 11 0	£42 0 0	£47 17 0	£44 12 0	£40 5 0
Increased return due to fertilizer	..	£19 9 0	£25 6 0	£22 1 0	£17 15 0
Cost of fertilizer and application	..	£2 15 0	£3 13 0	£4 4 0	£5 2 0
Profit from fertilizer	..	£16 14 0	£21 13 0	£17 17 0	£12 13 0

The response to sulphate of ammonia on this trial is most outstanding. Its effects could be very readily detected early in the growth of the ratoon crop. There was a response to this constituent on the plant cane equal to about 4 tons of cane per acre. On the ratoons, however, this is increased to over 10 tons. This emphasises once more the absolute necessity for nitrogenous fertilizer on ratoons. A further interesting point is the fact that this crop, harvested at its peak of maturity, showed no falling off of c.c.s. due to the fertilizer, and cut out at an average of about 17·8 per cent. The average value of the increased crop was over £17 per acre.

Location.—**Messrs. Coulthard and Cox's farm, Saltwater, Mossman.**

Soil Type.—Alluvial soil; very acid, and of characteristic bleached colour.

Variety.—H.Q. 426. Age of crop—Fourteen and a-half months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	280 lb. Sulphate of Ammonia + 400 lb. Super-phosphate.	280 lb. Sulphate of Ammonia + 200 lb. Potash.	400 lb. Super-phosphate + 200 lb. Potash.	280 lb. Sulphate of Ammonia + 400 lb. Super-phosphate + 200 lb. Potash.
Tons cane per acre	26·3	31·0	30·8	25·0	32·0
C.C.S. in cane	17·4%	17·4%	17·5%	18·0%	17·6%
Value of crop	£55 18 0	£65 18 0	£66 15 0	£56 3 0	£69 17 0
Less harvesting costs	£10 4 0	£12 0 0	£11 19 0	£9 14 0	£12 8 0
Return	£45 14 0	£53 18 0	£54 16 0	£46 9 0	£57 9 0
Increased return due to fertilizer	..	£8 4 0	£9 2 0	£0 15 0	£11 15 0
Cost of fertilizer and application	..	£4 18 0	£4 1 0	£4 15 0	£6 7 0
Profit or loss from fertilizer	..	Profit. £3 6 0	Profit. £5 1 0	Loss. £4 0 0	Profit. £5 8 0

Again, the outstanding feature of this third Mossman plot is the response to sulphate of ammonia. The increase in this case is about 7 tons of cane per acre. The soil type is a bleached alluvial, obviously highly deficient in humus. Indeed, the soil tests indicated an intense degree of acidity and the urgent need for liming. It is indeed a little surprising to find such a definite response to sulphate of ammonia under these conditions; in all probability the ill effects will be evident in the ratoons.

Location.—**W. Chapman's farm, Hambledon.**

Soil Type.—Red schist hillside slope.

Variety.—Badila. Age of crop—Fourteen and a-half months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	360 lb. Sulphate of Ammonia + 360 lb. Super-phosphate.	360 lb. Sulphate of Ammonia + 200 lb. Potash.	360 lb. Super-phosphate +200 lb. Potash.	360 lb. Sulphate of Ammonia + 360 lb. Super-phosphate + 200 lb. Potash.
Tons cane per acre	33·0	36·8	41·1	35·1	40·4
C.C.S. in cane	16·7%	16·1%	16·7%	17·0%	16·8%
Value of crop	£57 15 0	£64 8 0	£71 19 0	£61 9 0	£70 14 0
Less harvesting costs	£12 16 0	£14 5 0	£15 19 0	£13 12 0	£15 13 0
Return	£44 19 0	£50 3 0	£56 0 0	£47 17 0	£55 1 0
Increased return due to fertilizer	..	£5 4 0	£11 1 0	£2 18 0	£10 2 0
Cost of fertilizer and application	..	£3 12 0	£4 9 0	£3 7 0	£5 19 0
Profit or loss from fertilizer	..	Profit. £1 12 0	Profit. £6 12 0	Loss. £0 9 0	Profit. £4 3 0

The red schist soil appears to be deficient in available nitrogen, despite a poor green manure crop which was ploughed under prior to planting. A slight increase due to potash is evident, but superphosphate has shown erratic results. It is anticipated that the results from the ratoons will be very interesting; soon after applying the sulphate of ammonia to the ratoons its effects were very evident.

Location.—**A. J. Kelly's farm, Aloomba.**

Soil Type.—Old alluvial soil of the Mulgrave River; land typical of much of the Aloomba country.

Variety.—B. 147. Age of crop—Fifteen months. Nature of crop—First ratoon.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 200 lb. Potash.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate + 200 lb. Potash.
Tons cane per acre	14·0	25·5	25·1	23·7	26·4
C.C.S. in cane	15·8%	14·9%	14·8%	15·4%	16·0%
Value of crop	£26 12 0	£44 17 0	£43 14 0	£43 11 0	£51 1 0
Less harvesting costs	£5 12 0	£9 18 0	£9 15 0	£9 4 0	£10 5 0
Return	£21 0 0	£34 19 0	£33 19 0	£34 7 0	£40 16 0
Increased return due to fertilizer	..	£13 19 0	£12 19 0	£13 7 0	£19 16 0
Cost of fertilizer and application	..	£2 5 0	£3 3 0	£3 14 0	£4 12 0
Profit from fertilizer	..	£11 14 0	£9 16 0	£9 13 0	£15 4 0

The slight results from sulphate of ammonia obtained in the plant crop were very considerably magnified in the first ratoons. In fact, the result from superphosphate shown on the plant was not reproduced in the ratoons. It would be interesting to determine what could be done with Badila on this land, judging from the results on both plant and ratoon crops with B. 147. It is considered that this land is too poor for Badila, but probably adequate fertilizing combined with good cultivation would result in highly profitable returns from our premier variety.

Location.—**J. H. Jackson's farm, Babinda.**

Soil Type.—Gravelly loam (granitic).

Variety.—Badila. Age of crop—Thirteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 360 lb. Super-phosphate.	240 lb. Sulphate of Ammonia + 140 lb. Potash.	360 lb. Super-phosphate + 140 lb. Potash.	240 lb. Sulphate of Ammonia + 360 lb. Super-phosphate + 140 lb. Potash.
Tons cane per acre	27·2	31·2	30·1	27·6	32·4
C.C.S. in cane	..	..	..	..	..
Value of crop	£47 12 0	£54 12 0	£52 14 0	£48 6 0	£56 14 0
Less harvesting costs	£10 11 0	£12 2 0	£11 13 0	£10 14 0	£13 11 0
Return	£37 1 0	£42 10 0	£41 1 0	£37 12 0	£44 3 0
Increased return due to fertilizer	..	£5 9 0	£4 0 0	£0 11 0	£7 2 0
Cost of fertilizer and application	..	£2 18 0	£2 19 0	£2 11 0	£3 19 0
Profit or loss from fertilizer	..	Profit. £2 11 0	Profit. £1 1 0	Loss. £2 0 0	Profit. £3 3 0

This granitic gravel soil has confirmed earlier results from this type—a distinct response to the use of sulphate of ammonia, which is as would be anticipated, having in mind the definite deficiency in humus content of the gravelly loams. This is a most important fact to keep in mind, even on "new" lands of this type. The particular block of land had just been brought under the plough for the first time.

Location.—**R. Matthews' farm, Pawngilly.**

Soil Type.—Alluvial soil, typical of much of the Russell River area. Tests showed the soil to be very acid and in need of a heavy lime dressing.

Variety.—Badila. Age of cane—Twelve months. Class of cane—First ratoon.

Results.—The experimental block showed outstanding results from the use of lime and superphosphate in the plant crop (harvested 1930).

For the ratoons, the block was uniformly fertilized, and at harvesting time only the effect due to the lime dressing was determined. These showed—

No lime	24·9 tons cane per acre
One and a-half tons burnt lime per acre..	27·6 tons cane per acre
Increase	2·7 tons cane per acre

The net increase for the two crops has been 8·4 tons of cane for an application of 1½ tons of burnt lime.

Location.—**J. A. Wolff's farm, South Johnstone.**

Soil Type.—The red schist soil of the area, adjacent to the red volcanic, with which it is often confused.

Variety.—Badila. Age of crop—Twelve months. Nature of crop—First ratoon.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 300 lb. Superphosphate.	300 lb. Sulphate of Ammonia + 240 lb. Potash.	300 lb. Sulphate of Ammonia + 300 lb. Superphosphate + 240 lb. Potash.
Tons cane per acre	24·8	24·5	30·2	29·5	33·4
C.C.S. in cane	14·9%	15·1%	14·6%	15·1%	14·8%
Value of crop	£43 12 0	£43 18 0	£51 14 0	£52 17 0	£58 6 0
Less harvesting costs	£9 12 0	£9 10 0	£11 14 0	£11 9 0	£12 19 0
Return	£34 0 0	£34 8 0	£40 0 0	£41 8 0	£45 7 0
Increased return due to fertilizer	..	£0 8 0	£6 0 0	£7 8 0	£11 7 0
Cost of fertilizer and application	..	£2 5 0	£3 3 0	£4 3 0	£4 18 0
Profit or loss from fertilizer ..	..	Loss. £1 17 0	Profit. £2 17 0	Profit. £3 5 0	Profit. £6 9 0

In this block we encounter a soil where the influence of a deficiency in available potash and superphosphate appears to overshadow any influence of the sulphate of ammonia. The latter substance employed alone has indeed shown no results, but it is most probable that its effects are felt in combination with potash and superphosphate.

Location.—**W. Jones's farm, Silkwood.**

Soil Type.—Acid alluvial soil, typical of the area. Tests showed need for lime and phosphate.

Variety.—Badila. Age of crop—Twelve months. Nature of crop—First ratoon.

RESULTS.

——	No Fertilizer.	360 lb. Sulphate of Ammonia.	360 lb. Sulphate of Ammonia + 300 lb. Superphosphate.	360 lb. Sulphate of Ammonia + 180 lb. Potash.	360 lb. Sulphate of Ammonia + 300 lb. Superphosphate + 180 lb. Potash.
Tons cane per acre	13·1	14·8	22·2	15·1	22·2
C.C.S. in cane	..	..	..	..	..
Value of crop	£22 5 0	£25 3 0	£37 15 0	£25 13 0	£37 15 0
Less harvesting costs	£5 8 0	£5 18 0	£8 12 0	£5 17 0	£8 12 0
Return	£16 17 0	£19 5 0	£29 3 0	£19 16 0	£29 3 0
Increased return due to fertilizer	..	£2 8 0	£12 6 0	£2 19 0	£12 6 0
Cost of fertilizer and application	..	£2 12 0	£3 10 0	£3 19 0	£3 17 0
Profit or loss from fertilizer ..	..	Loss. £0 4 0	Profit. £8 16 0	Loss. £1 0 0	Profit. £8 9 0

The results from this block closely parallel those obtained for the plant crop. Again we find a very pronounced response to superphosphate with apparently little increase from the employment of other manures. A warning should be issued that in all probability the nitrogenous manure is showing results in combination with superphosphate. It was one of the weaknesses of our earlier type of trial that this influence was masked by the choice of treatments.

Location.—**F. N. King's farm, Jaffa.**

Soil Type.—Gravelly loam (granitic).

Variety.—Badila. Age of crop—Thirteen and a-half months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 360 lb. Superphosphate.	240 lb. Sulphate of Ammonia + 180 lb. Potash.	360 lb. Superphosphate + 180 lb. Potash.	240 lb. Sulphate of Ammonia + 360 lb. Superphosphate + 180 lb. Potash.
Tons cane per acre	39·6	41·4	38·7	41·1	43·1
C.C.S. in cane	15·2%	14·3%	15·0%	15·1%	15·0%
Value of crop	£71 12 0	£68 13 0	£68 14 0	£73 13 0	**£76 10** 0
Less harvesting costs	£15 7 0	£16 1 0	£15 0 0	£15 19 0	**£16 14** 0
Return	£56 5 0	£52 12 0	£53 14 0	£57 14 0	**£59 16** 0
Increased or decreased return due to fertilizer	..	Decrease. £3 13 0	Decrease. £2 11 0	Increase. £1 9 0	Increase. **£3 11** 0
Cost of fertilizer and application	..	£2 19 0	£3 4 0	£2 17 0	£4 5 0
Loss from fertilizer	..	£6 12 0	£0 13 0	£1 8 0	£0 14 0

This block had been brought under the plough for the first time prior to the planting of the present crop. Though the increase in crop yield was not sufficient to cover the cost of fertilizer, the indications are again very evident that nitrogenous manures are required on the gravelly loams. The returns are somewhat erratic, but a deficiency in phosphates is also indicated. More definite results are anticipated in the ratoons.

Location.—**A. Cousin's farm, Feluga.**

Soil Type.—Gravelly loam (granitic).

Variety.—Badila. Age of crop—Thirteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 360 lb. Super-phosphate.	240 lb. Sulphate of Ammonia + 180 lb. Potash.	360 lb. Super-phosphate + 180 lb. Potash.	240 lb. Sulphate of Ammonia + 360 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	19·5	30·0	26·5	32·5	24·7
C.C.S. in cane	15·4%	16·4%	15·8%	15·9%	16·8%
Value of crop	£35 17 0	£59 18 0	£50 9 0	£62 6 0	£50 15 0
Less harvesting costs	£7 11 0	£11 13 0	£10 5 0	£12 12 0	£9 11 0
Return	£28 6 0	£48 5 0	£40 4 0	£49 14 0	£41 4 0
Increased return due to fertilizer	..	£19 19 0	£11 18 0	£21 8 0	£12 18 0
Cost of fertilizer and application	..	£2 19 0	£3 4 0	£2 17 0	£4 5 0
Profit from fertilizer	..	£17 0 0	£8 14 0	£18 11 0	£8 13 0

Due to the high degree of soil variability on this block, the returns are inconclusive. There does appear to be a definite response to sulphate of ammonia, however, which might have been expected. This land was also recently stumped and ploughed for the first time before the present crop. The removal of large stumps was undoubtedly responsible for much of the irregularity in yield from plot to plot.

Location.—**S. J. French's farm, Midgenoo.**

Soil Type.—Gravelly loam (granitic).

Variety.—Badila. Age of crop—Eleven months. Nature of crop—Second ratoon.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 120 lb. Potash.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate + 120 lb. Potash.
Tons cane per acre	21·5	25·1	27·3	25·1	29·0
C.C.S. in cane	..	..	..	..	..
Value of crop	£36 11 0	£42 13 0	£46 8 0	£42 13 0	£49 6 0
Less harvesting costs	£8 7 0	£9 15 0	£10 12 0	£9 15 0	£11 5 0
Return	£28 4 0	£32 18 0	£35 16 0	£32 18 0	£38 1 0
Increased return due to fertilizer	..	£4 14 0	£7 12 0	£4 14 0	£9 17 0
Cost of fertilizer and application	..	£2 5 0	£3 3 0	£3 3 0	£4 1 0
Profit from fertilizer	..	£2 9 0	£4 9 0	£1 11 0	£5 16 0

This block has now reached the stage of second ratoons, and the plantfood deficiency begins to show up in an unmistakeable manner. Nitrogenous manure showed the greatest response, but superphosphate is beginning to produce its effects.

Location.—**Allison Brothers' farm, Midgenoo.**

Soil Type.—Buff alluvial soil with tendency towards poor drainage in local areas; typical of a fair area of land in this district.

Variety.—Badila. Age of crop—Twelve months. Class of cane—First ratoons.

Results.—This experimental block showed, on the plant crop, that the soil is very deficient in available phosphate.

For the ratoons, the block was uniformly fertilized, and at harvesting time an attempt was made to determine the influence of an application of earth lime which had been made prior to planting.

For the plant crop, the increase due to lime was 1·7 tons of cane per acre. On the ratoons, both series yielded 27 tons of cane per acre, with no apparent improvement due to liming. It must be borne in mind that the block was very uneven, and a poor patch of cane in one corner upset what was apparently a definite increase in favour of liming.

BURDEKIN DISTRICT.

The plot returns from this district might be considered as a whole, as they indicate a definite response to but one constituent of our mixtures—nitrogen. The results from the trials on the farms of Messrs. Hoey Brothers and G. E. Watt are particularly interesting in this regard. The former plot has since been ratooned, and the need for nitrogen was most evident early in the growth of the ratoon crop. The results all suggest that failure to apply an early dressing of available nitrogen in the form of artificial manure may be largely responsible for the failure of ratoon crops in this area. The erratic nature of the results from certain of the treatments in these trials is doubtless due to the abnormally dry season experienced; the crop was grown almost entirely by irrigation, and hence the effects of topography were aggravated. On G. E. Watt's block, which is situated on the oldest area of the district, an average yield of 53 tons of cane per acre was recorded, and on the plots receiving complete fertilizer several tons per acre of dead cane remained on the field.

Location.—**Hoey Brothers' farm, Pioneer.**

Soil Type.—Old alluvial loam.

Variety.—Badila. Age of crop—Eighteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	300 lb. Suplhate of Ammonia + 360 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 180 lb. Potash.	360 lb. Super-phosphate + 180 lb. Potash.	300 lb. Sulphate of Ammonia + 360 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	25·3	30·8	32·0	24·2	33·2
C.C.S. in cane	17·7%	17·9%	17·9%	17·6%	17·4%
Value of crop	£55 13 0	£68 13 0	£71 7 0	£52 17 0	£71 8 0
Less harvesting costs	£9 10 0	£11 11 0	£12 0 0	£9 2 0	£12 9 0
Return	£46 3 0	£57 2 0	£59 7 0	£43 15 0	£58 19 0
Increased or decreased return due to fertilizer	..	£10 19 0	£13 4 0	Decrease. £2 8 0	£12 16 0
Cost of fertilizer and application	..	£3 6 0	£3 12 0	£2 18 0	£4 13 0
Profit or loss from fertilizer	..	Profit. £7 13 0	Profit. £9 12 0	Loss. £5 6 0	Profit. £8 3 0

Location.—**G. E. Watt's farm, Dick's Bank, Brandon.**

Soil Type.—Old alluvial loam, typical of the area.

Variety.—B. 208. Age of crop—Nineteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 180 lb. Potash.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	47·7	53·2	56·0	56·0	52·6
C.C.S. in cane	17·9%	18·1%	17·9%	17·8%	17·6%
Value of crop	£106 6 0	£120 7 0	£124 16 0	£123 18 0	£114 17 0
Less harvesting costs	£17 18 0	£19 19 0	£21 0 0	£21 0 0	£19 15 0
Return	£88 8 0	£100 8 0	£103 16 0	£102 18 0	£95 2 0
Increased return due to fertilizer	..	£12 0 0	£15 8 0	£14 10 0	£6 14 0
Cost of fertilizer and application	..	£2 5 0	£3 2 0	£3 12 0	£4 9 0
Profit from fertiliser	..	£9 15 0	£12 6 0	£10 12 0	£2 5 0

Location.—**Ferguson Brothers' farm, Airdmillan.**

Soil Type.—Alluvial loam.

Variety.—B. 208. Age of crop—Fourteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia + 360 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 180 lb. Potash.	360 lb. Super-phosphate + 180 lb. Potash.	300 lb. Sulphate of Ammonia + 360 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	44·2	47·7	44·9	38·9	43·9
C.C.S. in cane	17·1%	16·1%	16·2%	17·2%	15·8%
Value of crop	£93 0 0	£93 0 0	£88 2 0	£82 7 0	£83 12 0
Less harvesting costs	£16 12 0	£17 18 0	£16 17 0	£14 12 0	£16 9 0
Return	£76 8 0	£75 2 0	£71 5 0	£67 15 0	£67 3 0
Decrease due to fertilizer ..	..	£1 6 0	£5 3 0	£8 13 0	£9 5 0
Cost of fertilizer and application	..	£3 6 0	£3 12 0	£2 18 0	£4 13 0
Loss from fertilizer	..	£4 12 0	£8 15 0	£11 11 0	£13 18 0

Location.—**B. Tapiolas's farm, Ivanhoe.**

Soil Type.—Alluvial loam.

Variety.—Badila. Age of crop—Seventeen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 180 lb. Potash.	300 lb. Sulphate of Ammonia + 300 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	35·7	40·1	40·2	38·8	37·9
C.C.S. in cane	16·7%	16·1%	16·7%	16·4%	16·6%
Value of crop	£72 18 0	£78 4 0	£82 1 0	£77 9 0	£76 18 0
Less harvesting costs	£13 8 0	£15 1 0	£15 2 0	£14 11 0	£14 4 0
Return	£59 10 0	£63 3 0	£66 19 0	£62 18 0	£62 1[illegible] 0
Increased return due to fertilizer	..	£3 13 0	£7 9 0	£3 8 0	£3 4 0
Cost of fertilizer and application	..	£2 5 0	£3 3 0	£3 12 0	£4 10 0
Profit or loss from fertilizer ..	..	Profit. £1 8 0	Profit. £4 6 0	Loss. £0 4 0	Loss. £1 6 0

Location.—**S. Gibson's farm, Home Hill.**

Soil Type.—Alluvial loam.

Variety.—Badila. Age of crop—Twelve months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia + 360 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 180 lb. Potash.	360 lb. Super-phosphate + 180 lb. Potash.	300 lb. Sulphate of Ammonia + 360 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	31·6	33·2	31·7	29·1	33·1
C.C.S. in cane	14·4%	14·7%	13·9%	14·9%	14·3%
Value of crop	£52 19 0	£57 5 0	£50 14 0	£51 3 0	£54 18 0
Less harvesting costs	£11 17 0	£12 9 0	£11 18 0	£10 18 0	£12 8 0
Return	£41 2 0	£44 16 0	£38 16 0	£40 5 0	£42 10 0
Increased or decreased return due to fertilizer	..	£3 14 0	£2 6 0 Decrease.	£0 17 0 Decrease.	£1 8 0
Cost of fertilizer and application	..	£3 6 0	£3 12 0	£2 18 0	£4 13 0
Profit or loss from fertilizer ..	..	Profit. £0 8 0	Loss. £5 18 0	Loss. £3 15 0	Loss. £3 5 0

MACKAY DISTRICT.

The growing season for the 1931 crop was one of the driest on record. As a consequence we find that poor tonnages were harvested, and, almost without exception, the plant crops showed little or no response to artificial manures. The obvious explanation is that the natural plantfood supply was not a limiting factor, under the dry conditions, and all crops suffered mostly from a water deficiency. The ratoon crops from the trials of the previous year were, on the other hand, decidedly benefited by the fertilizer applications. Thus the trial on E. K. Glen's farm, though yielding only 12·7 tons of cane on the plots receiving complete fertilizer, showed almost double the crop produced on those receiving no treatment, and the net profit was £2 12s. per acre. This farm is situated on the area which was particularly badly treated by the weather in both 1930 and 1931.

Location.—**P. Hand's farm, Wandaru.**

Soil Type.—Stony hillside loam.

Variety.—M. 1900. Age of crop—Fourteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 240 lb. Superphosphate.	240 lb. Sulphate of Ammonia + 120 lb. Potash.	240 lb. Superphosphate + 120 lb. Potash.	240 lb. Sulphate of Ammonia + 240 lb. Superphosphate + 120 lb. Potash.
Tons cane per acre	20·5	20·9	20·8	21·5	22·1
C.C.S. in cane	16·3%	16·9%	16·3%	16·8%	16·6%
Value of crop	£40 11 0	£43 6 0	£41 3 0	£44 5 0	£44 15 0
Less harvesting costs	£7 14 0	£7 17 0	£7 16 0	£8 1 0	£8 6 0
Return	£32 17 0	£35 9 0	£33 7 0	£36 4 0	£36 9 0
Increased return due to fertilizer	..	£2 12 0	£0 10 0	£3 7 0	£3 12 0
Cost of fertilizer and application	..	£2 11 0	£2 16 0	£2 1 0	£3 9 0
Profit or loss from fertiliser ..	..	Profit. £0 1 0	Loss. £2 6 0	Profit. £1 6 0	Profit. £0 3 0

Location.—**J. Trevaskis's farm, Farleigh.**

Soil Type.—Sandy loam on gentle slope.

Variety.—M. 1900. Age of crop—Eleven and a-half months. Nature of crop—First ratoon.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 300 lb. Superphosphate.	300 lb. Sulphate of Ammonia + 240 lb. Potash.	300 lb. Sulphate of Ammonia + 300 lb. Superphosphate + 240 lb. Potash.
Tons cane per acre	10·2	10·8	12·3	14·9	17·2
C.C.S. in cane	18·2%	17·9%	17·8%	17·8%	17·6%
Value of crop	£23 1 0	£23 19 0	£26 18 0	£32 17 0	£37 7 0
Less harvesting costs	£3 17 0	£4 1 0	£4 12 0	£5 12 0	£6 9 0
Return	£19 4 0	£19 18 0	£22 6 0	£27 5 0	£30 18 0
Increased return due to fertilizer	..	£0 14 0	£3 2 0	£8 1 0	£11 14 0
Cost of fertilizer and application	..	£2 5 0	£3 2 0	£4 0 0	£4 17 0
Profit or loss from fertilizer ..	..	Loss. £1 11 0	..	Profit. £4 1 0	Profit. £6 17 0

The good effects of a complete mixture on this soil type are even more pronounced than on the plant crop. This class is characterised by high c.c.s. values in matured crops, and hence we find that the complete fertilizer showed a profit of £6 17s. per acre.

Location.—**H. Single's farm, Foulden, Mackay.**

Soil Type.—Recent alluvial sandy loam of good natural fertility.

Variety.—Q. 813. Age of crop—Thirteen months. Nature of crop—First ratoon.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 300 lb. Superphosphate.	300 lb. Sulphate of Ammonia + 240 lb. Potash.	300 lb. Sulphate of Ammonia + 300 lb. Superphosphate + 240 lb. Potash.
Tons cane per acre	10·2	15·1	16·3	17·3	17·6
C.C.S. in cane	16·2%	15·9%	16·4%	15·8%	16·2%
Value of crop	£19 18 0	£28 14 0	£32 7 0	£32 14 0	£34 6 0
Less harvesting costs	£4 14 0	£5 13 0	£6 2 0	£6 10 0	£6 12 0
Return	£15 4 0	£23 1 0	£26 5 0	£26 4 0	£27 14 0
Increased return due to fertilizer	..	£7 17 0	£11 1 0	£11 0 0	£12 10 0
Cost of fertilizer and application	..	£2 5 0	£3 2 0	£4 0 0	£4 17 0
Profit from fertilizer	..	£5 12 0	£7 19 0	£7 0 0	£7 13 0

Following on a heavy plant crop, this land suffered particularly from the effects of the prolonged dry weather. The increased yield from sulphate of ammonia was, however, greater than with the plant crop. The response to potash and superphosphate was of minor importance.

Location.—**C. F. Miles's farm, Te Kowai.**

Soil Type.—Alluvial loam.

Variety.—P.O.J. 2714. Age of crop—Fourteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 300 lb. Super-phosphate.	240 lb. Sulphate of Ammonia + 120 lb. Potash.	300 lb. Super-phosphate + 120 lb. Potash.	240 lb. Sulphate of Ammonia + 300 lb. Super-phosphate + 120 lb. Potash.
Tons cane per acre	21·1	22·4	23·9	22·8	23·8
C.C.S. in cane	14·4%	14·1%	13·9%	14·2%	14·0%
Value of crop	£35 7 0	£36 10 0	£38 3 0	£37 11 0	£38 8 0
Less harvesting costs	£7 18 0	£8 8 0	£8 19 0	£8 11 0	£8 18 0
Return	£26 9 0	£28 2 0	£29 4 0	£29 0 0	£29 10 0
Increased return due to fertilizer	..	£1 13 0	£2 15 0	£2 11 0	£3 1 0
Cost of fertilizer and application	..	£2 15 0	£2 16 0	£2 5 0	£3 13 0
Profit or loss from fertilizer ..	..	Loss. £1 2 0	Loss. £0 1 0	Profit. £0 6 0	Loss. £0 12 0

Location.—**Palms Plantation, Palms Estate.**

Soil Type.—Alluvial loam.

Variety.—D. 1135. Age of crop—Twenty-seven months. Nature of crop—Standover plant.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 240 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 180 lb. Potash.	300 lb. Sulphate of Ammonia + 240 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	22·5	22·1	23·3	24·3	22·5
C.C.S. in cane	13·7%	13·3%	13·7%	13·6%	12·8%
Value of crop	£35 5 0	£33 7 0	£36 10 0	£37 13 0	£32 1 0
Less harvesting costs	£8 9 0	£8 6 0	£8 15 0	£9 2 0	£8 9 0
Return	£26 16 0	£25 1 0 Decrease.	£27 15 0	£28 11 0	£23 12 0 Decrease.
Increased or decreased return due to fertilizer	..	£1 15 0	£0 19 0	£1 15 0	£3 4 0
Cost of fertilizer and application	..	£2 5 0	£2 19 0	£3 12 0	£4 5 0
Loss from fertilizer	..	£4 0 0	£2 0 0	£1 17 0	£7 9 0

Location.—**Branscombe Plantation, Palms Estate, Pleystowe.**

Soil Type.—Alluvial loam.

Variety.—Q. 813. Age of crop—Fourteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 240 lb. Super-phosphate.	240 lb. Sulphate of Ammonia + 120 lb. Potash.	240 lb. Super-phosphate + 120 lb. Potash.	240 lb. Sulphate of Ammonia + 240 lb. Super-phosphate + 120 lb. Potash.
Tons cane per acre	12·8	13·6	14·5	12·8	13·9
C.C.S. in cane	16·5%	16·0%	16·0%	16·2%	16·1%
Value of crop	£25 15 0	£26 6 0	£28 1 0	£25 3 0	£27 2 0
Less harvesting costs	£5 9 0	£5 9 0	£5 12 0	£5 9 0	£5 11 0
Return	£20 6 0	£20 17 0	£22 9 0	£19 14 0 Decrease.	£21 11 0
Increased or decreased return due to fertilizer	..	£0 11 0	£2 3 0	£0 12 0	£1 5 0
Cost of fertilizer and application	..	£2 11 0	£2 16 0	£2 1 0	£3 9 0
Loss from fertilizer	..	£2 0 0	£0 13 0	£2 13 0	£2 4 0

Location.—**A. Breadsell's farm, Pleystowe.**

Soil Type.—Alluvial loam.

Variety.—Q. 813. Age of crop—Fifteen months. Nature of crop—Plant cane.

RESULTS.

——	No. Fertilizer.	180 lb. Sulphate of Ammonia + 240 lb. Super-phosphate.	180 lb. Sulphate of Ammonia + 120 lb. Potash.	240 lb. Super-phosphate + 120 lb. Potash.	180 lb. Sulphate of Ammonia + 240 lb. Super-phosphate + 120 lb. Potash.
Tons cane per acre	14·2	15·0	15·4	14·8	14·2
C.C.S. in cane	15·8%	15·6%	15·5%	15·8%	15·5%
Value of crop	£27 0 0	£28 0 0	£28 10 0	£28 2 0	£26 5 0
Less harvesting costs	£5 10 0	£5 13 0	£5 16 0	£5 15 0	£5 10 0
Return	£21 10 0	£22 7 0	£22 14 0	£22 7 0	£20 15 0 Decrease.
Increased or decreased return due to fertilizer	..	£0 17 0	£1 4 0	£0 17 0	£0 15 0
Cost of fertilizer and application	..	£2 4 0	£2 9 0	£2 1 0	£2 12 0
Loss from fertilizer	..	£1 7 0	£1 5 0	£1 4 0	£3 7 0

Location.—**E. K. Glen's farm, Pleystowe.**

Soil Type.—Average alluvial soil of the Pioneer Valley.

Variety.—Q. 813. Age of crop—Thirteen and a-half months. Nature of crop—First ratoon.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 240 lb. Superphosphate.	300 lb. Sulphate of Ammonia + 180 lb. Potash.	300 lb. Sulphate of Ammonia + 240 lb. Superphosphate + 180 lb. Potash.
Tons cane per acre	7·3	10·0	10·0	11·6	12·7
C.C.C. in cane	14·6%	14·1%	13·2%	14·5%	14·1%
Value of crop	£12 9 0	£16 6 0	£14 18 0	£19 13 0	£20 14 0
Less harvesting costs	£4 0 0	£4 12 0	£4 12 0	£5 4 0	£5 8 0
Return	£8 9 0	£11 14 0	£10 6 0	£14 9 0	£15 6 0
Increased return due to fertilizer	..	£3 5 0	£1 17 0	£6 0 0	£6 17 0
Cost of fertilizer and application	..	£2 5 0	£2 18 0	£3 12 0	£4 5 0
Profit or loss from fertilizer ..	..	Profit. £1 0 0	Loss. £1 1 0	Profit. £2 8 0	Profit. £2 12 0

The increases from fertilizer are of the same order as were recorded for the plant crop. The influence of the fertilizer was to convert a crop failure into a modest first ratoon crop. Fertilizer does seem to give results on ratoons even in a very dry year.

Location.—**Mrs. E. Webb's farm, Pleystowe.**

Soil Type.—Alluvial soil.

Variety.—Q. 813. Age of crop—Sixteen months. Nature of crop—Plant cane.

RESULTS.

——	No. Fertilizer.	216 lb. Sulphate of Ammonia + 288 lb. Superphosphate.	216 lb. Sulphate of Ammonia + 120 lb. Potash.	288 lb. Superphosphate + 120 lb. Potash.	216 lb. Sulphate of Ammonia + 288 lb. Superphosphate + 120 lb. Potash.
Tons cane per acre	10·0	10·7	9·9	9·3	10·2
C.C.S. in cane	15·7%	15·4%	15·5%	15·4%	15·1%
Value of crop	£18 18 0	£19 13 0	£18 7 0	£17 2 0	£18 5 0
Less harvesting costs	£4 12 0	£4 18 0	£4 19 0	£4 13 0	£4 14 0
Return	£14 6 0	£14 15 0	£13 8 0 Decrease.	£12 9 0 Decrease.	£13 11 0 Decrease.
Increased or decreased return due to fertilizer	..	£0 9 0	£0 18 0	£1 17 0	£0 15 0
Cost of fertilizer and application	..	£2 11 0	£2 14 0	£2 5 0	£3 10 0
Loss from fertilizer	..	£2 2 0	£3 12 0	£4 2 0	£4 5 0

Location.—**H. Barfield's farm, Tannalo.**

Soil Type—Alluvial loam.

Variety—E.K. 28. Age of crop—Fifteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	225 lb. Sulphate of Ammonia + 300 lb. Superphosphate.	225 lb. Sulphate of Ammonia + 120 lb. Potash.	300 lb. Superphosphate + 120 lb. Potash.	225 lb. Sulphate of Ammonia + 300 lb. Superphosphate + 120 lb. Potash.
Tons cane per acre	25·1	25·5	24·2	26·8	27·5
C.C.S. in cane	17·9%	17·7%	17·7%	17·8%	17·4%
Value of crop	£55 19 0	£56 2 0	£53 5 0	£59 8 0	£59 3 0
Less harvesting costs	£9 8 0	£9 11 0	£9 2 0	£10 1 0	£10 6 0
Return	£46 11 0	£46 11 0	£44 3 0 Decrease.	£49 7 0	£48 17 0
Increased or decreased return due to fertilizer	..	..	£2 8 0	£2 16 0	£2 6 0
Cost of fertilizer and application	..	£2 13 0	£2 14 0	£2 5 0	£3 11 0
Profit or loss from fertilizer ..	..	Loss. £2 13 0	Loss. £5 2 0	Profit. £0 11 0	Loss. £1 5 0

Location.—**Comerford Brothers' farm, Finch Hatton.**

Soil Type.—Loam typical of hillside outwash soil.

Variety.—M. 1900 Seedling. Age of crop—Fifteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 300 lb. Superphosphate.	240 lb. Sulphate of Ammonia +120 lb. Potash.	300 lb. Superphosphate + 120 lb. Potash.	240 lb. Sulphate of Ammonia + 300 lb. Superphosphate + 120 lb. Potash.
Tons cane per acre	22·3	22·2	23·7	22·4	22·7
C.C.S. in cane	16·1%	15·4%	15·0%	16·3%	16·2%
Value of crop	£43 10 0	£40 16 0	£42 1 0	£44 7 0	£44 13 0
Less harvesting costs	£8 7 0	£8 6 0	£8 18 0	£8 8 0	£8 10 0
Return	£35 3 0	£32 10 0 Decrease.	£33 3 0 Decrease.	£35 19 0	£36 3 0
Increased or decreased return due to fertilizer	..	£2 13 0	£2 0 0	£0 16 0	£1 0 0
Cost of fertilizer and application	..	£2 14 0	£2 16 0	£2 4 0	£3 12 0
Loss from fertilizer	..	£5 7 0	£4 16 0	£1 8 0	£2 12 0

Location.—**F. Letchford's farm, Finch Hatton.**

Soil Type.—Sandy loam, outwash soil.

Variety.—M. 1900 Seedling. Age of crop—Fifteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	200 lb. Sulphate of Ammonia + 250 lb. Super-phosphate.	200 lb. Sulphate of Ammonia + 125 lb. Potash.	250 lb. Super-phosphate + 125 lb. Potash.	200 lb. Sulphate of Ammonia + 250 lb. Super-phosphate + 125 lb. Potash.
Tons cane per acre	19·2	19·8	19·7	19·4	19·9
C.C.S. in cane	17·6%	16·7%	17·2%	17·4%	17·7%
Value of crop	£41 18 0	£40 8 0	£41 16 0	£41 14 0	£43 16 0
Less harvesting costs	£7 4 0	£7 9 0	£7 8 0	£7 6 0	£7 9 0
Return	£34 4 0	£32 19 0 Decrease.	£34 8 0	£34 8 0	£36 7 0
Increased or decreased return due to fertilizer	..	£1 5 0	£0 4 0	£0 4 0	£2 3 0
Cost of fertilizer and application	..	£2 7 0	£2 12 0	£2 3 0	£3 6 0
Loss from fertilizer	..	£3 12 0	£2 8 0	£1 19 0	£1 3 0

Location.—**H. Ivers's farm, Rosella.**

Soil Type.—Sandy loam, typical of Homebush area.

Variety.—Q. 813. Age of crop—Fourteen months. Nature of crop—First ratoon.

RESULTS.

——	No Fertilizer.	300 lb. Sulphate of Ammonia.	300 lb. Sulphate of Ammonia + 240 lb. Super-phosphate.	300 lb. Sulphate of Ammonia + 180 lb. Potash.	300 lb. Sulphate of Ammonia + 240 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	8·9	11·5	12·9	13·0	13·8
C.C.S. in cane	14·3%	14·3%	13·0%	14·4%	14·2%
Value of crop	£14 15 0	£19 1 0	£18 16 0	£21 16 0	£22 13 0
Less harvesting costs	£4 14 0	£5 4 0	£5 10 0	£5 4 0	£5 10 0
Return	£10 1 0	£13 17 0	£13 6 0	£16 12 0	£16 13 0
Increased return due to fertilizer	..	£3 16 0	£3 5 0	£6 11 0	£6 12 0
Cost of fertilizer and application	..	£2 5 0	£2 18 0	£3 11 0	£4 4 0
Profit from fertilizer	..	£1 11 0	£0 7 0	£3 0 0	£2 8 0

The results on the ratoon crop show a decided response to sulphate of ammonia, and, contrary to the findings of the plant crop, the influence of potash appears to be asserting itself. However, it is often found that potash shows results in a dry year, while phosphates are more valuable in a wet season. Again what was practically a crop failure was converted into a reasonable ratoon yield by the use of artificial manures.

Location.—**P. Simonsen's farm, West Plane Creek.**

Soil Type.—Sandy forest ridge soil.

Variety.—P.O.J. 2714. Age of crop—Fifteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	216 lb. Sulphate of Ammonia + 300 lb. Super-phosphate.	216 lb. Sulphate of Ammonia + 180 lb. Potash.	300 lb. Super-phosphate + 180 lb. Potash.	216 lb. Sulphate of Ammonia + 300 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	14·6	16·6	14·7	19·1	19·9
C.C.S. in cane	14·5%	13·3%	15·1%	14·1%	13·1%
Value of crop	£24 15 0	£25 1 0	£26 8 0	£31 2 0	£29 7 0
Less harvesting costs	£5 13 0	£6 5 0	£5 14 0	£7 3 0	£7 9 0
Return	£19 2 0	£18 16 0 Decrease.	£20 14 0	£23 19 0	£21 18 0
Increased or decreased return due to fertilizer	..	£0 6 0	£1 12 0	£4 17 0	£2 16 0
Cost of fertilizer and application	..	£2 12 0	£3 2 0	£2 14 0	£3 19 0
Profit or Loss from fertilizer ..	..	Loss. £2 18 0	Loss. £1 10 0	Profit. £2 3 0	Loss. £1 3 0

In this area, where the rainfall was somewhat better than that of the Pioneer Valley or the Homebush area, the fertilizer appears to have had some influence on the plant crop. Results show a definite gain from potash and superphosphate, particularly the latter. This is in accordance with our findings elsewhere in the case of sandy forest soils.

SOUTHERN DISTRICTS.

The season in the southern areas was what might be called a fair average one. Hence the returns from many of the plots harvested are distinctly disappointing. The failure of the crop to respond to fertilizer when the average yield of a block was decidedly below what might reasonably be expected, and indeed was shown by adjacent areas of similar type, is a definite indication of a moisture deficiency; and in many cases it would probably be found on examination that inadequate tillage was the chief trouble. This indeed was the case with several which were carefully inspected. The ratoon crops in most cases showed crop increases from the use of fertilizer very much in excess of what the plant crops revealed.

Location.—**W. J. Tutin's farm, Gooburrum.**

Soil Type.—Forest loam.

Variety.—Q. 813. Age of crop—Nineteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 240 lb. Superphosphate.	240 lb. Sulphate of Ammonia + 180 lb. Potash.	240 lb. Superphosphate + 180 lb. Potash.	240 lb. Sulphate of Ammonia + 240 lb. Superphosphate + 180 lb. Potash.
Tons cane per acre	13·4	14·1	15·0	14·4	15·4
C.C.S. in cane	16·2%	15·4%	15·3%	15·1%	15·0%
Value of crop	£26 7 0	£25 19 0	£27 9 0	£25 16 0	£27 7 0
Less harvesting costs	£5 4 0	£5 6 0	£0 9 0	£5 8 0	£5 12 0
Return	£21 3 0	£20 13 0	£22 0 0	£20 8 0	£21 15 0
Increased or decreased return due to fertilizer	..	£0 10 0 Decrease.	£0 17 0	£0 15 0 Decrease.	£0 12 0
Cost of fertilizer and application	..	£2 10 0	£3 3 0	£2 9 0	£3 16 0
Loss from fertilizer	..	£3 0 0	£2 6 0	£3 4 0	£3 4 0

The increases on this block were very slight. In all cases the added tonnage did not cover the cost of the fertilizer. This is a plot on which there appears to have been a decidedly adverse influence of the treatment on the c.c.s. of the cane.

Location.—**J. Black's farm, Gooburrum.**

Soil Type.—Red forest soil, typical of the area.

Variety.—Q. 813. Age of crop—Fourteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	270 lb. Sulphate of Ammonia + 300 lb. Superphosphate.	270 lb. Sulphate of Ammonia + 120 lb. Potash.	300 lb. Superphosphate + 120 lb. Potash.	270 lb. Sulphate of Ammonia + 300 lb. Superphosphate + 120 lb. Potash.
Tons cane per acre	15·2	16·1	17·6	16·0	16·4
C.C.S. in cane	16·8%	16·7%	16·4%	16·7%	16·8%
Value of crop	£31 4 0	£32 17 0	£35 3 0	£32 13 0	£33 14 0
Less harvesting costs	£5 10 0	£5 17 0	£6 8 0	£5 16 0	£5 19 0
Return	£25 14 0	27 0 0	£25 15 0	£26 17 0	£27 15 0
Increased return due to fertilizer	..	£1 6 0	£0 1 0	£1 3 0	£2 1 0
Cost of fertilizer and application	..	£2 17 0	£2 17 0	£2 2 0	£3 13 0
Loss from fertilizer	..	£1 11 0	£2 16 0	£0 19 0	£1 12 0

Location.—**P. Peterson's farm, South Kolan.**

Soil Type.—This block is on the slope below a volcanic ridge, and is mixed volcanic-sandy loam.

Variety.—Black Innis. Age of crop—Twelve months. Nature of crop—First ratoon.

RESULTS.

——	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate.	250 lb. Sulphate of Ammonia + 400 lb. Potash.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate + 400 lb. Potash.
Tons cane per acre	14·7	17·4	18·8	23·5	23·2
C.C.S. in cane	14·1%	14·0%	13·9%	14·2%	14·3%
Value of crop	£23 19 0	£28 1 0	£30 0 0	£38 14 0	£38 10 0
Less harvesting costs	£5 10 0	£6 6 0	£6 16 0	£8 10 0	£8 8 0
Return	£18 9 0	£21 15 0	£23 4 0	£30 4 0	£30 2 0
Increased return due to fertilizer	..	£3 6 0	£4 15 0	£11 15 0	£11 13 0
Cost of fertilizer and application	..	£1 18 0	£2 12 0	£4 4 0	£4 18 0
Profit from fertilizer	..	£1 8 0	£2 3 0	£7 11 0	£10 15 0

The results from the use of potash are again very definite on this soil. With the ratoons, however, the use of a nitrogenous manure was also of importance, although its influence on the plant was very slight. Superphosphate was again without much influence, indicating that this soil type is predominantly volcanic.

Location.—**Eardley Brothers' farm, North Coast road, via Bundaberg.**

Soil Type.—Forest sandy loam; an important soil type of the area.

Variety.—Q. 813. Age of crop—Eleven months. Nature of crop—First ratoon.

RESULTS.

	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate.	250 lb. Sulphate of Ammonia + 300 lb. Potash.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate + 300 lb. Potash.
Tons cane per acre	12·8	13·4	18·8	16·2	22·2
C.C.S. in cane	13·9%	14·0%	14·0%	14·1%	14·0%
Value of crop	£20 9 0	£21 12 0	£30 6 0	£26 8 0	£35 16 0
Less harvesting costs	£5 6 0	£5 4 0	£6 16 0	£5 17 0	£8 1 0
Return	£15 3 0	£16 8 0	£23 10 0	£20 11 0	£27 15 0
Increased return due to fertilizer	..	£1 5 0	£8 7 0	£5 8 0	£12 12 0
Cost of fertilizer and application	..	£1 18 0	£2 12 0	£4 1 0	£4 15 0
Profit or loss from fertilizer ..	..	Loss. £0 13 0	Profit. £5 15 0	Profit. £1 7 0	Profit. £7 17 0

Although there was a definite falling off in the yield from the unfertilized plots from plant to first ratoons, the return from the complete fertilizer plots was but slightly reduced. For the plant crop the yield was 23·4 tons, as against 22·2 tons here recorded. A high response to superphosphate was the outstanding result.

Location.—**A. F. Shaw's farm, Bucca.**

Soil Type.—Ridge soil, typical of the area.

Variety.—Co. 210. Age of crop—Fourteen months. Nature of crop—Plant cane.

RESULTS.

	No Fertilizer.	225 lb. Sulphate of Ammonia + 270 lb. Superphosphate.	225 lb. Sulphate of Ammonia + 120 lb. Potash.	270 lb. Superphosphate + 120 lb. Potash.	225 lb. Sulphate of Ammonia + 270 lb. Superphosphate + 120 lb. Potash.
Tons cane per acre	7·7	9·6	9·3	8·9	10·4
C.C.S. in cane	13·5%	10·8%	12·3%	13·9%	12·0%
Value of crop	£11 17 0	£10 8 0	£12 10 0	£14 4 0	£13 10 0
Less harvesting costs	£4 4 0	£4 15 0	£4 12 0	£4 12 0	£4 13 0
Return	£7 13 0	£5 13 0 Decrease.	£9 18 0	£9 12 0	£8 17 0
Increased or decreased return due to fertilizer	..	£2 0 0	£2 5 0	£1 19 0	£1 4 0
Cost of fertilizer and application	..	£2 11 0	£2 13 0	£2 2 0	£3 8 0
Loss from fertilizer	..	£4 11 0	£0 8 0	£0 3 0	£2 4 0

Location.—**C. N. Dahl's farm, Woongarra, Bundaberg.**

Soil Type.—Red volcanic loam.

Variety.—D. 1135. Age of crop—Twelve months. Nature of crop—First ratoon.

RESULTS.

	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate.	250 lb. Sulphate of Ammonia + 400 lb. Potash.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate + 400 lb. Potash.
Tons cane per acre	13·5	15·3	16·5	18·7	18·6
C.C.S. in cane	13·3%	12·5%	12·9%	12·3%	12·7%
Value of crop	£20 7 0	£21 2 0	£23 16 0	£25 5 0	£26 4 0
Less harvesting costs	£5 5 0	£5 11 0	£6 0 0	£6 16 0	£6 15 0
Return	£15 2 0	£15 11 0	£17 16 0	£18 9 0	£19 9 0
Increased return due to fertilizer	..	£0 9 0	£2 14 0	£3 7 0	£4 7 0
Cost of fertilizer and application	..	£1 18 0	£2 12 0	£4 4 0	£4 18 0
Profit or loss from fertilizer ..	..	Loss. £1 9 0	Profit. £0 2 0	Loss. £0 17 0	Loss. £0 11 0

The plant crop showed practically no results from fertilizing. With the ratoons, however, the need for potash is evident; this is what we would expect from the true volcanic soils of this area, and the definite increase from sulphate of ammonia is also of interest.

Location.—**Burrage Brothers' farm, Maroondan.**

Soil Type.—Black clay, typical of the area.

Variety.—M. 1900. Age of crop—Twelve months. Nature of crop—First ratoon.

RESULTS.

	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 300 lb. Superphosphate.	250 lb. Sulphate of Ammonia + 240 lb. Potash.	250 lb. Sulphate of Ammonia + 300 lb. Superphosphate + 240 lb. Potash.
Tons cane per acre	4·9	4·0	4·7	6·0	7·3

Although the results indicate some response to fertilizer treatment, the crop was practically a failure. The profound difficulties associated with the cultivation of these heavy clay soils, except under favourable conditions, will be appreciated.

Location.—**H. Kay's farm, Gin Gin.**

Soil Type.—Red volcanic loam.

Variety.—M. 1900 Seedling. Age of crop—Thirteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 240 lb. Superphosphate.	240 lb. Sulphate of Ammonia + 180 lb. Potash.	240 lb. Superphosphate + 180 lb. Potash.	240 lb. Sulphate of Ammonia + 240 lb. Superphosphate + 180 lb. Potash.
Tons cane per acre	8·5	10·8	9·5	10·7	11·1
C.C.S. in cane	16·5%	16·6%	16·6%	16·6%	16·6%
Value of crop	£16 14 0	£21 7 0	£18 16 0	£21 4 0	£21 19 0
Less harvesting costs	£4 8 0	£4 16 0	£4 13 0	£4 15 0	£4 17 0
Return	£12 6 0	£16 11 0	£14 3 0	£16 9 0	£17 2 0
Increased return due to fertilizer	..	£4 5 0	£1 17 0	£4 3 0	£4 16 0
Cost of fertilizer and application	..	£2 10 0	£3 4 0	£2 10 0	£3 17 0
Profit or loss from fertilizer ..	..	Profit. £1 15 0	Loss. £1 7 0	Profit. £1 13 0	Profit. £0 19 0

It was unfortunate that the incidence of grubs played havoc with this trial quite early in its life. The results are as a consequence most erratic.

Location.—**G. H. Wadsworth's farm, Wallaville.**

Soil Type.—Alluvial loam.

Variety.—Mahona. Age of crop—Thirteen months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 304 lb. Superphosphate.	240 lb. Sulphate of Ammonia + 128 lb. Potash.	304 lb. Superphosphate + 128 lb. Potash.	240 lb. Sulphate of Ammonia + 304 lb. Superphosphate + 128 lb. Potash.
Tons cane per acre	26·7	28·4	28·7	29·3	27·7
C.C.S. in cane	9·5%	9·4%	9·7%	9·5%	9·6%
Value of crop	£24 5 0	£25 6 0	£27 0 0	£26 12 0	£25 12 0
Less harvesting costs	£9 14 0	£10 6 0	£10 8 0	£10 12 0	£10 1 0
Return	£14 11 0	£15 0 0	£16 12 0	£16 0 0	£15 11 0
Increased return due to fertilizer	..	£0 9 0	£2 1 0	£1 9 0	£1 0 0
Cost of fertilizer and application	..	£2 11 0	£2 12 0	£2 3 0	£3 8 0
Loss from fertilizer	..	£2 2 0	£0 11 0	£0 14 0	£2 8 0

Location.—**M. Oakes's farm, Childers.**

Soil Type.—Red volcanic loam (hillside).

Variety.—Q. 813. Age of crop—Fourteen months. Nature of crop—Plant.

RESULTS.

——	No Fertilizer.	225 lb. Sulphate of Ammonia + 225 lb. Superphosphate.	225 lb. Sulphate of Ammonia + 180 lb. Potash.	225 lb. Superphosphate + 180 lb. Potash.	225 lb. Sulphate of Ammonia + 225 lb. Superphosphate + 180 lb. Potash.
Tons cane per acre	15·6	14·3	13·9	16·4	14·9

Location.—**A. Adie's farm, Cordalba.**

Soil Type.—Red volcanic loam.

Variety.—D. 1135. Age of crop—Fourteen months. Nature of crop—First ratoon.

RESULTS.

——	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate.	250 lb. Sulphate of Ammonia + 400 lb. Potash.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate + 400 lb. Potash.
Tons cane per acre	14·0	16·2	17·4	17·6	21·0
C.C.S. in cane	16·5%	15·2%	15·9%	15·4%	15·5%
Value of crop	£28 4 0	£29 6 0	£30 18 0	£32 7 0	£38 19 0
Less harvesting costs	£5 5 0	£5 17 0	£6 6 0	£6 8 0	£7 12 0
Return	£22 19 0	£23 9 0	£24 12 0	£25 19 0	£31 7 0
Increased return due to fertilizer	..	£0 10 0	£1 13 0	£3 0 0	£8 8 0
Cost of fertilizer and application	..	£1 18 0	£2 12 0	£4 4 0	£4 18 0
Profit or loss from fertilizer ..	..	Loss. £1 8 0	Loss. £0 19 0	Loss. £1 4 0	Profit. £3 10 0

The returns for the plant crop were erratic, but the ratoons indicate a definite response to sulphate of ammonia, with secondary increases from superphosphate and potash. Again we find a pronounced depression of the c.c.s. content of the fertilized cane, and for this reason only the completely manured cane showed a profitable return. The trial as a whole was rather marred by the fact that the canes of the H.Q. 285 stools which were used as supplies for the plant crop were almost completely eaten out by foxes.

Location.—**Irwin Brothers' farm, Cordalba.**

Soil Type.—Red volcanic loam.

Variety.—M. 1900 Seedling. Age of crop—Fifteen months. Nature of crop—Plant cane.

RESULTS.

	No Fertilizer.	208 lb. Sulphate of Ammonia + 208 lb. Superphosphate.	208 lb. Sulphate of Ammonia + 192 lb. Potash.	208 lb. Superphosphate + 192 lb. Potash.	208 lb. Sulphate of Ammonia + 208 lb. Superphosphate + 192 lb. Potash.
Tons cane per acre	15·7	16·9	16·9	17·4	18·6
C.C.S. in cane	16·8%	17·0%	16·7%	17·0%	16·7%
Value of crop	£32 5 0	£35 6 0	£34 9 0	£36 6 0	£37 18 0
Less harvesting costs	£5 14 0	£6 3 0	£6 3 0	£6 6 0	£6 15 0
Return	£26 11 0	£29 3 0	£28 6 0	£30 0 0	£31 3 0
Increased return due to fertilizer	..	£2 12 0	£1 15 0	£3 9 0	£4 12 0
Cost of fertilizer and application	..	£2 4 0	£3 2 0	£2 10 0	£3 13 0
Profit or loss from fertilizer	..	Profit. £0 8 0	Loss. £1 7 0	Profit. £0 19 0	Profit. £0 19 0

Location.—**C. H. Tench's farm, Nikenbah.**

Soil Type.—Forest loam, typical of soil of the area.

Variety.—N.G. 40. Age of crop—Twenty-four months. Nature of crop—Standover plant.

RESULTS.

	No Fertilizer.	60 lb. Sulphate of Ammonia.	60 lb. Sulphate of Ammonia + 240 lb. Superphosphate.	60 lb. Sulphate of Ammonia + 240 lb. Potash.	60 lb. Sulphate of Ammonia + 240 lb. Superphosphate + 240 lb. Potash.
Tons cane per acre	23·5	24·6	27·3	28·1	30·3
C.C.S. in cane	..	..	..	..	..
Value of crop	£37 18 0	£39 13 0	£44 0 0	£45 6 0	£48 17 0
Less harvesting costs	£8 10 0	£8 18 0	£9 18 0	£10 4 0	£11 0 0
Return	£29 8 0	£30 15 0	£34 2 0	£35 2 0	£37 17 0
Increased return due to fertilizer	..	£1 7 0	£4 14 0	£5 14 0	£8 9 0
Cost of fertilizer and application	..	£0 17 0	£1 10 0	£2 12 0	£3 5 0
Profit from fertilizer	..	£0 10 0	£3 4 0	£3 2 0	£5 4 0

Due to a misunderstanding, this trial did not receive a top dressing of sulphate of ammonia. Our treatments are therefore practically a comparison between potash and superphosphate, and each has exerted its influence on the yields. The plots receiving the "complete" mixture showed the superior yield. In all probability, a well-balanced mixture would be best suited to this type of soil, especially for ratoons.

Location.—**T. Beattie's farm, Mount Bauple.**

Soil Type.—Stony hillside soil, typical of the upland soils of the area.

Variety.—D. 1135. Age of crop—Twelve months. Nature of crop—First ratoon.

RESULTS.

	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate.	250 lb. Sulphate of Ammonia + 300 lb. Potash.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate + 300 lb. Potash.
Tons cane per acre	7·6	11·8	11·7	15·1	15·1
C.C.S. in cane	14·6%	14·7%	14·5%	14·8%	14·9%
Value of crop	£13 0 0	£20 7 0	£19 17 0	£26 6 0	£23 1 0
Less harvesting costs	£4 2 0	£5 3 0	£5 2 0	£5 9 0	£5 2 0
Return	£8 18 0	£15 4 0	£14 15 0	£20 17 0	£17 19 0
Increased return due to fertilizer	..	£6 6 0	£5 17 0	£11 19 0	£9 1 0
Cost of fertilizer and application	..	£1 18 0	£2 12 0	£4 1 0	£4 15 0
Profit from fertilizer	..	£4 8 0	£3 5 0	£7 18 0	£4 6 0

This is still another area on which a crop failure has been turned into a fair ratoon crop by the use of artificial manures. The results for the ratoon crop are irregular, but there appears to have been certainly a definite increase from sulphate of ammonia.

Location.—**J. W. Tatnell's farm, Maroochy River.**

Soil Type.—Alluvial loam; better class soil of the district.

Variety.—Q. 813. Age of crop—Twelve months. Nature of crop—Plant cane.

RESULTS.

	No Fertilizer.	240 lb. Sulphate of Ammonia + 320 lb. Superphosphate.	240 lb. Sulphate of Ammonia + 128 lb. Potash.	320 lb. Superphosphate + 128 lb. Potash.	240 lb. Sulphate of Ammonia + 320 lb. Superphosphate + 128 lb. Potash.
Tons cane per acre	22·7	25·2	23·8	25·4	26·4
C.C.S. in cane	15·2 %	15·0%	15·2%	14·8%	14·8%
Value of crop	£41 1 0	£44 15 0	£43 1 0	£44 5 0	£46 0 0
Less harvesting costs	£8 5 0	£9 3 0	£8 13 0	£9 4 0	£9 11 0
Return	£32 16 0	£35 12 0	£34 8 0	£35 1 0	£36 9 0
Increased return due to fertilizer	..	£2 16 0	£1 12 0	£2 5 0	£3 13 0
Cost of fertilizer and application	..	£2 15 0	£2 14 0	£2 5 0	£3 12 0
Profit or loss from fertilizer	..	Profit. £0 1 0	Loss. £1 2 0	..	Profit. £0 1 0

The results from this trial indicate a response only to superphosphate. Small but indefinite increases from the use of potash and ammonia are suggestive, but it will be necessary to wait for the results from the ratoon crop for definite confirmation.

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