

It appears, therefore, that deficiency of available nitrogen in soils under cotton at the fruiting stage of the crop may have something to do with its partial failure.

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### Occurrence of Celestite in the Phosphatic Nodules of Utatur

SEVERAL investigators<sup>1,2,3</sup> have reported on the extensive deposits of phosphatic nodules in the Utatur area. Crushed specimens of phosphatic nodules revealed the presence of a white platy mineral which filled the cracks in the nodule and appeared to have concentrated near the core. Since it could be easily loosened and isolated and also since it comprised more than 3 per cent. (even 10 per cent. in exceptional cases) of the entire nodule, it was obtainable in sufficient quantity for study.

A careful chemical examination which involved the separation of calcium, strontium and barium by reliable methods showed that the mineral consisted approximately of 93 per cent. of strontium sulphate, 4 per cent. of the sulphates of calcium and barium and 3 per cent. of quartz.

We have also examined a lump of celestite occurring in the gypsum beds in the same area. This specimen was a massive aggregate of columnar crystals each of which was 10–12 mm. long.

In view of the fact that no significant deposits<sup>1,5,6,7</sup> of strontium minerals in India have so far been known to exist, this finding of a large source of strontium compounds in the Utatur area appears to be of some importance to this country.

A detailed study of the occurrence of celestite

and of other minerals occurring in the Utatur area is now in progress.

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<sup>1</sup> Blanford *Mem. Geol. Surv. Ind.*, 1862, 4, 83.

<sup>2</sup> Sivan, *Year Book of the Mad. Agric. Dept.*, 1918.  
—, *Proc. Ind. Sci. Cong.*, 1922, 29.

—, *Ibid.*, 1924, 44.

<sup>3</sup> Rama Rao, *Quart. Jour. Geol. Min. Met. Soc. Ind.*, 1931, 4, 49.

<sup>4</sup> Blanford, *Mem. Geol. Surv. Ind.*, 1880, 17, 196.

<sup>5</sup> Coggin Brown, *India's Mineral Wealth*, 1936, 277.

<sup>6</sup> Jones, *Rec. Geol. Surv. Ind.*, 1888, 21, 36.

<sup>7</sup> Hughes-Buller, *Ibid.*, 1904, 31, 45.

### A Note on the Effect of Indole-butyric and Indole-acetic Acids on Rooting of Green Wood Cuttings with Special Reference to Litchi and Mango

PRELIMINARY results obtained during the summer of 1939 definitely indicate the effectiveness of indole-butyric acid in stimulating root growth in cuttings of litchi and a hedge plant, namely, *Justicia gendarusa* Linn. The time allowed (60 days) was found too short for rooting in mango but the effect of the chemicals was evident in callus growth. The importance<sup>1</sup> of propagation by cutting, if really practicable, would be very great in litchi and mango. The present methods of marcotting of litchi, and inarching of mango using seedling stocks are not only tedious but also do not give satisfactory results.

In the present experiments, cuttings about 6 inches in length were taken from one- and two-year old shoots, during the last week in March 1939. All leaves were removed and the cuttings immersed to a depth of about 1 inch in various concentrations of a water solution (tap water) of indole-butyric and indole-acetic acids for 6, 12, 24 and 48-hour periods. After treatment the cuttings were planted to about two-third of their length in a sand bed. These were excavated after 60 days. The *justicia* sp.

is not difficult to root. Ordinarily it is propagated by cuttings and, therefore, it was used in these experiments with a view to provide a check on the methods employed.

Between the two acids, indole-butyric was found more effective and in all cases maximum effect was obtained where the highest concentration was applied for the longest period. Fig. 1 is a photograph showing the effect

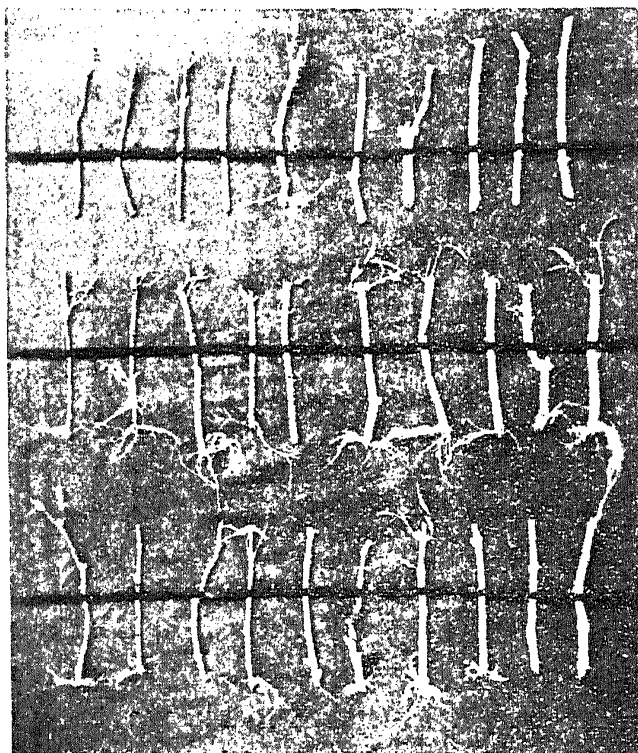


FIG. 1

Showing rooting in *Justicia gendarusa* cuttings, the top line shows the controls, the middle line the ones treated with indole-butyric acid and the bottom line treated with indole-acetic acid.

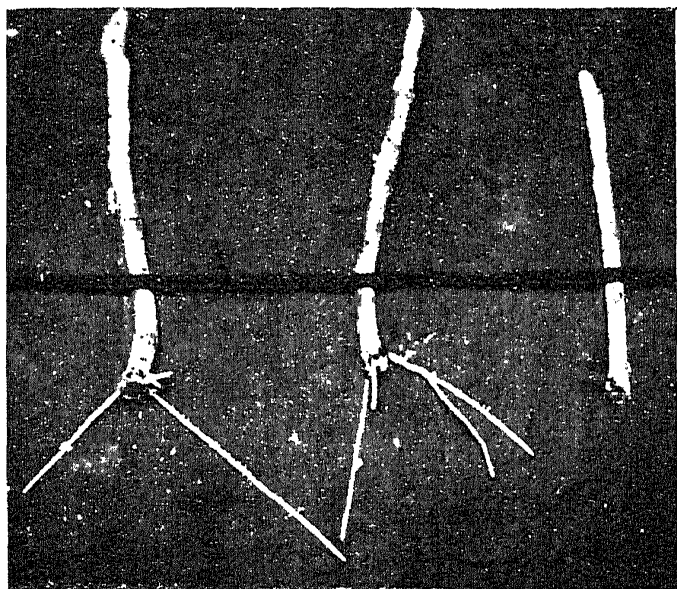


FIG. 2

Showing rooting on *Litchi* cuttings treated with indole-butyric acid.

on *justicia* cuttings of the three treatments, namely, control, 60 mgr. indole-butyric acid per litre and 48-hour period, and 60 mgr. indole-acetic acid per litre and 48-hour period on the top, middle and bottom rows respectively. Fig. 2 shows rooting in litchi cuttings. In this case actual rooting was obtained only under the treatment of 60 mgr. indole-butyric acid per litre and 48-hour period. The detailed data of these experiments have been presented in the *Annual Report* of the Fruit Research Station, Sabour, for 1938-39.

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<sup>1</sup> Sen, P. K., *Hort. Res. Sta. of U.P. and Bihar*, Sabour, 1937-38, Pt. II, pp. 54-60.

Tanaka Tyozburo, *Phil. J. Agri.*, 1939, 10, No. 1.

### 'Thermo' or 'Vacuum' Flasks for Preserving Sugarcane Pollen

SUGARCANE pollen loses viability fairly quickly—sometimes in less than four hours—under the ordinary field or laboratory conditions. Experiments in the past had, however, shown that under conditions controlled for temperature and humidity certain sugarcane pollens can be preserved for as many as nearly thirteen days.<sup>1,2</sup> A simple, cheap and portable arrangement for thus preserving the pollen had, however, been a desideratum.

The device illustrated herein (Fig. 1) utilising the easily available thermo or vacuum flask has shown usefulness in preserving cane pollen already for the period above mentioned and the periodical testing for viability is still in progress.

A is a test tube, rubber stoppered at the top, carrying a specially designed staging M in which cane pollen of four different kinds could be stored in small watch glasses. This tube A is the store chamber for the pollen desired to be preserved. H is a mixture of sulphuric acid and water in suitable proportions for securing