RESEARCH NOTES

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First Molt in *Anguina tritici*[1]

MICHAEL A. MCCLURE[2]

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The juveniles of most tylenchid nematodes typically undergo four molts during their development, the first within the egg. An exception appears to be *Anguina tritici* (Steinbuch, 1799) Chitwood, 1935 in which the first molt is said to occur following eclosion of the first-stage juvenile (J1) (1,4–6). Bird (2) has noted the difficulty in detecting a molt within the egg, however, and has suggested that ultrastructural studies of eggs at different developmental stages might reveal the presence of a molted cuticle. This study demonstrates conclusively that the first molt occurs within the egg and that the juvenile that emerges is the second-stage juvenile (J2).

Wheat kernels (*Triticum aestivum* cv. Tonichi) were sown to a depth of 2 cm in sterile sandy loam soil in 30-cm-d pots. Seed galls containing infective juveniles of *A. tritici* were placed about 1 cm above the wheat kernels, at the rate of four per kernel, and covered with an additional 1 cm soil. Pots were placed in the greenhouse under an intermittent mist (20 seconds/30 minutes) until the plants had matured and obvious symptoms developed on the inflorescence: distortion of the heads and heads with abnormally spreading glumes. Green galls were harvested every 2 days from diseased heads and were dissected in 0.06 M phosphate buffer, pH 7.2, with the aid of a stereomicroscope. When eggs were detected, they were mounted on glass microscope slides and observed at high magnification. Eggs containing embryos were photographed by light microscopy with interference contrast optics and prepared for electron microscopy as described by Bird and McClure (3).

Molted cuticles were easily observed by light microscopy within eggs containing mature embryos (Fig. 1D). The exuvia was most distinct in the head region of the J2 during formation of the stylet. Cast cuticle was also observed surrounding the J2 in thin sections of eggs (Fig. 1A, B) and in the lumen of the esophagus of those nematodes (Fig. 1C). Once the stylet was fully formed, and just before hatching, the exuviae could not be detected by light microscopy and became difficult to identify in thin sections. Examination of hundreds of hatched J2 nematodes failed to reveal adhering portions of the shed cuticle.

Eggs within galls result from oviposition by up to 40 females (4) over a period of 10–15 days. Therefore, synchrony in egg development could not be expected. During the interval in which J1 nematodes molted, however, cast cuticles were found in as many as 15% of the eggs examined.

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[1] Journal Series Paper No. 4388 of the Arizona Agricultural Experiment Station.

[2] Department of Plant Pathology, University of Arizona, Tucson, AZ 85721.

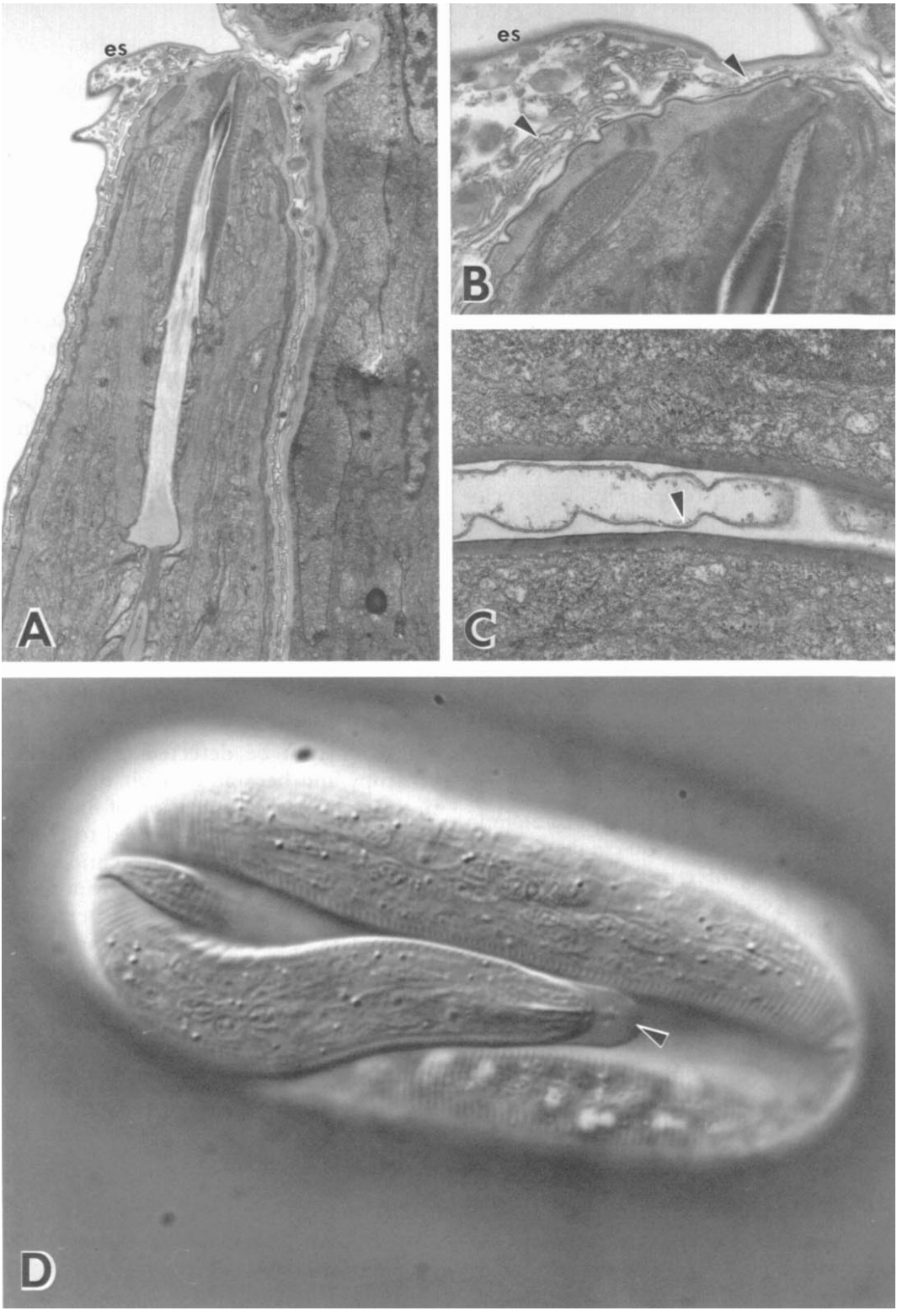
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FIG. 1. Evidence for a molt within the egg of *Anguina tritici.* Arrows indicate cast cuticle; es = egg shell. A–C) Electron micrograph of longitudinal section through the head region of a J2 which has completed a molt. B) Details near stoma. C) Lumen of esophagus. D) J2 coiled within the egg.