

Picea pungens Engelm. – a new host of *Dothistroma* needle blight *Mycosphaerella pini* E. Rostrup detected in the Czech Republic

L. JANKOVSKÝ, D. PALOVČÍKOVÁ, M. BEDNÁŘOVÁ

Faculty of Forestry and Wood Technology, Mendel University of Agriculture and Forestry, Brno, Czech Republic

ABSTRACT: *Dothistroma* needle blight *Mycosphaerella pini* is an important pathogen of pine needles. In addition to different species of pine, *M. pini* was found in blue spruce *Picea pungens* in the proximity of infected *Pinus nigra* in the region of southern Moravia about 20 km SE of Brno.

Keywords: *Dothistroma* needle blight; *Mycosphaerella pini*; *Picea pungens*; quarantine pests

Dothistroma needle blight *Mycosphaerella pini* E. Rostrup [syn. *Scirrhia pini* Funk et A.K. Parker, *Eruptio pini* (Rostr. apud Munk) M.E. Barr, anamorph *Dothistroma septospora* (G. Doroguine) Morelet, syn. *Dothistroma pini* Hulbary, *Cytosporina septospora* G. Doroguine] is an important quarantine pathogen of pine. It is known from both tropical and subtropical regions. It spreads even to cold regions of the northern temperate zone. Virtually all species of pine are affected. Some other species of conifers were also reported as hosts – *Pseudotsuga menziesii* (Mirb.) Franco, *Picea omorica* (Pančič) Purkyně (KARADŽIĆ 1994), *Picea abies* (L.) Karst. (LANG 1987).

In the Czech Republic, *Dothistroma* needle blight was detected for the first time in 1999 on Austrian pine imported from Hungary in the same year. In plantings carried out in the open, *Dothistroma* needle blight was first observed in May 2000 in a plantation of Christmas trees of *Pinus nigra* Arnold near Jedovnice about 30 km north of Brno (JANKOVSKÝ et al. 2000). At that time, the blight was already known from a number of European countries including Austria (PETRAK 1961), Slovenia (MACEK 1975), Germany (BUTIN, RICHTER 1983) and Poland (KOWALSKI, JANKOWIAK 1998), where it was found in May 1990, Slovakia (KUNCA, FOFFOVÁ 2000) and Hungary (KOLTAY 1997).

In a relatively short time, *Dothistroma* needle blight was detected in more than 50 localities in the Czech Republic (CR). Introduced *Pinus nigra* at the age of 5–20 years is most affected in the CR. On the other hand, *M. pini* was observed only sporadically in the autochthonous Scots pine *P. sylvestris* L. In total, it was found on 10 species of pine (JANKOVSKÝ et al. unpubl.) in the CR. In the neigh-

bouring Germany, *M. pini* was noticed on 16 species of pine (LANG, KARADŽIĆ 1987).

MATERIAL AND METHODS

Within the *M. pini* monitoring samples of pine or other conifer needles were studied that were taken in places with a suspicion of the occurrence of *Mycosphaerella pini*. *M. pini* was detected from the occurrence of external symptoms of infection and according to the morphology of fructification organs.

The documented material is deposited in the herbarium of the Department of Forest Protection, Faculty of Forestry and Wood Technology, Mendel University of Agriculture and Forestry Brno (BRNL).

RESULTS AND DISCUSSION

Within the monitoring of the occurrence of *M. pini* in the CR, *M. pini* was detected in blue spruce *Picea pungens* Engelm. The locality is situated on the Knížecí les pheasantry in Židlochovice, about 20 km SE of Brno (Southern Moravia). The infected spruce is about 25 years old. On needles, typical symptoms were noticed such as red strips with developed acervuli and articulate conidia. The conidia are hyaline, 14–28 × 2.5–3 µm in size with 2–4 septae.

In the proximity, *Pinus nigra* trees are infected. They can be considered to be the source of infection. Effects of unsuitable climatic conditions, particularly high temperatures together with extreme short-term droughts, are an important predisposition factor in the locality at an altitude of 250 m.

Supported by Ministry of Education, Youth and Sports of the Czech Republic, Project No. MSM 434100005 and Ministry of Agriculture, State Phytosanitary Service.

KARADŽIĆ (1994) reported the occurrence of *Dothistroma* needle blight in spruce *Picea omorica* and Douglas fir *Pseudotsuga menziesii* in the region of Serbia. As for Norway spruce *Picea excelsa*, *M. pini* was detected in 6-year-old plants in Bavaria (LANG 1987).

CONCLUSION

Dothistroma needle blight is the most important forest quarantine disease spreading in the Czech Republic. The present spectrum of hosts includes virtually all species of pine. The described infection of *Picea pungens* appears to be the result of high infection pressure in the proximity of an affected tree in combination with unsuitable site conditions. The infection of blue spruce *Picea pungens* by *Dothistroma* needle blight is an exception and, for the present, it is not a case of mass adaptation to a new species.

References

BUTIN H., RICHTER J., 1983. *Dothistroma* – Nadelbraune, eine neue Kiefernkrankheit in der Bundesrepublik Deutschland. Nachr. Bl. Dtsch. Pfl.-Schutzdienst, 35 (9): 129–131.

JANKOVSKÝ L., ŠINDELKOVÁ M., PALOVČÍKOVÁ D., 2000. Karanténní sypavky *Mycosphaerella pini* a *M. dearnessii*. Lesn. Práce, 79: 370–372.

KARADŽIĆ D.M., 1994. *Picea omorica* – a new host of *Dothistroma septospora*. Eur. J. For. Path., 24 (5): 300–303.

KOLTAY A., 1997. New pathogens in Hungarian black pine stands. Novenyvedelem, 33 (7): 339–341.

KOWALSKI T., JANKOWIAK R., 1998. First record of *Dothistroma septospora* (Dorog.) Morelet in Poland: a contribution to the symptomatology and epidemiology. Phyt. Pol., 16: 15–29.

KUNCA A., FOFFOVÁ E., 2000. Ohrozenie porastov borovice čiernej fyto karanténnym patogénom *Dothistroma septospora* (Dorog.) Morelet. In: VARÍNSKY J. (ed.), Aktuálne problémy v ochrane lesa 2000. Zbor. Zvolen, LVÚ: 136–139.

LANG K.J., 1987. *Dothistroma pini* an jungen Fichten (*Picea abies*). Eur. Jour. For. Path., 17 (4–5): 316–317.

LANG K.J., KARADŽIĆ D., 1987. *Dothistroma pini* – eine Gefahr für *Pinus sylvestris*? Forstwis. Zbl., 106 (1): 45–50.

MACEK J., 1975. *Scirrhia pini*, the pathogen of a new disease of pine in Slovenia. Gozd. Vestnik, 33 (1): 9–11.

PETRAK F., 1961. Die Lecanostica Krankheit der Föhren in Österreich. Sydowia, 15: 252–256.

Received for publication September 15, 2003
Accepted after corrections December 23, 2003

Picea pungens Engelm. – nový hostitel červené sypavky *Mycosphaerella pini* E. Rostrup

L. JANKOVSKÝ, D. PALOVČÍKOVÁ, M. BEDNÁŘOVÁ

Lesnická a dřevařská fakulta, Mendelova zemědělská a lesnická univerzita, Brno, Česká republika

ABSTRAKT: Červená sypavka *Mycosphaerella pini* je významným patogenem jehlic borovic. Kromě borovic byla v České republice *M. pini* zjištěna na *Picea pungens* v těsném sousedství infikovaných borovic černých *Pinus nigra* v oblasti jižní Moravy, u města Židlochovice, asi 20 km JV od Brna.

Klíčová slova: červená sypavka; *Mycosphaerella pini*; *Picea pungens*; karanténní choroby

V rámci monitoringu výskytu *Mycosphaerella pini* v České republice byla tato sypavka zaznamenána na smrku pichlavém *Picea pungens*. Lokalita se nachází v bažantnici Knížecí les v Židlochovicích, asi 20 km JV od Brna. Stáří infikovaného smrku je 25 let. Na jehlicích byly pozorovány typické červené pruhy s vyvinutými acervuli a článkovanými konidiemi. Pozorované konidie byly hyalinní, 14–28 × 2,5–3 μm velké, se 2 až 4 přepážkami.

V těsném okolí jsou infikované borovice černé *Pinus nigra*, které je možné považovat za zdroj infekce. Významným predispozičním faktorem na lokalitě v nadmořské

výšce 250 m je působení nevhodných klimatických podmínek, zvláště pak vysoké teploty v kombinaci s extrémními přísušky.

Červená sypavka je lesnicky nejvýznamnější karanténní choroba, která se v České republice šíří. Současné spektrum hostitelů zahrnuje prakticky všechny druhy borovic. Popisovaná infekce smrku pichlavého je výsledkem vysokého infekčního tlaku v okolí infikovaného smrku pichlavého v kombinaci s nevhodnými stanovištními podmínkami. Infekce smrku pichlavého *Picea pungens* červenou sypavkou *Mycosphaerella pini* je výjimkou a prozatím nejde o masovou adaptaci na nový druh.

Corresponding author:

Dr. Ing. LIBOR JANKOVSKÝ, Mendelova zemědělská a lesnická univerzita, Lesnická a dřevařská fakulta, Lesnická 37, 613 00 Brno, Česká republika
tel. + fax: + 420 545 134 116, e-mail: jankov@mendelu.cz