

## 200 Acre Scheme.

Name of Firm	Pump	Piping	Engine	Estimated cost of scheme.			
				Plant Durban f.o.r.	Erection and Housing	Total	Running Costs for Fuel and Lubricants Per 8hr. day
Thos. Barlow & Son.	8" Tangye Centrifugal	12" Steel	55 B.H.P. Tangye Heavy Oil.				10/-
Collingwood & Beckwith.	6 inch Worthington Centrifugal	Wrought Iron.	67 B.H.P. Crude Oil				45/-
Reid Bros.	10" Mather & Platt Centrifugal	10" Hume Concrete.	36-42 B.H.P. Petter Semi Diesel Crude Oil.	£1,116	£110	£1,226	9/10½
Rogers—Jenkins.	No. 6 Goulds Centrifugal	10" Black W.I. S. & S.	70 B.H.P. Ruston Crude Oil.	£1,600	£175	£1,775	14/-
Stewarts & Lloyds.	6" Gilks Centrifugal	12" Steel.	65 B.H.P. Crude Oil.	£1,450	£300	£1,750	14/-
"	"	"	Suction Gas 63 B.H.P.	£1,500	£350	£1,850	23/3

## QUESTIONS RELATING TO GREEN MANURING.

Questions No. 29.—“What are the most promising crops to grow for green manuring in Natal; (a) for winter planting (b) for spring planting?”

Reply.—There are many green manure crops that can be recommended for planting during the spring and early summer. Several of the legumes will make excellent growth at this period such as velvet beans, cow peas, mung peas and sunn hemp. Buckwheat will also make vigorous and rapid growth at this season.

The difficulty is to find plants which will make growth during the dry months when planted late in the season. Buckwheat, however, appears to do well even when moisture is deficient, and it was found at Cedara that lupins planted in March gave good yields. Other deep rooting plants, such as rape are being experimented with during the present season. Natal Estates Co., state that velvet beans, including Mauritius bean, will do well before the rains become plentiful once the colder weather has been passed.

Mr. Townsend: On the question of cow peas, what do you consider is the proper time to plough them in? We have had a good many differences of opinion, whether it should be at the flowering or whether when the seed pods are just ripe and whether the advantage is not the same if you allow the crop to mature, reap the seed, and then plough the residue in.

Reply.—I believe that time is a great factor in a green manuring system. The idea is to give as much organic matter to the soil in as little time as possible. The best time would appear to be as soon as the plant has made its maximum leaf growth,

and that is usually at the flowering stage. There is another advantage in ploughing in at this stage, and that is that it decomposes the more readily in the soil. Consequently the land becomes available for further planting more rapidly. Of course if the idea is to procure seed it is necessary to leave it in the ground a further period, and as was stated yesterday with some of these plants which have not become acclimatised to Natal coast conditions it may be advisable for the planter to grow his own seed. In some cases he has to because the seeds are not obtainable at all.

Some of the crops have not been grown under Natal coast conditions. But for green manuring I would recommend ploughing it in at the flowering stage. There is an exception, though, to that in the case of the crop we saw at Umbogintwini of sunn hemp. That, as was noticed, made a very tall growth; it had grown about six feet before it had flowered and reached its maximum growth. That is a very vigorous plant and at that stage the fibre which is formed is rather tough and must take a considerable time to decompose. Under those conditions I would recommend ploughing in sunn hemp before it reached that stage of maturity, say when it is about three feet high, which would occur under normal conditions after about five or six weeks growth.

Capt. Greig: When growing a crop of beans in heavy clay soil do you recommend ploughing that crop in green or waiting until it dries out and then plough it in; it is the ordinary red bean.

Reply.—I think the best practice would be to plough it in while it was still green. There may

**Questions Relating to Green Manuring.—Contd.**

be a temporary increase of soil acidity during the decomposition of the plant, but it is found that that soon passes off and usually within three weeks or so it is safe to plant some other crop.

Mr. Hamlyn.—After you have planted your fields say in the autumn would it be detrimental to put in buckwheat between your furrows with the object of ploughing it in when you scarify at the commencement of spring?

Reply.—As I mentioned yesterday, it would seem to me that the best plan when ploughing out old cane is to sow a crop of buckwheat as early as possible, for the reason that that is one of the few plants that will germinate before the beginning of the rainy season and will give your system of green manuring a start. As to planting between the rows, I am of opinion at present that it is not advisable to grow anything between the rows of plant cane in this country.

In Louisiana it has been the practice to sow *mellilotis indicus* because the cane although planted in the autumn does not grow during the winter and does not appear above the ground until the following spring. Consequently they have several months available during which they can grow green manuring crops during the winter. Here we have not those conditions. What we require to do here is to encourage the development of the plant cane as early as possible.

Anything which tends to hinder its development whether by drawing on the reserves of plant food in the soil or by shading the plant, to my mind is harmful. For that reason I would not grow any green manuring plant among the plant cane and still less any catch crops such as beans or sweet potatoes, as is sometimes done.

## QUESTIONS RELATING TO AGRICULTURAL PRACTICE.

Question 31.—“Realising that cane is deep rooting and occupying the soil for several years, what main points should be considered in preparing the soil for cane planting?”

Mr. Fisher stated that he would rather that some members of the audience would start the answer to this question and that the question be discussed and he would then sum up the position. By so doing he thought they would get much more information than if he was to reply straight off.

Mr. Patrick: The first essential in my opinion as an amateur is your method of ploughing. Merely scratching the ground is useless because you don't break up the ground to the required depth to allow the roots to go down. The ideal method of ploughing to my mind is to plough we will say twice, first breaking your soil to a depth of eight inches. When you have harrowed that down and it has been as-

Questions No. 30.—“Is the superiority of legumes over non legumes as green manure crops likely to be so marked in this country as is the case elsewhere?”

Reply.—The application of non-leguminous green manure crops such as buckwheat, rape and others would appear to be particularly promising in this country, where nitrogen does not appear to be as a rule the dominant fertiliser requirement of the soil. In most other sugar growing countries nitrogen is principally required, but that is not the case here in those soils which are well supplied with organic matter. The first requirement in this country would appear to be a plentiful source of humus together with a supply of phosphate.

Mr. Dodds was also asked whether he could mention any other country where the conditions were similar to those in Natal.

Reply.—South Africa is unique in a great many respects. Among sugar growing countries I don't know of any where the conditions very closely resemble the conditions here.

Question: Is it not then a fact that the only experiments that have been made in sugar growing have been made at Cedara where conditions are entirely different to the sugar belt?

Reply: The only experiments on sugar cane growing for sugar production which have been published and are generally available are those at Winkle Spruit, but experiments with other crops not only at Winkle Spruit but Cedara and Weenen have been carried out, and the same conditions were found. The application of mineral nitrogenous fertiliser except in very small quantities of mixed fertiliser, was found to be unfavourable as a rule. This is essentially a matter which calls for further investigation and we have commenced a few experiments in this direction.

sisted by the weather you should then cross plough it to a depth of say ten inches.

When you have worked that down into tilth to go a further depth of say twelve inches. The idea of the further depth of course is to break up the sub-soil in such a way as to allow the roots of the cane to penetrate, and by so doing you get a big reserve of moisture for your droughty years and you allow a bigger working place for the bacteria that supply the plant with food. It would be advisable if one was not limited by the cost to plough perhaps only ten inches and do the further depth by the method of sub-soiling, but to most planters that is impossible. I think if you have three successive ploughings and finally add a depth of twelve inches you are going to get a fairly good result. The main point is that you get a decent tilth, you get moisture reserve in your soil, and you have broken up