JOURNAL OF FOREST SCIENCE, *51*, 2005 (6): 256–258

New finds of *Cryphonectria parasitica* and the first record of chestnut blight on red oak *Quercus rubra* L. in the Czech Republic

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ABSTRACT: The causal agent of the chestnut blight, the fungus *Cryphonectria parasitica* (Murrill) M. E. Barr (syn. *Endothia parasitica* (Murrill) P. J. Anderson et H. W. Anderson), was found out at new localities in the Czech Republic. The chestnut blight was observed for the first time in the Czech Republic in 2002. Two new localities were discovered in southern Moravia in May and June 2004. The disease was identified both on the sweet chestnut (*Castanea sativa* Mill.) and on the red oak (*Quercus rubra* L.). Infected trees were treated according to the order of the State Phytosanitary Administration of the Czech Republic.

Keywords: chestnut blight; *Cryphonectria parasitica*; sweet chestnut; *Castanea sativa*; red oak; *Quercus rubra*; quarantine pest

The causal agent of the chestnut blight *Cryphonectria parasitica* (Murrill) M.E. Barr (syn. *Endothia parasitica* (Murrill) P.J. Anderson et H.W. Anderson) is a quarantine pest according to EPPO (European Plant Protection Organization). The disease was introduced from Asia to N. America in about 1902 and afterwards to W. Europe in 1925 (Anonymous 1950 in Juhásová 1999). However, it was recorded in the European sweet chestnut in the area of the Caucasus as early as in 1880 (Pridnya et al. 1996). In the area of former Czechoslovakia, chestnut blight was found in Slovakia, Prašice-Duchonka locality, Topoľčany District in 1976 (Juhásová 1990, 1991 in Juhásová 1999).

The chestnut blight was detected for the first time in the Czech Republic in 2002 (Jankovský et al. 2003, 2004) as a result of monitoring the distribution of sweet chestnut in the Czech Republic (Haltofová, Jankovský 2003).

The aim of the paper is to provide some new information about the chestnut blight distribution in the Czech Republic.

MATERIAL AND METHODS

The distribution and health condition of *Castanea sativa* Mill. were monitored from 2001 to October 2004. Information on the occurrence of *Castanea sativa* Mill. was obtained in 320 localities. Different plantings older than 20 years distributed in urban areas or in woodlands were included. The tree position was surveyed using GPS for further processing in GIS. The pathogen was identified on the basis of outer symptoms, fruit bodies, mycelial fans, and *in vitro* morphology.

Voucher specimens are deposited in the herbarium of the Department of Forest Protection and Game Management, Faculty of Forestry and Wood

Supported by the University Development Fund of the Czech Republic, Project No. 4FR237.

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RESULTS

Health conditions of sweet chestnut were monitored methodically in 282 macro-localities in the CR till October 2004. Together with trees in forest stands, the number of all assessed trees can be estimated to be higher than 1,000.

In the Czech Republic, *Cryphonectria parasitica* was observed for the first time on the sweet chestnut in the town of Uherský Brod (Jankovský et al. 2003, 2004). The infected tree was imported as a two-year-old seedling from Bratislava (Slovakia) in 1976. Locality: Uherský Brod (eastern Moravia), Za Humny street, co-ordinates: 49°01´33´´N, 17°39´11´´E, in a private garden; 27-year-old tree; height 5 m, girth 95 cm (measured at the ground), date of the find: 19 July 2002, rev. 16 October 2002, leg. Haltofová, det. Haltofová, Jankovský, Palovčíková, rev. Juhásová.

Two new localities in southern Moravia were recorded in May and June 2004. *C. parasitica* was recorded on two individuals of sweet chestnut in Kuřim near Brno. These trees were planted in 1975. The origin of the trees is unclear. Locality: Kuřim, Pod Horou street, co-ordinates: 49°18´31´´N, 16°32´15´´E, public garden; 29-year-old tree; height 7.5 m, girth 54, 48, 25 and 60 cm (tree with four stems, individually measured at 1.3 m), date of the find: 27 May 2004, leg. Haltofová, det. Haltofová, Jankovský, Palovčíková.

The extensive distribution of *C. parasitica* was recorded in a nursery in Moravský Písek. The fungus was found on many trees of sweet chestnut (*Castanea sativa* Mill.) and also on several trees of red oak (*Quercus rubra* L.) planted in windbreaks. The trees were about 30 years old. The origin of the infection is not clear and the importation with nuts is not assumed. Locality: Moravský Písek, forest nursery, co-ordinates: 49°00´07´´N, 17°19´34´´E; trees in windbreaks, host trees: *Castanea sativa, Quercus rubra,* date of the find: 7 June 2004, det. Haltofová, Jankovský, Palovčíková. This is the first record of *C. parasitica* on oaks in the Czech Republic.

All infected trees of sweet chestnut and also red oaks in the Moravský Písek locality were felled and removed according to the decision of State Phytosanitary Administration. The stump grubbing was imposed as well as an acquisition for pest eradication in all localities.

DISCUSSION AND CONCLUSIONS

The presented findings of *Cryphonectria parasitica* are the very first documented records of this pathogenic fungus in the territory of the Czech Republic. It is necessary to emphasize that so far there have been only three cases in more than 282 localities visited and more than 1,000 trees checked. However, new occurrence cannot be excluded because chestnut trees imported from abroad can represent new sources of infection. The occurrence of *Cryphonectria parasitica* in the nursery near Moravský Písek in southern Moravia poses a great threat to the area of the CR. Specimens of red oak (*Quercus rubra*) were also identified as hosts there. Considerable amounts of the planting stock of the chestnut and oak were already exported from this nursery. It is possible that chestnut blight was distributed together with the plants from this nursery in the past before our research; only trees older than 20 years were monitored.

Owing to the patchy character of the chestnut blight distribution in the CR the probability of a rapid spread and of potential economic damage is minimal. However, according to the scenarios connected with global climate changes it is necessary to consider potential disturbances of natural geographical barriers preventing the spread of some diseases and, therefore, further progress of the chestnut blight northwards cannot be eliminated.

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Received for publication December 13, 2004
Accepted after corrections February 3, 2005

Nové nálezy rakoviny kůry kaštanovníku *Cryphonectria parasitica* a její první nález na dubu červeném *Quercus rubra* L. v České republice

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ABSTRAKT: Původce rakoviny kůry kaštanovníku *Cryphonectria parasitica* (Murrill) M.E. Barr (syn. *Endothia parasitica* (Murrill) P.J. Anderson et H.W. Anderson) byl zjištěn na nových lokalitách v České republice. První nález pochází z roku 2002. Další dvě lokality byly zaznamenány na jižní Moravě v květnu a červnu 2004. Rakovina kůry kaštanovníku byla vedle kaštanovníku rovněž potvrzena na dubu červeném *Quercus rubra* L. Infikované stromy byly asanovány na základě mimořádného rostlinolékařského opatření Státní rostlinolékařské správy ČR.

Klíčová slova: rakovina kůry kaštanovníku; *Cryphonectria parasitica*; kaštanovník jedlý; *Castanea sativa*; dub červený; *Quercus rubra*; karanténní choroby

Od roku 2001 je postupně monitorován výskyt kaštanovníku jedlého *Castanea sativa* a jeho zdravotní stav na celém území České republiky (Haltofová, Jankovský 2003; Jankovský et al. 2003). Hlavním cílem je zjištění současného rozšíření rakoviny kůry kaštanovníku *Cryphonectria parasitica* v České republice.

V České republice byla rakovina kůry kaštanovníku poprvé zaznamenána v roce 2002 v Uherském Brodě (Jankovský et al. 2003). Infikovaný kaštanovník byl dovezen ze Slovenska, konkrétně z Bratislavy v roce 1976 jako dvouletá sazenice. Stáří stromu je asi 30 let. Šlo o izolovaného jedince a možnost přenosu choroby na jiné jedince byla minimální.

V květnu 2004 byl zaznamenán výskyt rakoviny kůry kaštanovníku v Kuřimi (Brno-venkov) na stromku vysazeném v roce 1975. Jde o izolovanou výsadbu, nikde v těsné blízkosti se kaštanovník jedlý nevyskytuje.

V červnu 2004 byl na vzorcích z Moravského Písku (okres Hodonín) zaznamenán výskyt *Cryphonectria parasitica* na kaštanovnících ve větrolamech. V rámci dalšího šetření byla tato choroba potvrzena také na dubu červeném *Quercus rubra* L. Velké množství kaštanovníků na této lokalitě ji zcela odlišuje od předchozích dvou nálezů, kdy šlo o izolované jedince. Kaštanovníky podle sdělení v místě pocházejí z kaštanů, které zůstaly jako přebytek jednoho z dovozů počátkem 70. let 20. století.

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