pendent of the age of the extract and of the presence or absence of tissue fragments or *Rh. cocophilus* in the extract. The behaviour of tomatoes in extracts of healthy tissue is different, in that freshly prepared cell-free extracts do not produce wilting unless the extracts are allowed to stand for several hours before removal of tissue fragments. If tissue fragments be removed, it is necessary to stand the cell-free extracts overnight before they can induce wilting. There is, therefore, reason for believing that the toxin is not produced directly by the nematodes but is the product of tissue disintegration as a result of nematode invasion.

Exposure of extracts to temperatures of 100° C for 30 min does not affect their ability to induce wilting, and it is justifiable to suppose that the toxin, if present, is relatively thermostable.

Other tests have been carried out using three palms, *Ptychorapis augusta*, *Licula spinosa* and *Thrinax morissii*, as indicator plants to show the presence of a possible vivo-toxin. The results of tests with these plants are similar to those using tomato, although wilting is less pronounced. Wilting in diseased tissue extract does not occur in less than 72 h after immersion, while wilting in cell-free, healthy tissue extracts, takes far longer. These palms are far too small to observe either the external symptoms, such as yellowing, or internal symptoms, such as discoloration. In tomato plants, however, a distinct pattern of yellowing is observed. Yellowing precedes wilting in these plants. The yellowing begins along the midrib, extends along the lateral veins, then the interveinal spaces yellow and finally necrosis of the leaf occurs.

It is suggested that these observations are consistent with the production of a toxin or toxins in coconut tissues, and that the toxin or toxins are produced indirectly as a result of tissue breakdown following nematode invasion.

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Effect of Treatment of Seeds with 2-Chloroethanol on the Resistance to Boron Toxicity in Wheat Seedlings

It has been shown that treatment of seeds with 2-chloroethanol increased the resistances to high salt concentration[1] and herbicide[2]. The present study is concerned with the influence of seed treatment on the boron toxicity.

Table 1. Effect of Seed Treatment with 2-Chloroethanol on the Resistance to Boron Toxicity in Wheat Seedlings

Seed treatment	Boron application (mg boron/200 g soil)	Wilted plants (per cent) h after applic. of boron 48	72	96
0·2 per cent 2-Chloroethanol (14 h)	12·5	1·9	37·5	90·3
,, ,, ,,	9	0	22·8	78·9
,, ,, ,,	5	0	4·7	23·5
Control	12·5	13·4	69·2	100·0
,,	9	4·5	43·6	92·7
,,	5	0	23·1	66·3

Wheat seeds (variety, Carstens VIII) were soaked in 0·2 per cent 2-chloroethanol for 14 h at room temperature. After that, the seeds were spread on a filter paper and dried for 4 h. The control seeds were treated in the same way using water instead of 2-chloroethanol solution. 200 g sandy soil (*p*H 5·85) was placed in a Neubauer container and moistened by 25 ml. of water. Forty seeds were placed in the soil. At 6 days after the seeding, varying amounts of boron in the form of 5,722 p.p.m. H_3BO_3 solution (1 mg boron/1 ml. solution) were applied on the surface of soil. The application of solution increased the water content of soil temporarily, and further irrigation of water was made after the moisture content of soil reduced to the original level. The first visible symptom of the toxicity was the wilting of the tips of leaf blades. The numbers of wilted seedlings were recorded. Results are shown in Table 1. Tests were replicated three times and the averages were calculated. From the results indicated in the table, I have arrived at the conclusion that the seed treatment increased the resistance.

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Growth-inhibiting Substances in Xylem Sap

A wide range of substances is already known to occur normally in xylem sap[1]. Experiments in this laboratory have now shown that growth-inhibiting substances are also present in xylem sap extracted from a range of woody plant species.

Xylem sap was collected from woody shoots using a method previously described[2], which allows quantities of up to 100 ml. to be extracted readily. To examine extracted sap for growth-inhibiting substances a volume of this material was first acidified to approximately *p*H 2·0 with dilute sulphuric acid and shaken three times with equal volumes of ether. The combined ether washings were then reduced in volume, samples placed on Whatman No. 1

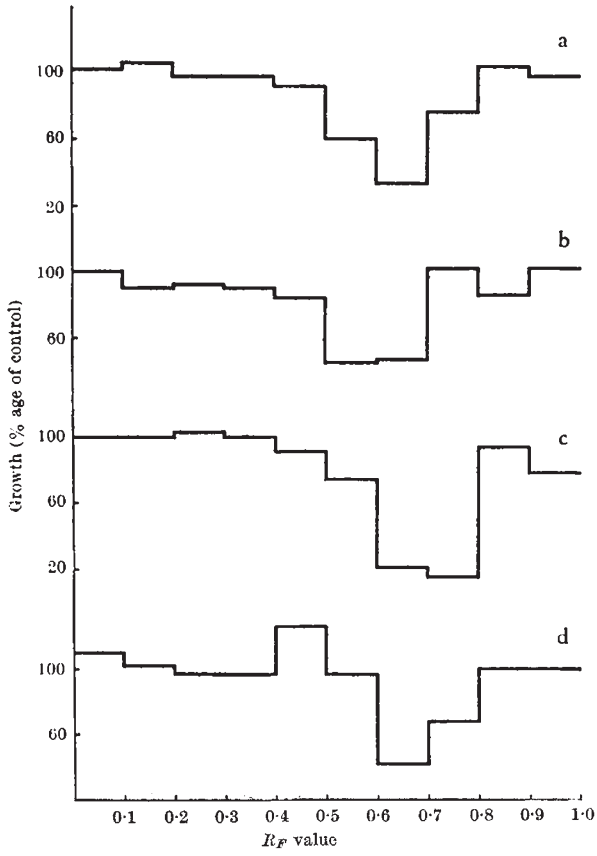

Fig. 1. Effect of chromatographed ether extracts of xylem sap and buds on growth of wheat coleoptile sections. *a*, 30 ml. cape honeysuckle sap; *b*, 70 ml. apple sap: *c*, 15 ml. willow sap: *d*, 150 willow buds