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STUDIES ON THE CYTOLOGY OF MELILOTUS ALBA

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(*Abstract*)

There are two varieties of *Melilotus alba* (Desr.), namely, the annual and the biennial. Rogers [1] made some observations on the anatomy and cytology of the biennial variety. The present paper covers the cytology of the annual variety.

The anther in cross section shows an average number of six pollen mother cells in each lobe. Chromatin is scattered through the nucleus and one large nucleolus is evident. Chromatin becomes aggregated close to the nuclear membrane and then condenses in a mass at one side of the nucleus, the nucleolus remaining distinct. The chromatin now forms a winding spireme and the nucleolus begins to disappear. In the prophase, eight chromatin masses are formed and a portion of the nucleolus is sometimes seen at this stage. The metaphase shows eight pairs of chromosomes. Eight chromosomes are in each nucleus at the organization of the two nuclei. Second division now takes place. Eight chromosomes were counted in each of the four nuclei. Pollen mother cell now becomes four lobed. Eventually four microspores are formed by cleavage, furrows beginning at the exterior of the pollen mother cell, and extending to the center. At this stage a mucilage-like secretion is evident around each microspore. The four microspores are also surrounded by another mucilage-like substance of different consistency. Each microspore develops into a pollen grain which in section shows three pores.

In material which was regarded as hybrid between the annual and biennial varieties, two kinds of pollen grains were found, namely, normal ones and others which were three or four times as large as the normal. The occurrence of an annual and a biennial variety is evidently associated with these two kinds of pollen grains.

The formation of the pollen grains from the pollen mother cells in the annual variety corresponds with their formation in the variety as reported by Rogers. [1]

[1] Rogers, W. E., Notes on *Melilotus alba*: Proc. Ia. Acad. Sci., 24, 1917.

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