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A Preliminary Study into the Lavongai Rectilinear Earth Mounds: an XRD and Phytolith Analysis

MATTHEW G. LEAVESLEY[1]* AND ULRIKE TROITZSCH[2]

[1] Department of Anthropology, University of Otago, PO Box 56, Dunedin, New Zealand
Matthew.Leavesley@Otago.ac.nz

[2] Department of Earth and Marine Sciences,
The Australian National University, Canberra ACT 0200, Australia
Ulrike.Troitzsch@anu.edu.au

ABSTRACT. This paper reports a pilot study undertaken at the Lavongai rectilinear earth mounds site in New Hanover, New Ireland Province, Papua New Guinea. The objective of the study was to determine whether the mounds were formed as part of a prehistoric agricultural system. X-ray Diffraction and phytolith analyses were used on a series of sediment samples from a test pit excavated into one of the Lavongai mounds. The phytolith results indicate a change from forest species in the lowest samples to grass species in the highest samples and the presence of a variety of plant species recorded in the ethnography of medicinal plants. The XRD results indicate that the sediments throughout the depth of the mound have a similar origin, suggesting that the changes in phytoliths do not represent changes in the source of the sediments. It is proposed that the phytolith results reflect four phases of gardening practices beginning between c. 3000 BP and c. 4000 BP.

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The development and spread of agriculture was the single most significant change in prehistoric subsistence and led to unprecedented change in human behaviour. Agriculture was almost certainly a prerequisite to the colonization of Remote Oceania (Spriggs, 1997: 84). The small size and impoverished biota of many Pacific Islands meant that long-term human occupation was not feasible without some form of agriculture (Spriggs, 2002: 87). Bismarck Archipelago agriculture is conventionally thought to have come from Southeast Asia with the Austronesian expansion and the Lapita Cultural Complex (Spriggs, 2000: 300) although it has also been hypothesized that aspects of agriculture developed in the Melanesian region (Yen, 1990).

* author for correspondence