

## First report of powdery mildew of Madagascar periwinkle caused by *Erysiphe* sp. in Japan

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In May 2007, powdery mildew of Madagascar periwinkle (*Catharanthus roseus*) was observed on commercially grown plants (cv. Yellow Magic) at Kanagawa prefecture. Usually, the white powdery dusting of the fungus developed on the upper leaf surfaces, but it was also seen on the lower leaf surfaces. Symptoms sometimes included yellow and brown lesions (approximately 3–10 mm in diameter) in association with whitish masses of conidiophores and conidia. For pathogenicity testing, conidia on the leaf surface of diseased plants were collected with a dry brush and transferred to each of five healthy leaves of *C. roseus*. These plants were kept at approximately 23°C and symptoms developed on one of the five leaves after 10 days.

Fungal morphology on the leaves was as follows: hyphae were branched and hyaline, lacking fibrosin bodies; conidiophores arose from the internal hyphae, and were septate, hyaline and cylindrical, 52–77 × 16–18 µm in diameter; conidia were also hyaline and cylindrical, 35–45 × 13–20 µm in diameter, produced singly; and appressoria were of a simple lobed type. These morphological characteristics corresponded to an anamorph stage of the genus *Oidium*, subgenus *Pseudoidium*, which belong to the genus *Erysiphe*.

For more specific identification by DNA analysis, the ITS 1-5-8S rDNA-ITS 2 region was amplified. The sequence (GenBank Accession No. AB355647) was most similar to that of *Erysiphe elevata* (AY587014: 99%). However, *E. elevata* is reported to be a pathogen of Bignoniaceae (Cook *et al.*, 2006). Furthermore, chasmothecia were not observed on

leaves of Madagascar periwinkle, and until a chasmothecium is found, this pathogen will be referred to as *Erysiphe* sp.

Powdery mildews on *C. roseus* have been recorded as *Leveillula taurica* in India and Korea (Amano, 1986; Shin 2000), and *Oidium* sp. in Tanzania and Venezuela (Amano, 1986). The reported powdery mildew of *C. roseus* is not endophytic and the conidiophore does not emerge through the stomata of the host. This feature is obviously different from that of *L. taurica*. This is the first record of powdery mildew caused by the genus *Erysiphe* of Madagascar periwinkle in Japan.

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## Downy mildew of sweet basil (*Ocimum basilicum*) caused by *Peronospora* sp. in Argentina

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In the green belt surrounding Buenos Aires and La Plata cities, Argentina, sweet basil (*Ocimum basilicum*) is grown commercially under greenhouse mainly for fresh consumption. In February 2008, plants showing typical symptoms of downy mildew were found in greenhouses in La Plata. The disease was widespread in the cropped area with 100% prevalence. Infection resulted in chlorotic leaves with a greyish to dark brown fungal-like growth on the lower surfaces. A sample was deposited in the local herbarium (KUS-F23241). Conidiophores were subhyaline, 230–460 × 7–11 µm, straight, monopodially branched, in 4–6 orders, and emergent from stomata. Ultimate branchlets were mostly in pairs, slightly curved, 10–25 (–30) µm long and had subtruncate tips. Conidia were broadly ellipsoidal to subglobose, greyish brown, and measured 24.3–32.5 × 22.5–26.5 µm (length/width ratio = 1.06–1.23). This pathogen is unequivocally in the genus *Peronospora*, and well concordant with characters of the unnamed *Peronospora* species reported in basil (Belbahri *et al.*, 2005).

The amplification and sequencing of the ITS rDNA were performed with procedures outlined by Cooke *et al.* (2000), and the sequence of the region was deposited in GenBank (Accession No. EU622314). Comparison of the sequences available in the GenBank database revealed that the ITS sequence is identical to those of *Peronospora* sp. found on *Ocimum basilicum* (AY831719 ex. Switzerland; AY919301 ex. Italy; and DQ479408 ex. South Africa), but shares three base substitutions with the sequences (EF153666–EF153670) from Iran.

Based on morphological and molecular approaches, the assumed pathogen was identical to the unnamed *Peronospora* species, reported on basil in Italy and Switzerland (Belbahri *et al.*, 2005). Downy mildew of sweet basil has been previously recorded only from Asia (Iran) (Khateri *et al.*, 2007), Africa (South Africa, Tanzania, Uganda) and Europe (France, Italy, Switzerland) (Farr *et al.*, 2008). This is the first record of a downy mildew epidemic on sweet basil in the Americas and suggests that the pathogen is capable of rapid spread into countries outside of Africa, Asia and Europe. Since sweet basil is cultivated on a commercial scale in Argentina, the downy mildew poses a serious threat to production of the herb.

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