UDC: 634.51:632.35 DOI: https://doi.org/10.53040/ppap2026.114

# IMPACT OF BACTERIOSIS WITHIN POLLINATION PROCESS ON FRUIT SET OF WALNUT (*Juglans regia* L.)

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**Purpose.** The role of anemophily in the walnut (*Juglans regia* L.) pollination process eventually involving a bacterial blight (*Xanthomonas campestris* pv. *Juglandis*) infected tree there is discussed.

**Materials and methods** In order to control the potential manifestation of bacterial blight during anemophilous pollination process, experimental investigations were conducted on all dichogamous types: protandous, protoginous and homogamous ones. The experiments were conducted according approved methodologies in fruit tree breeding on a collection of over 300 walnut genotypes (local and introduced varieties and hybrids), as well as in the frame temporary testation within industrial orchards, where the pollen remains present for over 4 weeks.

**Results**. The pollen collected from these varieties during the massive anemophilous spread towards the female flowers, as well as the flowers subjected to free pollination, proved to be infected exclusively by. *Xanthomonas campestris* after testation at the level of 97-99%, Female (pistillate) flowers from the open pollination of dichogamous varieties (Skinosskii și Chișinevskii, etc,) dropped off 3-5 days after pollination. Practically, only a few remained on an upward trend (1-2%), which have developed necrotic symptoms on the outer surface of the already set fruit. In most pistillate flowers, however, browning and complete drying of the stigmas were observed. The sudden cessation in the development of the ovule, of all elements of the embryo sac, the integument, and all carpel tissues, followed by their shedding within 7-12 days. In the case of isolating flowers with special isolators that do not allow pollen to penetrate through the insulating material, The American Hartley variety proved to be the most susceptible, followed by Lara, Tiszacsecsi, and Milotay. Less sensitive were Chandler, Fernor, and Fernette. It should be emphasized that the latter flowering varieties (protandrous), when cultivated experimentally on a temporary basis in various fruit-growing regions of our country, have demonstrated a compara-

tively late blooming of female (pistillate) flowers, at a time when there are no longer any (or very few!) pollen catkins. Thus, minimal conditions for presence of pollen are created for reduction the contact with pollen possibly infected with *Xanthomonas campestris pv. Juglandis* and consequently, inevitable possibilities for the manifestation of bacterial blight development on female flowers, juvenile leaves, etc. Thus, the effect of pollen dispersion (accidentally infected with bacterial blight), driven by anemophily, represents a real process of infecting the female (pistillate) flowers. Their abortion takes place in 7-12 days, depending on the microclimatic conditions. The permanent manifestation of bacterial blight (year after year) during the flowering-pollination period (late April, and especially the first decade of May—the period typical for protandrous varieties, usually promoted intensively in this regard) is very effectively favored by the presence of humidity during that period, being usual local microclimatic condition.

**Conclusions**. When planting new walnut orchards, it is important to consider not only the economic and commercial aspect, but also the susceptibility of the selected varieties to bacterial blight, as it is a disease that can drastically reduce the crop yield. In all cases, protandrous varieties, late flowering period of pistillate flowers and the minimal percentage of pollinators ((2—4) there are obligatory.

**Keywords**: walnut, dichogamy, anemophily, bacterial blight, fructification,

**Acknowledgments.** Study was supported by the research project: 200101 „Development of fruit, grapevine, and vegetable varieties and clones; refinement of agrotechnical cultivation methods; and development of technologies for producing wines from local grape varieties and state-of-the-art food products" 2024-2027, funded by Republic of Moldova.