

SOIL TRANSMISSION OF THE COCONUT WILT VIRUS

DURING the course of studies on the methods of transmission of the Coconut Wilt Virus (CWV),^{1,2} it was found that this is also soil-borne. The following is a preliminary report on the mode of soil transmission of the same.

One-week-old seedlings of cowpea, grown in steam-sterilised garden soil were used as test plants, the method of inoculation being the same as described earlier.²

In preliminary experiments seedlings of cowpea were grown in the insect-proof house in pots of soil collected from the base of diseased coconut trees. Within three weeks of sowing, 35 to 40% of seedlings developed typical symptoms of 'vein clearing' and malformation of first trifoliate leaf while all seedlings grown in sterilised garden soil were healthy.

Subsequent experiments where preparations from silt and clay fractions of this infested soil were mechanically inoculated on cowpea confirmed that the virus is soil-borne. Samples of air-dried soil, passed through a 2.0 mm. sieve, were suspended in distilled water overnight and then separated according to Stokes' law into different fractions sedimenting within 30 seconds to 4 minutes (silt) and within 4 minutes to 6 hours (clay). These were centrifuged for 10 minutes at 3,000 r.p.m., the sediments were resuspended in 0.05 M phosphate buffer at pH 8 and inoculated on test plants. The results (Table I) show that the soil from the base of almost all the diseased trees are infective, the virus being retained in the silt and clay fractions probably adsorbed on the particle surface. A critical search in the fractionated samples of soil for micro-organisms which may act as vectors has proved unsuccessful so far.

The foregoing results show that CWV is comparable to the cereal mosaic viruses of Japan and tobacco necrosis virus³ in the mode of retentivity in soil. This may also explain to

TABLE I

Infectivity of soil samples collected from the base of healthy and diseased trees

Source of inoculum	Soil fraction	No. of samples yielding virus/No. tested	No. of cowpea infected/inoculated	Percentage infection on cowpea
Base of healthy tree	Clay	-/10	-/80	..
	Silt	-/10	-/80	..
Base of diseased tree	Clay	14/14	49/112	44
	Silt	13/14	56/104	54

a certain extent the slow nature of spread of the wilt disease of coconut in nature. Coconut has an extensively spreading root system (up to 20 to 22 meters) and since the virus has been found in the roots of infected palms too,⁴ it is probable that the virus spreads by root contact through soil. Detailed studies on the mode of soil transmission of this virus and the role that soil nematodes may play in its spread are in progress and will be reported in due course.

Central Coconut Research Station,
Kayangulam (Kerala),
October 20, 1961.

K. P. V. MENON.
P. SHANTA.

1. Nagaraj, A. N. and Menon, K. P. V., *Indian Coconut J.*, 1956, 9, 161.
2. Shanta, P. and Menon, K. P. V., *Virology*, 1960, 12, 309.
3. Miyamots, V., *Ibid.*, 1959, 7, 250; *Ibid.*, 1959, 9, 290; Cadman, C. H. and Harrison, B. D., *Ibid.*, 1960, 10, 1.
4. Shanta, P. and Menon, K. P. V., *Indian Coconut J.*, 1961, 15, 30.