The role of Phytophthora species in the decline of black walnut stands

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Although black walnut *(Juglans nigra L.)* is not a native species in Hungary, it plays an important economical role. Among its pathogens, there are some *Phytophthora* species, which can cause the death of older black walnut trees even by adequate site and growth conditions. According to the previous studies of our Institute, the most common *Phytophthora* species in the rhizosphere soil of dying black walnut trees are *Phytophthora cactorum* (*LEBERT & COHN*) *SCHRÖT. 1886* and *Phytophthora plurivora (JUNG & BURGESS 2009)* in Hungarian stands. The pathogenicity of these species to young black walnut trees was previously confirmed.

In June 2011 we investigated the health condition of two black walnut stands in West-Transdanubium, Hungary. The first stand is near Kapuvár, on a drained floodplain. The second stand is near Sárvár, on the floodplain of the river Rába. In both stands, single trees or groups of trees showed the following, specific symptoms: their crown was sparse with dead branches; the leaves were smaller as usual, often with yellowish discolouration. On some trees in the first stand, we have also found bark necrosis. During the examination, we have investigated the crown and the stem of the trees. The observed symptoms were evaluated with a four-point scale for each type of symptom. After that, we took soil samples from the rhizosphere of the trees. Altogether 30 trees with different health condition have been assessed (20 from the first stand, 10 from the second stand).

We have isolated *Phytophthora* species from the soil samples on selective agar media, using the leaf baiting method with *Rhododendron* and *Prunus laurocerasus* leaves as baits. The isolates were identified by sequencing the ITS 1 and ITS 2 region of their rDNA. Their morphological and physiological features were examined on carrot slice agar. From the first stand, 16 soil samples were infected with *Phytophthora*. 2 species were found: *Phytophthora cactorum* (9 isolates from 16), and *Phytophthora plurivora* (7 isolates from 16). From the second stand, 9 samples proved to be infected. There were 2 species: *P. plurivora* (7 isolates from 10) and *Phytophthora polonica (BELBAHRI et al. 2006;* 2 isolates from 10).

Our aim is to keep tabs on the condition of the infected stands, and to keep the necessary phytosanitary instructions to avoid the spread of the infection into the surrounding healthy stands.

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