

BRIEF COMMUNICATION

Pollination and Nucellus in *Abelmoschus esculentus*

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Abstract. Pollination induced dissolution of nucellar cells at the micropylar end forming a passage for pollen tube entry even when the pollen tubes are in the stylar region.

Pollination is known to have profound influence on the ovarian tissues even though the fertilization has not taken place (MAHESHWARI and RANGASWAMY 1965). It may lead to parthenocarpic development of the fruits. In recent years investigations have been directed to investigate the causes of pollen tube growth all the way down from the stigma to the embryo sac. This has been attributed to the chemotropic effect exerted by the embryo sac (STEFFEN 1963). During investigations of pollen tube growth in pistil of *Abelmoschus esculentus* we came across a phenomenon which may throw some light on the above problem.

Seeds of *Abelmoschus esculentus* cv. 'Pusa Sawani' were obtained from Plant Introduction Division, Indian Agricultural Research Institute, New Delhi. They were sown in the experimental Botanical Garden of the University of Delhi. Pollen tube growth was studied in pistils, which were first emasculated and then pollinated on the subsequent day, by usual embryological techniques (JOHANSEN 1940). Microtome sections were stained with safranin-haematoxylin combination.

Prior to the pollen tube entry into the ovule, there is dissolution of nucellar cells in the micropylar region forming a passage in many ovules (Fig. 1C) (observation in ovules of about 50 pistils). The contents of the nucellar cells can be seen in the passage formed. The dissolution of nucellar cells may start even when the pollen tube is in the style (Fig. 1A—C). However, a few ovules show no dissolution of nucellar cells even when the pollen tube is seen in the vicinity of the ovule. Dissolution of nucellar cells was not observed in ovules of unpollinated carpels.

STEFFEN (1963) writes that "It is often thought that a chemotropic substance is secreted by the filiform apparatus of the synergids", but many

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developmental data speak against chemotropic effects of synergids. Present observations in *Abelmoschus* and those in *Gossypium hirsutum* (JENSEN 1969) give another clue that ovules probably may be involved in attraction of pollen tubes. In both these plants it was noted that nucellar cells in many of the ovules break down and form a passage even when the pollen tubes are still in the stylar region. It is, however, yet to be analysed whether this dissolution of nucellar cells speaks anything about chemotropic factor to attract the pollen tubes, or the readiness of the ovules to receive the latter if they happen to be in their vicinity, or a physiological phenomenon unrelated to pollen tube attraction.

It deserves investigation whether this phenomenon is restricted to only these two members of *Malvaceae* or to all members of *Malvaceae* or is of wide occurrence in angiosperms.

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Figures see at the end of the issue.

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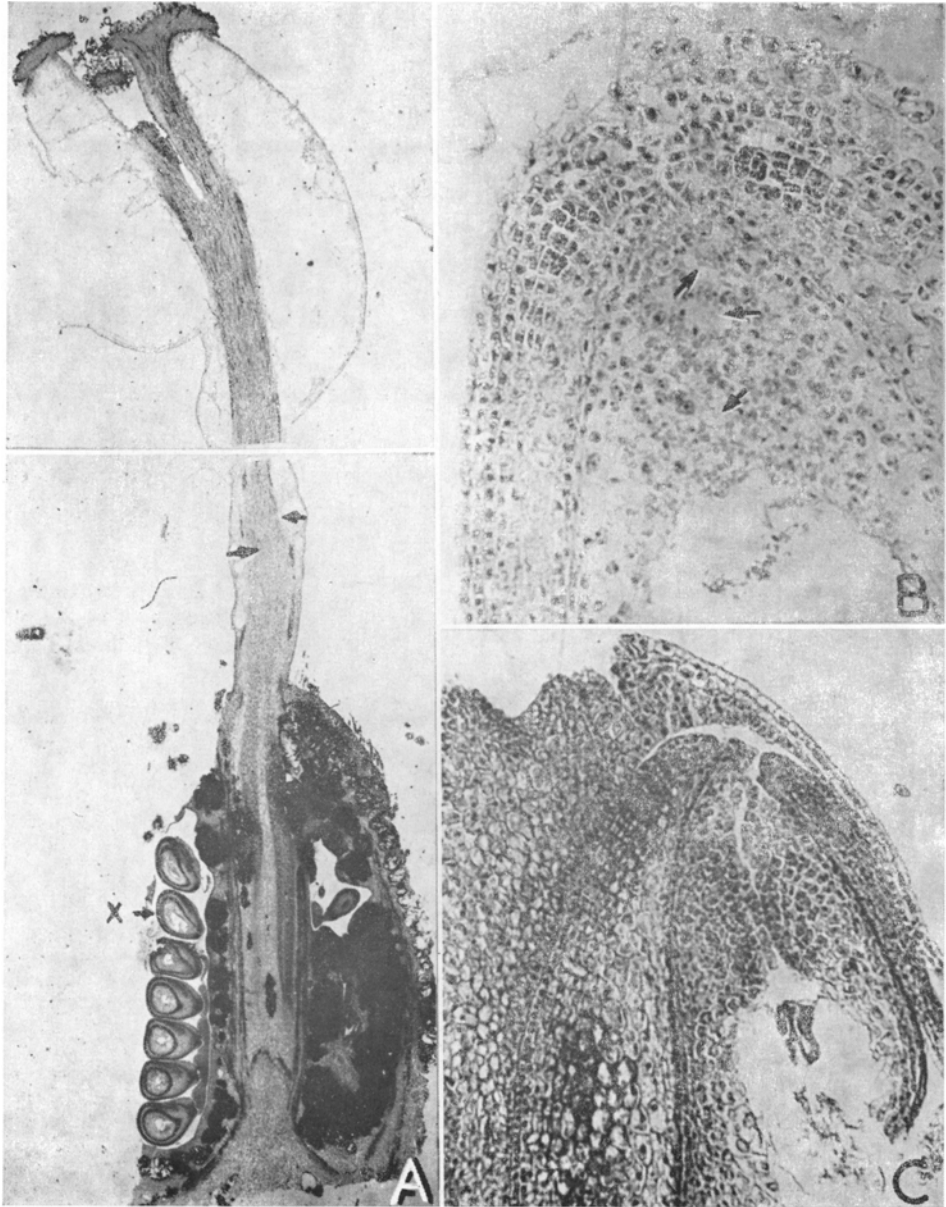


Fig. 1. Dissolution of nucellar cells prior to pollen tube entry into the ovule. *A.* L. s. pistil showing extent of pollen tube growth in style indicated by arrows (two exposures combined. Magn. $7\times$. *B.* Enlarged micropylar portion of ovule in *A* (marked x) showing beginning of dissolution of nucellar cells. Magn. $200\times$. *C.* L. s. ovule showing formation of passage in nucellus. Magn. $176\times$.