

### Growth Promoting Factors in Jowar (*Andropogon Sorghum* Linn.)

IN the course of our feeding experiments with the rice moth, *Careya cephalonica*, it was found that the insect needs a water-soluble factor and also one which is fat-soluble. Whole jowar, dried and powdered to pass through a 30-mesh sieve, when fed to these insects, has been found to constitute an adequate diet, but the material subjected to an extraction with ether, does not support the growth of the insect, although the diet is supplemented with an equivalent quantity of fat in the form of groundnut oil. The addition of the ether extract to the extracted meal, however, restores the adequacy of the diet, although the diet suffers in quality to a certain extent. This deterioration in quality is attributed to a partial destruction of the fat-soluble factor in the course of the preparation of this diet.

Batches of ten larvæ were fed on three different diets (1) whole jowar, (2) jowar extracted with ether but the fat deficiency made up by groundnut oil and (3) ether extracted jowar to which an equivalent quantity of the extract has been added. Results of these experiments have been graphically represented in Fig. 1, which

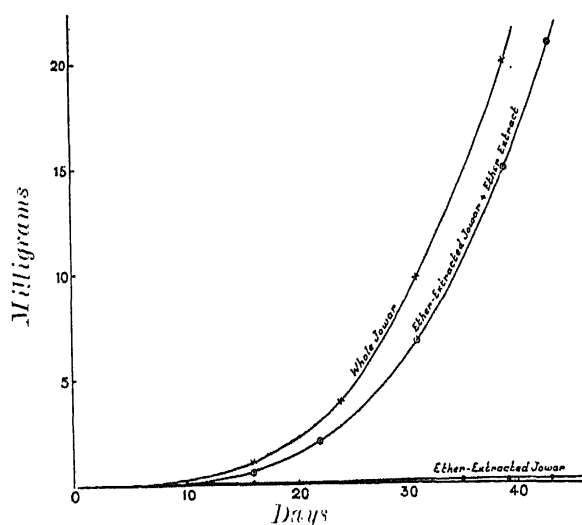


FIG. 1.  
Growth curves of the rice moth (*Careya cephalonica*) fed on different diets  
Scale—x axis 1 cm. = 2 days  
y axis 2 cm. = 2.5 mgms.

demonstrates in a convincing manner, the presence of a potent fat-soluble, growth-promoting factor in the ether extract. Experiments

with a view to isolate this factor in a concentrated if not a pure form, are now in progress.

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### Nitric Nitrogen in Soils under Cotton

A GENERAL complaint in the cotton growing districts of the Punjab is that American varieties of cotton do not often give successful crops. At the flowering stage the plants usually become yellowish green in colour, and at times there is a considerable shedding of leaves and flowers and bad opening of bolls. This trouble has also been encountered in Sind.

Since soils in tropical countries are generally deficient in nitrogen, the yellowish green appearance of plants led us to suspect nitrogen starvation at the time of seed formation when it is most required. Preliminary observations on the amount and type of nitrogen in soils under cotton were taken in 1928. These showed a deficiency of available nitrogen in such soils.

In 1929 and again in 1933, with the assistance of the Cotton Research Botanist weekly determinations of different forms of nitrogen were made during the entire cotton season. These were correlated in 1929 with the types of micro-organisms present in fallow and the cropped soils.

The results of such observations (Table I) showed that the amount of nitric nitrogen in soils under cotton was practically nil from about the end of July onwards.

Another set of observations was taken in September this year (1939). Determinations for available nitrogen were made in samples of soil removed from 16 different fields under American cottons at Risalewala and Lyallpur Agricultural Farms. The amount of available nitrogen was found to be practically nil in all these (Table II).