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# *SHORT SCIENTIFIC NOTES*

## Reproduction of Symptoms of Root (Wilt) Disease of Coconut in Potted Coconut Seedlings

The etiology of root (wilt) disease of coconut has not been conclusively worked out. Several microorganisms and deficiency of one or more micronutrients have been pointed out to be associated with the disease (Shanta and Radha, 1975). Nagaraj and Menon (1956) reported the infection of coconut seedlings growing in a disease affected garden when inoculated with leaf grindates and the lace bug *Stephanitis typicus* Distant. However, Shanta, Joseph, and Lal (1964) observed only flaccidity of leaflets, slight stunting, and paling of leaves when seedlings growing in pots in sterile soil in an insect-proof screen house were inoculated by the same method. Menon (1961) observed localised infection followed by severe rotting of roots, but no foliar symptoms when roots of seedlings growing in sterile soil were inoculated with the fungi *Rhizoctonia solani* and *R. bataticola.*

A higher calcium and magnesium content has been observed in some soils of the disease-free tract and it has been proposed that this might be one of the contributing factors preventing the spread of the disease into those areas (Ann. Rept., CPCRI, 1970). This would imply that a lower Ca and Mg content of soil predisposes the palms to infection. An experiment was started in September, 1970 to test this hypothesis. During the course of the experiment, all the important symptoms of the disease have been reproduced on the seedlings. The following is a report on the same.

Two sets of six seedlings each (two year old West Coast Tall from Kasaragod, a disease-free area) were grown in cylindrical reinforced cement concrete pots, one set containing unsterilized soil from a disease-free area in Peechi (Ca/Mg: 4.4/1.5 m.eq./100g soil) and another set containing sterilized soil from Kayangulam, a diseased area (Ca/Mg: 1.0/0.2 m.eq./100g soil). Since earlier trials with the indicator host cow pea *Vigna sinensis* Endl. had shown that incorporation of roots of infected trees into soil made it highly infective (Shanta *et al.*, 1972), roots of diseased trees were intermittently incorporated into the soil in all the pots in equal proportions by volume. A third set of six pots containing soil from Peechi (disease-free) interlayered with roots of infected trees were maintained at Peechi as a control to those kept at Kayangulam where contamination through infective *S. typicus* was possible.

In February 1973, when seedlings growing in the pots had become pot-bound and growth rate was reduced, they were transplanted into bigger pots (120 cm height $\times$ 180 cm diameter) containing soil and roots of infected palms in equal proportions. One seedling at Kayangulam died during the course of the experiment.

The seedlings grew rapidly after transplanting. Flaccidity appeared in 3rd to 5th leaves in four out of five seedlings at Kayangulam and one out of six seedlings at Peechi in September 1973. No foliar symptoms

were discernible in seedlings which had not been transplanted into bigger pots. The reason for the sudden appearance of disease symptoms is probably the rapid vegetative growth in an environment enriched with roots of diseased palms as inoculum.

The three sets of seedlings were continuously observed for two years at quarterly intervals. The development of disease symptoms in the two sets of transplanted seedlings may be noticed from Table I. Though flaccidity of leaflets was the most important visual symptom in the diseased seedlings, intermittent yellowing and drying of leaves were noticed in one seedling at Kayangulam and rotting of youngest leaf in two out of five seedlings at Kayangulam.

The studies on role of Ca and Mg on disease incidence are continuing.

TABLE I

*Disease index of the transplanted potted seedlings*

| Location | | Kayangulam : diseased area | | | | | Peechi: disease-free area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seedling number | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 6 |
| Disease index score | 1973 Sept. | 11.6 | 7.2 | 12.8 | 12.5 | * | 5.7 | * | * | * | H | H |
| | 1975 Sept. | 20.0 | 12.0 | 17.0 | 31.6 | 18.1 | 20.0 | 12.2 | 10.0 | * | H | * |

* = No clear symptoms; H = Healthy

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