Theraptus sp. *D. frumenti* and the larvæ of *Lamoria* sp. are all very resistant to DDT, whether used as a wettable powder or dissolved in oils. However, the addition of coumarone resin[3] renders the same formulations highly toxic and persistent. To prevent *Pheidole* sp. foraging in palms, a 10 per cent DDT (80 per cent *para para*) with 1 per cent coumarone indene resin (grade C.469 from the British Resin Products, Ltd.) dissolved in power kerosene is effective. This spray is persistent for at least three months when used in the crowns of the palms, and for five months when applied around the trunks of the palms. It has little effect on the larger species of ants such as *Œcophylla smaragdina*, *Anoplolepis custodiens* and *Polyrhacis* sp. *Polyrhacis* sp. can be controlled by spraying the trunks with 'Dieldrex'. The addition of 1 per cent coumarone indene resin to 10 per cent 'Dieldrex' prevents it being washed off the trunks by rain and at least doubles its persistence.

Theraptus sp. has been successfully eradicated from Prison Island, which had 168 heavily infested palms, with one spraying of 3 per cent DDT plus 0·3 per cent resin. By using 'Eclipse' pneumatic sprayers, all the palms were hand-sprayed in one day. So far as is known, *Theraptus* sp. has no wild host plants; it has been found only on mangoes, guavas, cinnamon, cacao and coconuts. It feeds only on the fruits of these plants, which often fall off after developing necrotic lesions. In the laboratory it has been very successfully reared on French beans (*Vigna* sp.).

Large-scale control is now being attempted by drift-mist spraying using a 'Micron' sprayer, which in still air will throw a mist up to 70 ft.

Fuller reports on these coconut problems will be published elsewhere. I wish to thank Mr. A. K. Briant, the director of agriculture, for permission to publish this note, and Dr. W. J. Hall, of the Commonwealth Institute of Entomology, for the insect identifications.

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Resistance to a Plant Disease associated with High Glucose Content of Leaf

Knight and Clouston[1], and Knight[2], in a series of papers from 1939 onwards, have worked out the genetics of the resistance of cotton to the blackarm disease (*Xanthomonas malvacearum*) and have succeeded in transferring resistance from New World to Egyptian (Sakel) types.

Clouston has found (private communication from Dr. R. L. Knight) that leaf extracts of blackarm-resistant cottons had a stronger reducing action on Fehling solution and considered that this might be associated with the mechanism of blackarm resistance.

We have confirmed this for synthesized varieties containing the blackarm resistance genes B_2 and $B_2 + B_3$, compared with their susceptible parent type. In addition, by the use of a quantitative paper-chromatography technique[3], it appears that this stronger reducing action of a water extract of the dried material may be attributed to a significantly higher glucose-level in the leaf, which is present from the cotyledonary stage onwards, in plants from different plots, sampled at different times of the day. The resistant seed contains higher sucrose and raffinose (the only two sugars found present), and possibly more oil, although this has not been sufficiently confirmed. The phosphate content, as measured colorimetrically on a 2 per cent acetic acid extract[4], is also generally, but not always, higher in the resistant leaf.

The leaf glucose-level in the susceptible plants, which is very low at the beginning of the season, appears to rise steadily with time, while that of the resistant remains consistently high. Three months from sowing, the glucose-level in the susceptible plants appears almost as high as in the resistant planted at the same time.

While no inhibition of the local strains of *Xanthomonas malvacearum* on nutrient agar has been observed here with additions of glucose up to 10 per cent w/v, one case[5] has been quoted where additions of both glucose and phosphate have inhibited growth, but only after sterilization at high temperatures.

It seems certain that resistance does not reside in the glucose itself, but in some factor which gives rise early to a high glucose content. The problem is still under investigation.

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Growth Response of Tree Seedlings to Mycorrhizal Mycelia in the Absence of a Mycorrhizal Association

Mycelium known to produce ectotrophic mycorrhizas can stimulate the growth of an endotrophic tree species although it does not form an association with the roots. This was demonstrated in pot-culture experiments in which seedlings of Lawson cypress (*Chamæcyparis lawsoniana* Parl.) were raised in soil inoculated with *Rhizopogon luteolus* Fr.

A poor heathland soil free from the mycelium of *Rh. luteolus* and from a mycorrhizal associate of Lawson cypress was used as potting medium. Sterilized soil which one would regard as the ideal substrate for inoculation experiments did not prove suitable as it produced relatively good control plants, thus not allowing for a full demonstration of the growth response to the inoculum. Furthermore, the activity of the ectotrophic mycelium was observed to be less vigorous in the sterilized than in the unsterilized soil.

Rhizopogon luteolus was inoculated in the form of mycorrhizal roots of Scots pine. This method was used in preference to introduction of mycelium from pure culture, as results of earlier experiments had shown that mycorrhizal material was more effective