

**D-18: Cocoon morphology and life cycle patterns in selected earthworms  
(Annelida: Oligochaeta) in Sri Lanka**

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Earthworms play an important role in soil aeration and fertility. They are hermaphrodites, which produce ova and sperms that mature at the same time. However self-fertilization is prevented by copulation between two mature worms. Soon after copulation the clitellum secretes a fluid, which hardens around the body to form a tube. This is brought forwards when the animal moves backwards and eventually leaves the body. The two ends of the tube close to form a sac-like cocoon filled with albumen secreted by the clitellum. These cocoons are an integral part of their life cycle. The sperms and ova are deposited in this tube as it moves along the body. Fertilization and entire development (without larval stages) takes place in the cocoon. The shape and size of cocoons are variable with short or long processes at the poles. The freshly formed cocoons are light in colour and become darker with age.

Fourteen Sri Lankan earthworm species were studied. The cocoons were collected from agricultural and natural habitats by hand sorting and wet sieving using a 500 micrometer sieve. The shapes and sizes were recorded using camera Lucida drawings and colours noted.

The cocoon lengths varied from 1.95mm (*Dichogaster* sp.) and to 6.5 mm (*Polyphretima* sp). The cocoons were either transparent and opaque and shades ranged from lemon yellow, orange, green and brown and colour intensity

enhanced with age, while the empty ones were black. The shapes varied from lemon (*Pheretima* sp); Conch shell (*Eudrilus* sp) and sac like (*Allobophora*.sp) with long or short polar extensions.

The information obtained would be helpful in earthworm identification where direct observation of cocoons in soil is possible, to select worm types most effective for vermi-culture and vermi-composting and to use cocoons as an inoculum that is easily handled (storing and transportation).

Financial assistance by University of Peradeniya (Research grant RG/97/C44/S) is acknowledged.