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PESTALOTIOPSIS ASSOCIATED WITH *ERICA* SPP. ORNAMENTAL PLANTS IN NURSERIES NEAR POZNAŃ – INCREASING PROBLEM

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Abstract: Changes in production methods of *Ericaceae* ornamental plants could have caused them to become more vulnerable to weak pathogens. The aim of this study was to investigate the casual agent of Ericaceous plant damage. Plants and peat substrate were collected from two nurseries near Poznań. After isolation on agar medium and fulfilling Koch postulates it was found that the casual agent of *Ericaceae* ornamental plant damage was *Pestalotiopsis sydowiana* (Bresadole) B.C. Sutton, a new species noted in Poland.

Key words: *Pestalotiopsis sydowiana,* Ericaceous oranmental plants

INTRODUCTION

Changes in the production methods of *Ericaceae* ornamental plants have resulted in increasing problems in diseases. Growing in container caused that plants might have become more vulnerable to the attack by pathogens which have previously been considered weak or secondary (Mańka 1998; Łabanowski and Orlikowski 1997; Okane et al. 1998).

During recent years, an increasing number of damaging fungal infections of *Erica* spp. were found on plant samples submitted by growers to the Institute of Plant Protection in Poznań.

Because of increasing problem it is very important to recognise main casual agent of the disease.

MATERIAL AND METHODS

Ericaceous plants were collected from two nurseries near Poznań in the years 2000–2004. We examined stock plants, cuttings and potted plants. Plant material with visible symptoms or symptomless plants were collected. Fragments (5 mm long) of tissue were cut and surface sterilised with 5% sodium hypochloride (ACE)

for 30 sec. Then fragments were washed under tap water and placed into disinfected paper to remove water from their surface. After surface disinfection plant fragments (5 per dish) were placed on PDA (Difco, pH 6.5) and incubated at 25°C.

Samples of unused (clean peat) and substrate used for plant growing were also collected from mentioned nurseries. Samples were air-dried and water suspension of 1g of peat in 100 ml of sterilised deionised water prepared. From that suspension 1; 0.1 and 0,01 ml was transferred to a Petri dish. Melted PDA (45°C), was poured over suspension and dishes gently stirred and left to solidify.

Plates were incubated at 25°C. After 5 days hyphal tips of growing mycelia were transferred to slides covered with PDA medium.

Identification of fungi was carried out after 14 to 21 days of incubation. Identification based on morphological characteristics of mycelium and conidia was performed according to Mańka (1998), Hopkins and McQuilen (2000), Mc Quilen and Hopkins (2001), Coyier et al. (1987), Domsh et al. (1980).

Chosen fungal isolates were investigated for pathogenicity in inoculation test. Young potted *Erica* sp. plants while dusting them with carborundum powder become slihgtly wounded. Then spore suspension (3×10^6 spores in 1 ml) was sprayed on one 15 cm high plant. Inoculated plants were covered with plastic bags and maintained in the greenhouse. Once a week plants were examined for the presence of disease symptoms. To confirm and fulfill Koch's postulates reisolation was performed from plant fragments with symptoms.

RESULTS

A serious damage was noted on cuttings, potted plants and stock plants. On *Erica* spp. the symptoms were necrosis and death of the foliage (Fig. 1) On *Pieris* and *Rhododendron* were observed brown spots and defoliation (Fig. 2) Sometimes rotting of roots and stem base was occurred. Disease reduced plant quality or caused plant losses. From ericaceous plants were collected mainly isolates of *Pestalotiopsis* spp. (Tab. 1). Isolates were also obtained from symptomless plant fragments. Number of isolations frequency was very high. From one plate where 5 fragments of plant tissue were placed 1 to 5 isolates of *Pestalotiopsis* sp. were obtained. Fungal cultures were isolated from used substrate and from unused peat with bark (Tab.

Table 1. Origin and incidence of *Pestalotiospis* spp. isolates

No.	Host	Plant part	Incidence of *Pestalotiopsis*	
			on plant fragments with symptoms	on symptomless plant fragments
1	*Erica* sp.	Foliage	+	+
2	*Erica* sp.	Foliage	+	+
3	*Erica* sp.	Stem base	+	–
4	*Erica* sp.	Roots	+	+
5	*Erica* sp.	Roots	+	+
6	*Rhododendron* sp.	Foliage	+	–
7	*Rhododendron* sp.	Stem base	+	+
8	*Rhododendron* sp.	Roots	+	+
9	*Pieris* sp.	Foliage	+	+

Fig. 1. *Erica* sp. with disease symptoms

2). Isolates of *Pestalotiopsis* sp. could be clearly separated from other cultures by their morphology. Surface of cultures in Petri dish with medium was pale buff and their reverse pale buff or pale luteous. Acervuli were produced rapidly after 14 to 21 days of incubation at 25°C. Acervuli were black or dark brown, rather abundant and scattered over the surface of mycelium.

All isolates had 5-celled conidia with hyaline apical and basal cells. Cells in the middle were brown or light brown. Conidia had 1 to 5 apical appendages. Morphology of conidia of obtained isolates was very similar to *Pestalotiopsis funerea* (Desm.) Steyaert. After measurement of conidial length and width all cultures were identified as *Pestalotiopsis sydowiana* (Bresadole) B.C. Sutton (syn. Pestalotia rhododendri Gruba nan Westland (Common Names of Plant Diseases 2004; CABI Bioscience Database 2004) (Tab. 3, Fig. 3).

Table 2. Samples of peat and substrate

No.	Peat	Origin	Incidence of Pestalotiopsis
1	Peat 1	Łotwa	–
2	Peat 2	Chlebowo Polska	–
3	Peat 3	Unused substrate (peat + bark)	+
4	Peat 4	Used substrate from diseased Rhododendron	+
5	Peat 5	Used substrate from diseased Erica	+

In inoculation test were used 2 isolates obtained from *Erica* plants and one from used peat. Eight weeks after inoculation first symptoms were observed. *P. sydowiana* was recognised as casual disease agent.

Fig. 2. *Rhododendron* sp. with disease symptoms

Table 3. Characteristics of conidia of *P. sydowiana* isolates

Isolate no.	Isolate origin	Size of conidia (μm)		Number of apical appendages (range)
		length	width	
1	*Erica* sp.	28.3–30.4	6.0–7.0	2–3
2	*Erica* sp.	22.3–27.4	6.0–6.4	2–4
3	*Erica* sp.	21.9–25.4	6.0–6.4	2–4
4	*Erica* sp.	25.8–30.1	7.0–7.0	2–3
5	*Erica* sp.	21.8–25.4	6.0–6.2	2–3
6	*Rhododendron* sp.	28.1–30.0	6.4–6.8	2–4
7	*Rhododendron* sp.	22.2–21.9	7.0–7.2	2–4
8	*Rhododendron* sp.	23.9–25.4	7.0–7.1	2–4
9	*Pieris* sp.	23.5–27.8	6.4–6.6	2–4
10	Peat 3	22.4–25.8	6.2–6.4	2–3
11	Peat 4	24.5–30.1	6.2–6.3	2–4
12	Peat 5	28.4–31.1	6.8–6.4	2–4

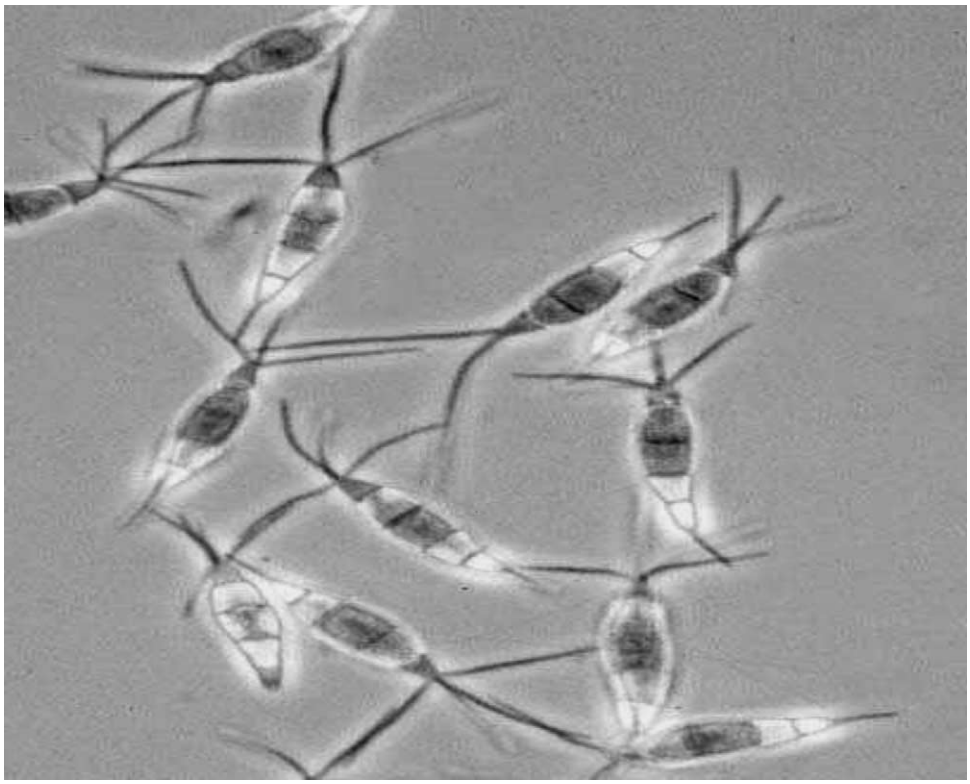

Fig. 3. Spores of *Pestalotiopsis sydowiana* (× 800)

DISCUSSION

Our results suggested that *P. sydowiana* could be a predominant species of *Pestalotiopsis* on ericaceous plants in investigated nurseries and probably in Poland. Species identification and description is probably the first information concerning this fungus as *Erica* sp. pathogen in Poland. In England, Scotland and in France (Hopkins and McQuilken 2000; McQuilken and Hopkins 2001) *P. sydowiana* was also recognised as ericaceous plant disease casual agent.

Isolates were also obtained from symptomless plant fragments.

Pathogen cultures were isolated from used substrate and from unused peat with bark. It is also very important that the fungus could survive in dried substrate or peat. This information probably explained why it is so difficult to eliminate this fungus from nurseries and that peat could be a source of infection.

In conclusion, in this study a new for Poland species of *Pestalotiopsis* was identified and partly sources of infection were determined. Further studies should be carried out to obtain more information about biology and control of this fungus on ericaceous plants.

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POLISH SUMMARY

RODZAJ *PESTALOTIPSIS* WYSTĘPUJĄCY NA OZDOBNYCH ROŚLINACH WRZOSOWATYCH W SZKÓŁKACH PRODUKCYJNYCH W REJONIE POZNANIA – WZRASTAJĄCE ZAGROŻENIE

Zmiany w systemie produkcji ozdobnych roślin wrzosowatych mogły spowodować wzrost znaczenia i szkodliwości słabych patogenów. Dlatego celem badań było określenie sprawców uszkodzeń roślin wrzosowatych. Badane rośliny i substrat torfowy pochodziły z dwóch szkółek znajdujących się w rejonie Poznania. Po przeprowadzeniu izolacji na pożywki agarowe i wypełnieniu postulatów Kocha stwierdzono, że sprawcą uszkodzeń roślin wrzosowatych był gatunek *Pestalotipsis sydowiana* (Bresadole) B.C. Sutton. Gatunek ten jest w Polsce nowym groźnym patogenem roślin wrzosowatych.