

The authors thank Dr. Orton Williams of the Commonwealth Institute of Helminthology, London, and Dr. P. K. Koshy, Nematologist, CPCRI, Regional Station, Kayangulam for the identification of the nematode. Thanks are due to Mr. M. C. Nambiar, Project Coordinator, and Dr. K. V. Ahamed Bavappa, Director, for their encouragement.

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Effect of Different Fungicides on the Control of Damping Off of Cardamom Seedlings

DAMPING off is one of the nursery diseases of cardamom which takes a considerable toll of seedlings. The disease is especially severe when nursery beds are raised in wet lands. The disease is caused by *Pythium* sp. under excessive soil moisture conditions or crowding of seedlings in the nurseries (Cardamom Board, 1970). The small spots of infected areas which are noticed in the early stages grow into bigger patches after a short period and the stand of the seedlings in the nursery presents a gappy appearance due to seedling lethality.

Heavy incidence of damping off was noticed during 1966-67. An experiment was conducted during 1968 to study the effect of soil application of different fungicides on the control of the disease.

The experiment was laid out in a randomised block design with five treatments and four replications. The treatments were: (A) formaldehyde (1:50); (B) Bordeaux mixture (5:5:50); (C) Blue copper 0.4%; (D) Cuman 0.2%; and (E) control. Fifteen days before seed sowing beds receiv-

ing treatment with formaldehyde were drenched with its solution at the rate of 15 l/m². The beds were then covered with moist gunny sheets for 24 hr. As regards the other treatments, the beds were drenched with the various solutions at the rate of 10 l/m² a day before sowing. Freshly extracted seeds were sown in lines and the beds were mulched and watered regularly.

Germination data as given below showed that the treatment with formaldehyde gave the highest germination.

Treatments :	A	D	C	E	B
Germination percentage after 60 days	45	34	29	26	23
C.D. at 5% :	10.3				

Treatment of seed beds with Bordeaux mixture, Blue Copper, or Cuman had no beneficial effect on germination over that of control. The seedlings in the beds treated with formaldehyde looked healthier and had grown one and half times taller than those of seedlings of other treatments. This initial advantage in growth also helped them to withstand the adverse effect of leaf spot and leaf rot disease much better.

The authors are thankful to Dr. N. P. Patil for giving encouragement in the conduct of this work.

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Record of a Stem Borer on Cacao from India

A STEM borer has been observed to cause wilting and drying of some of the 3-4 year old cacao plants grown as an intercrop in the arecanut garden of the Station. The

external symptoms of attack are a round hole on the stem, drying of the upper portions above the hole, and excreta and chewed up fibres strewn out at the base of the plant. The larvae make unramified hollow tunnels inside the stem. Out of seven plants infested, four were dead, where the main stem had been attacked; and in the others, the attacked terminal branches alone had dried up.

The adult moths are white in colour. They are characterized by sexual dimorphism. The male moth is smaller with 21 mm length and 37 mm width, the female large with 32 mm length and 55 mm width. In the male the antenna is bipectinate almost upto the middle and filiform distally, and in the female, it is filiform throughout. The wings in the male overlap only a part of the abdomen, and in the female they cover the entire abdomen. The abdomen is slender and elongated ending in a brush of hairs in the male and it is broad and thick with a well developed ovipositor in the female. Longevity of adult in the laboratory is 6-7 days (male lived one day longer than female). The female lays about 510 eggs within 5 days. Full grown larva measures 42 mm in length and 6 mm in thickness. Head is prominent with very strong mandibles. Pupa is reddish brown in colour with a hard spine-like projection at

the anterior region. Pupa measures 27-32 mm in length and 3-5 mm in width. Pupal period lasts for 9-13 days.

The pest is identified as *Zeuzera coffeae* N. (family: Cossidae; subfamily: Cossioidea; order: Lepidoptera). It is well known as the red borer of coffee (Somasekhar, 1958). The related *Zeuzera nyrina* Linn. the leopard moth is destructive to the stem of many fruit trees in India (Imms, 1957; Metcalf and Flint, 1951).

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Journal of Plantation Crops, Vol. 2, No. 1
(June 1974), page 38, para 2, line 5: for
KNO₃ read HNO₃.