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REPRODUCTIVE ABILITY OF PLUM (*Prunus domestica* L.) POLLEN STORED AT LOW TEMPERATURES

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Breeding programmes often require the necessity for longer pollen storage, whether asynchronous flowering of parental pairs exists (especially if early-flowering genotypes are pollinated with late-flowering), or if there is a temporal, geographical or spatial distance. The objective of this study was to assessed pollen vitality in vitro and in vivo in three plum cultivars ('Čačanka Lepotica', 'Valjevka' and 'Valerija') after one year of storage at +4°C and sub-freezing temperatures (-20°C, -80°C and -196°C). Pollen viability in vitro was determined on germination medium and by staining with fluorescein-diacetate. For in vivo vitality assay, stored pollen was used for pollination of emasculated flowers of 'Čačanka Lepotica'. Parameters of pollen tubes growth was determined on 3th, 6th and 10th day after pollination. In all cultivars, the lowest rate of pollen viability was observed for that stored at +4°C. Pollen stored at sub-freezing temperatures showed relatively high viability that was reduced from 8.85 to 47.15% in comparison with fresh pollen. Generaly, in vitro germination test showed lower pollen viability compared to fluorescein-diacetate staining method. Pollen viability under in vivo conditions, corellated with the those obtained under in vitro conditions. The growth of pollen tubes, from pollen stored at +4°C, or was absent or it ended mainly in the upper parts of the style. For pollen stored at sub-freezing temperatures, pollen tubes penetrated into the nucelus on the 6th day after pollination in all cultivars. The best dynamic of pollen tube growth of 'Čačanska Lepotica' and 'Valerija' was observed with pollen stored at -80°C, while in 'Valjevka' with that stored at -196°C.

Keywords: *Prunus domestica* L., pollen storage, pollen gernination in vitro, pollen germination in vivo.