

FEMALE FERTILITY IN RAPESEED

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In the tested rapeseed (*Brassica napus* L. subs. *oleifera* Del.) cultivars, it was found that approximately 70% of the ovules develop into seeds. This incomplete seed set might be due to a suboptimal fertilisation process.

In previous studies (Pechan, 1988; Boutier et al, 1992), it was shown that rapeseed ovaries have an average of 31 ovules, 16% of which are not fertilised. The suboptimal fertilisation was not due to lack of pollen tubes, because, near the unfertilised ovules, pollen tubes were present on the placenta and the funicle. These data were found both under field conditions and after manual pollination at anthesis in the greenhouse. Further analysis showed the existence of a non-simultaneous embryo sac maturation in the ovules along the ovary. This non-synchronous maturation pattern might be responsible for the suboptimal percentage of the seed set.

The aim of this study was to analyze the cytological and physiological background of this phenomena. Therefore, three different cultivars of rapeseed were used: "Ceres", a winter sown variety that we mainly grow for field tests and two spring varieties "Drakkar" and "Tanto", employed for greenhouse experiments.

We examined how the seed setting was affected by different ways of pollination. After different schedules in pollination we analyzed the penetration of the pollen tube into the ovules, using a Scanning Electron Microscope.

Both repeated pollinations at anthesis (ANT) plus one day after (1DAA), and a single pollination one day after anthesis (1DAA) resulted in a reduction of the number of unpenetrated ovules (6.5%).

Accordingly, we could conclude that the seed set under field conditions could be optimised by a prolonged pollination for several days, which might be achieved with an extended attraction of the flower for the pollinators, i.e. a breeders selection (among other criteria) on flower colour, aroma and nectar production.

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