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**Giant Eggs of the Clover Cyst Nematode, *H. trifolii* Goffart, 1932**

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IMPREGNATION of the females of the clover cyst nematode, *Heterodera trifolii* Goffart, 1932, by males of the sugar-beet nematode, *H. schachtii* Schmidt, 1871, was reported in 1958<sup>1</sup>. The activity of the sugar-beet nematode sperm in the reproductive tract of the clover cyst nematode and the production of giant eggs is now reported.

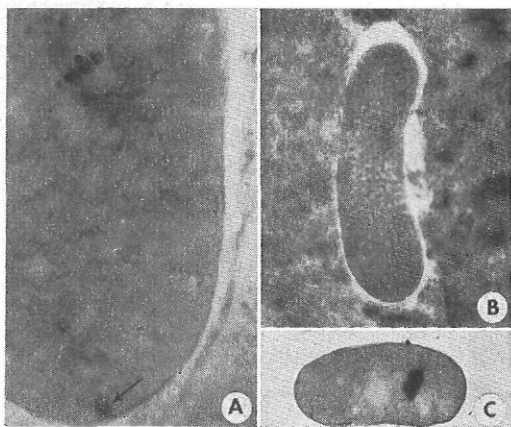


Fig. 1. A, Metaphase I, in *H. trifolii*, showing *H. schachtii* sperm (see arrow) in the oocyte ( $\times 1,000$ ); B, giant egg ( $\times 240$ ); C, normal egg at same stage as giant egg ( $\times 240$ )

Mixed cultures of *H. trifolii* and *H. schachtii* were propagated in the manner previously described<sup>1</sup>. Living white gravid females of the clover cyst nematode were removed from the roots of the white Dutch clover plants and prepared for cytological study by the squash technique<sup>2</sup>. *H. schachtii* sperm was found in several oocytes (Fig. 1A) and in a few it had proceeded some distance in the cytoplasm of the egg. In the latter the chromatin of the sperm had resolved into discrete chromosomes. However, union of the sperm and egg nuclei was not observed. *H. trifolii* has a diploid number of 27 chromosomes which is not reduced during maturation.

To determine the result of impregnation, white Dutch clover plants were inoculated with live *H. trifolii* females from this population. Giant eggs (Fig. 1B) were produced by some females of this second generation. However, both normal and giant

eggs were found in these females. Neither the normal (Fig. 1C) nor the giant eggs had as yet produced larvæ. Seventeen of the giant eggs averaged 178  $\mu$  long (range 140–225  $\mu$ ) and 45  $\mu$  wide (range 40–56  $\mu$ ). Two meiotic spindles, with many chromosomes, were observed in one giant egg and another contained a large spindle with two sets of chromosomes.

Onions<sup>3</sup> reported the occurrence of a number of giant first-stage larvæ from a single cyst of the golden nematode, *H. rostochiensis* Wollenweber, 1923. Normal larvæ were also present in this cyst. He suggested that either gene mutation or polyploidy were responsible for the formation of these giant larvæ. In the present case it appears that polyploidy has taken place.

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<sup>1</sup> Mulvey, R. H., *Canad. J. Zool.*, **33**, 205 (1955).

<sup>2</sup> Smith, S. G., *Canad. Ent.*, **75**, 33 (1943).

<sup>3</sup> Onions, T. G., *Nature*, **172**, 249 (1953).