Table 1. MACRO- AND MICRO-ELEMENTS IN HEALTHY AND UNHEALTHY LEAVES OF *Eucalyptus camaldulensis*

Description of leaf sample	Macro-nutrients (per cent)					Micro-nutrients (p.p.m.)			
	N	P	K	Ca	Mg	Cu	Zn	Fe	Mn
Tree No. 2 in row No. 1 (*H*)	2·016	0·12	0·97	1·03	0·26	16·3	20·3	141	77
Tree No. 2 in row No. 1 (*U*)	1·544	0·08	0·71	1·48	0·22	8·0	12·6	146	105
Tree No. 2 in row No. 2 (*H*)	1·573	0·09	1·09	2·22	0·26	12·3	12·5	131	120
Tree No. 2 in row No. 2 (*S*)	1·450	0·08	0·66	3·28	0·30	13·1	17·5	190	143
Tree No. 2 in row No. 2 (*U*)	1·190	0·06	0·61	4·10	0·24	15·7	14·7	250	168
Ootacamund (*H*)	1·78	0·13	0·94	1·59	0·32	25·0	36·0	290	1,000

H, Healthy; *U*, unhealthy; and *S*, apparent deficiency symptoms.

accompanied by a high content of calcium is likely to appear. A relationship between potash deficiency and the content of calcium oxide has been observed by Lockard[3] in rice. A comparison of our data with those given in Table 1 of ref. 2 shows that the quantities of iron, manganese, copper and zinc even in healthy leaves of *E. camaldulensis* are relatively low. It should, however, be mentioned that iron, manganese, copper and zinc deficiencies could possibly occur when soils with a low supplying power are afforested or when these elements are not available. This was observed in the case of nursery seedlings of a large number of *Eucalyptus* species which developed characteristic symptoms of iron, magnesium, and manganese deficiency[4].

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Susceptibility of Coconut Palm to Lethal Yellowing Disease

COCONUT palms (*Cocos nucifera*) are not susceptible to lethal yellowing disease[1] until they are from two to three years old, reckoning from the time they are planted out from the nursery bed. Rare instances are known where palms have become infected at 18 months. No explanation for this unusual phenomenon has been offered, even though it is widely held that the disease is infectious. It presents a serious barrier to the study of the transmission of the disease, since palms 18 months old and older are difficult to grow under controlled conditions.

The disease is characterized by wilting of the palm and this in turn implies a blockage of translocation. The site of this blockage has been determined by means of translocation tests with dyes, by starch accumulation tests with potassium iodide–iodine solutions, chemical analyses of tissues and histological studies of tissues proximal and slightly distal to the growing point in the heart of the palm.

If a palm is felled and a section cut out from just below the "cabbage" or heart of the palm to a point at about the top of the brown felt-like strainer, the growing point and the bases of the contiguous fronds are included. When such a section is set base down in a 0·5 per cent solution of acid fuchsin, translocation of the dye takes place and material differences can be observed between healthy and diseased tissues. A healthy palm will show a uniform distribution of the dye across the stem and up into the fronds. In the diseased palm, the dye is limited to a few scattered streaks; the older the palm the more of these there are likely to be. In the case of young non-bearing palms with only a very short stem (trunk), the cut-off of dye translocation below the growing point is abrupt and complete. For comparisons of starch concentration, the sections of palms were split down the middle longitudinally and the solution of potassium iodide and iodine was brushed on copiously. Strong positive reactions were obtained with both healthy and diseased tissues in the area at the base of the growing point; distally, however, the healthy tissues showed a deeper and more extensive coloration in the contiguous fronds. Split sections were also used for chemical analyses. These analyses (by R. A. Chen) revealed a high concentration of reducing sugars in the bases of the inner fronds just above the central growing point.

From the same split sections, samples were also taken for histological study (and fixed in formol acetic alcohol). The samples were examined by P. D. Tomlinson of the Fairchild Tropical Gardens, and it appears that in the diseased tissues the phloem in the region just proximal to the growing point is practically obliterated.

Taken singly, any one of these sets of observations would be significant, but together they appear to present rather conclusive evidence that the central wilting characteristic of lethal yellowing disease is a result of a blockage of translocation associated with phloem necrosis in the stem. The data also add materially to the plausibility of the hypothesis that a virus is the causal agent. The lack of susceptibility of very young palms is also accounted for, since it is not until the palm has reached an age of approximately two years that the stem is clearly differentiated and the anatomo-physiological basis for blockage established.

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Waterproofing of Metaldehyde on Bran Baits for Slug Control

SUCCESSFUL long term slug control depends on the persistence of the molluscide and baiting material because both must be present when weather conditions are optimal for slug activity[1]. Moreover, to investigate the effect of incorporation of baits in the soil to limit subterranean damage to wheat and potatoes, the bran must be protected from soil moisture and subsequent deterioration by soil fungi. In 1963, the problem was brought to the notice of J. N. Firth and J. C. Jones of the new project division of Midland Silicones, who collaborated on methods of waterproofing metaldehyde baits.

The first approach was to dip slug "pellets" for 1 min in a 5 per cent solution of chlorosilanes dissolved in petroleum ether. The solvent was removed by air drying for 13 days, but tests showed that the presence of small solvent residues made the baits unpalatable to slugs. A gaseous treatment with chlorosilanes has now been tried, and preliminary trials comparing treated and untreated pellets show that the treatment is in no way repellent to slugs. The baits, having been moistened, are held in a stream of air containing chlorosilane vapours which react with the moisture to form a siloxane film on the surface of the baits. The hydrochloric acid liberated is removed in the air stream.

The water repellent properties of a number of proprietary slug "pellets" have been assessed by immersing known weights in water and noting the time taken for them to disintegrate. The longest took 10 min but were still intact after 3 months immersion after treatment using the gaseous method to contain 1·0 per cent siloxane. The same effect can be achieved with alkoxysilanes,