

## SURVEY OF VESICULAR-ARBUSCULAR MYCORRHIZAE IN MANGROVE VEGETATION

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DESPITE the ubiquitous occurrence of mycorrhizae in forests and cultivated soils<sup>1</sup>, very little is known about their distribution in mangrove plants and soil. In this note, the results on the distribution of vesicular arbuscular mycorrhizae in Pitchavaram mangrove forest, Tamil Nadu are reported.

Roots of mangrove plants and soil samples were collected from the mangrove forest ecosystem. Mycorrhizal infection was measured<sup>2</sup> by observing 100 root segments. At least 6 plants of each species were screened for mycorrhizal infection. To recover mycorrhizal spores from the soil, wet-sieving and decanting method was followed<sup>3</sup>.

Twenty-five plant species from 12 families were screened (table 1) for mycorrhizal association in samples collected in May 1985. Surprisingly, no mycorrhizal association was recorded in the roots nor in the soil. The samples collected in March 1986 were also screened for mycorrhizae. No mycorrhizal association was recorded in the roots. Nor did we isolate spores from soil.

Klecka and Vukolov<sup>4</sup> reported the presence of mycorrhizae in *Salicornia* and *Suaeda*, but both were reported to be non-mycorrhizal<sup>5,6</sup>. The roots of *Rhizophora mangle*, a mangrove plant, did not harbour any mycorrhizae<sup>7</sup>.

Soil from the mangrove forest was clay and, we believe that this soil would influence the distribution of mycorrhizae. Indeed in clay soil, very few mycorrhizal fungi were present compared to sandy soil<sup>8</sup>. Furthermore, soil moisture substantially reduced the mycorrhizal association<sup>9</sup> due to insufficient availability of oxygen. In alkaline soils, fungal growth was always poor<sup>10,11</sup>. In addition to alkalinity, the clay nature of the soil is unsuitable for fungal growth because of their consequent poor aeration<sup>12</sup>. Clearly, besides soil type, the soil moisture, alkalinity and salinity influence the mycorrhizal association. The mangrove vegetation, we believe, is highly specialized with reference to mineral nutrition and deserves serious study.

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Table 1 Plant species screened for mycorrhizae from the mangrove forest

Family	Plant species
Acanthaceae	<i>Acanthus ilicifolius</i> L
Aegicerataceae	<i>Aegiceras corniculatum</i> (L) Blanco
Chenopodiaceae	<i>Arthrocnemum indicum</i> (Willd) Moq <i>Salicornia brachiatae</i> Roxb <i>Suaeda martima</i> (L) Dumort <i>S. monoica</i> (Forsskal ex) J Gmelin <i>S. nudiflora</i> Moq
Combretaceae	<i>Lumnitzira racemosa</i> Willd
Euphorbiaceae	<i>Excoecaria agallocha</i> L
Aizoaceae	<i>Sesuvium portulacastrum</i> L
Meliaceae	<i>Xylocarpus granatum</i> J Koeing
Papilionaceae	<i>Dalbergia horrida</i> (Dennst) Mabb <i>D. spinosa</i> Roxb <i>Derris trifoliata</i> Lour <i>D. uliginosa</i> Benth
Rhizophoraceae	<i>Bruguiera cylindrica</i> (L) Blume <i>B. gymnorrhizae</i> (L) Savigny <i>Ceriops decandra</i> (Griffith) Ding Hou <i>C. roxburghiana</i> Arn <i>Rhizophora apiculata</i> Blume <i>R. mucronata</i> Poiret
Salvadoraceae	<i>Salvadora persica</i> L
Sonneratiaceae	<i>Sonneratia apetala</i> Buch-Ham
Verbenaceae	<i>Avicennia marina</i> (Forsskal) Viesh <i>A. officinalis</i> L

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1. Gerdemann, J. W., In: *Proc. 1st N. Am. Conf. Mycorrhizae*; (ed.) E. Hacskeylo, 1969, 9.
2. Phillips, J. M. and Hayman, D. S., *Trans. Br. Mycol. Soc.*, 1970, 55, 158.
3. Gerdemann, J. W. and Nicolson, T. H., *Trans. Br. Mycol. Soc.*, 1963, 46, 235.
4. Klecka, A. and Vukolov, V., *Ann. Acad. Tehecosl. Agric.*, 1937, 12, 190.
5. Mason, E., *New Phytol.*, 1928, 27, 193.
6. Nicolson, T. H., Ph.D. thesis, 1955 Univ. of Nottingham.
7. Lee, B. K. H. and Baker, G. E., *Mycologia*, 1973, 65, 894.
8. Manjunath, A., Mohan, R. and Bagyaraj, D. J., *Can. J. Bot.*, 1983, 61, 2729.
9. Mohankumar, V. Ph.D. thesis, 1985. Univ. of Madras.
10. Waksman, S. A., *Ecology*, 1924, 5, 54.
11. Jensen, H. L., *Soil Sci.*, 1931, 31, 123.
12. Pugh, G. J. F., *Trans. Br. Mycol. Soc.*, 1962, 45, 560.