

## MANURIAL TREATMENT FOR REMEDYING NITROGEN DEFICIENCY OF SOILS OF UPPER ASSAM FOR GROWING PLANT CANES.

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(Read at Symposium, August 29-30, 1936.)

This paper deals with the results of some of the sugar-cane experiments that have been done at Jorhat Farm, and as the soil of the Farm is more or less representative of some of the soils of the Upper Assam Valley, some idea can be formed from these experiments as to the status of nitrogen in such soils. The nitrogen content in Jorhat Farm soil is on an average .09% (top-soil) and sugar-cane, when grown without any nitrogenous manurial treatment, has been found to give very poor yield of canes; stunted growth and other signs of nitrogen starvation were invariably noticed. It has been the usual practice in the Farm to manure the canes of the nursery and simple varietal experimental plots with 300 mds. of cow-dung + 1,000 lbs. of oil-cake in the case of plant canes and with 200 mds. of cow-dung + 2,000 lbs. oil-cake in the case of ratoon canes. Besides, in simple varietal and manurial experiments the following rotation is followed:—

1st year—plant cane.

2nd year—ratoon cane.

3rd year—(Kharif) a green manure crop, (rabi) oats.

4th year—(Kharif) another green manure crop, (rabi) a catch crop of mustard.

Canes under the above arrangements are found to yield a good crop, the maximum yield up to 1936 being 54 tons approximately per acre of stripped canes with Co. 419 (Plant cane).

A good idea as to yields of canes when grown under different treatments, viz. (1) control, (2)  $\frac{125 \text{ mds.}}{50 \text{ lbs. N}_2}$  cow-dung per acre, (3)  $\frac{250 \text{ mds.}}{100 \text{ lbs. N}_2}$  cow-dung per acre, can be gathered from the combined varietal and manurial experiment conducted in the year 1935-36. The above mentioned treatments were used with three varieties of plant canes, P.O.J. 2714, Co. 213, Teli, and the experiment was laid out in the randomised blocks with 3 replications. The soil of the experiment received no initial common manurial dressing. Signs of nitrogen starvation was noticed in the case of treatment (1), to some extent in treatment (2), and to a very small extent in the case of treatment (3). In the latter case both the yield of stripped canes and quality of juice were found to be superior to those due to other treatments, the yield of canes under treatment (1) being extremely poor. The experiment clearly showed that

nitrogen is not present in the soil in a form to yield a satisfactory crop. It must be added to the soil in the form of a suitable manure.

The results, given below, of our manurial experiment conducted in the year 1934-35 clearly show the utility of using 300 mds. cow-dung+1,000 lbs. oil-cake—the usual treatment given to plant canes in the nursery and simple varietal experiments in our Farm.

*Manurial Experiment, 1934-35.*

With Co. 213 (Plant canes), 4 treatments with six replications.

Treatment	(1)—100 mds. cow-dung.
„	(2)—200 „ „
„	(3)—300 „ „
„	(4)—400 „ „

Treatment	1	2	3	4	Mean	S.E.
Yield of stripped canes (ton per acre)	23.13	24.92	27.44	26.83	25.60	.699
Sucrose tons per acre	2.16	2.28	2.40	2.33	2.29	.103
% Sucrose in juice	14.69	14.85	14.16	14.19	14.47	.29
% Glucose in juice	.52	.69	.71	.58	.63	.046

All plots received a common dressing of 1,000 lbs. oil-cake.

*Conclusions* :—For stripped canes treatment 3 is the best and significantly greater than treatment 1 or 2.

Regarding sucrose content treatment 3 yields the highest value but is not significantly greater than the others.

Further experiments are in progress. These include tests in fields of cultivators in selected areas. Each of the treatments stated above indicates the amount per acre.