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Chromosome Number in the Sugar-Beet Nematode *Heterodera schachtii* Schmidt

MULVEY¹ made a preliminary study of oogenesis in a species of *Heterodera* (probably *H. schachtii* var. *trifolii* Goffart, 1932) from the roots of hairy vetch (*Vicia villosa* Roth), this being the first record of oogenesis in a cyst-forming nematode. This is a report on the chromosome number and arrangement during meiosis of the sugar-beet nematode, *H. schachtii* Schmidt, 1871.

As the males are numerous, this nematode is evidently bisexual and has normal oogenesis, that is, two polar bodies are produced and the diploid number of chromosomes is reduced during maturation. Living white gravid females (both monocyst and mass cultures) taken from the roots of rutabaga, cabbage and red beet plants were prepared for study by the squash technique². The material was fixed in an iron-mordant fixative³ to which a few drops of propionic-orcein stain was added. Squash preparations were then prepared in the normal manner. By this method the chromosomes were stained intensely and were easily photographed.

Nine bivalents are regularly formed at meiosis (Fig. 1A). The chromosomes are very small, and at metaphase I of meiosis the largest bivalent is about 1 micron long. Mitotic divisions in the anterior part of the ovary show discrete chromosomes which are extremely small and difficult to count.

The well-developed spermathecae are usually amply supplied with small, tailless sperm (Fig. 1B).

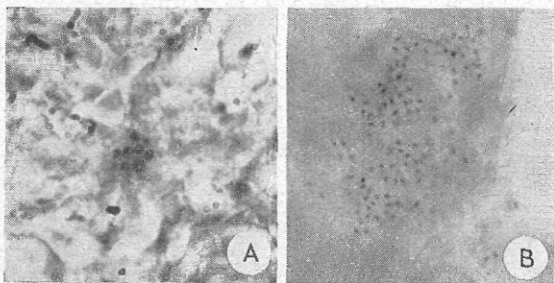


Fig. 1. A, Metaphase I, in *H. schachtii*, showing nine bivalents ($\times 1,500$); B, small, tailless sperm in the spermatheca ($\times 1,080$)

The many oocytes examined showed few did not contain sperm, but only one sperm was observed in each oocyte.

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¹ Mulvey, R. H., *Can. J. Zool.*, **33**, 295 (1955).

² Smith, S. G., *Can. Entomol.*, **75**, 33 (1943).

³ Hyde, B. H., and Gardella, C. A., *Slain Tech.*, **23** (6), 305 (1953).