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## First Report of *Melampsora euphorbiae* on Poinsettia (*Euphorbia pulcherrima*) in Norway

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*Melampsora euphorbiae* (Schub.) Cast. is reported from all continents but Antarctica. The rust fungus is living on a great number of *Euphorbia* species. In Norway it is found on five *Euphorbia* species (wild growing or cultivated outdoors), including the common weed sun spurge (*E. helioscopia* L.). On this host the fungus is known in the country north to North Trøndelag County. To our knowledge *M. euphorbiae* on poinsettia (*E. pulcherrima* Willd.) has previously been reported only three times, namely in India (2), Tanzania (5), and Mauritius (1). *M. euphorbiae-dulcis* Otth. has been reported on poinsettia in Kenya (4). The fungus is autoecious, but has been found to have three specialized forms (3). None of them are reported on poinsettia. In September 2006, necrotic spots (Fig. 1 and 2) were observed on leaves of poinsettia cv. Cortez White from a greenhouse in Troms County in northern Norway. An examination of the spots revealed that they were caused by *M. euphorbiae*. Uredinia (Fig. 3) and telia (Fig. 4) were present in the material, both on the lower side of the leaves.



Fig. 1. Necrotic spots on the upper surface of a leaf of poinsettia (*Euphorbia pulcherrima* cv. Cortez White) infected with *Melampsora euphorbiae*. Photo by V. Talgø.



Fig. 2. Orange spore masses (urediniospores) of *Melampsora euphorbiae* on the lower surface of a leaf of poinsettia (*Euphorbia pulcherrima* cv. Cortez White). Photo by V. Talgø.

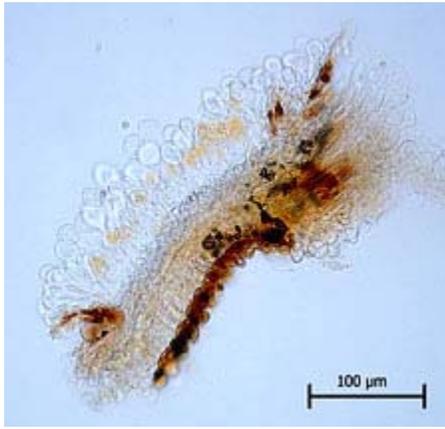


Fig. 3. Uredinia with paraphyses (round heads) and some urediniospores (orange, next to the paraphyses) of *Melampsora euphorbiae* on a cross section of an infected leaf of poinsettia (*Euphorbia pulcherrima* cv. Cortez White). Photo by M. L. Herrero.

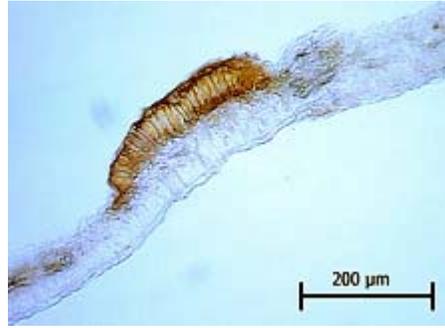


Fig. 4. Telia of *Melampsora euphorbiae* on a cross section of an infected leaf of poinsettia (*Euphorbia pulcherrima* cv. Cortez White). Photo by M. L. Herrero.

In October 2006, symptomatic leaves were collected from poinsettia cvs. Arctic White, Cortez White, and Infinity Red at a greenhouse in North Trøndelag County that was the source of the infected plants in Troms County. Hence, a small survey was carried out in November and December 2006 in other nurseries that had received cuttings from the nursery in North Trøndelag. Positive samples were collected from five additional greenhouse locations. In total, *M. euphorbiae* was recorded on 11 cultivars by mid December 2006; Arctic White, Cortez White, Cortez Red, Infinity Red, Lilo, Malibu Red, Malibu White, Millennium, Prestige, Scandic, and Sonora. Cortez White was by far the most frequently and severely infected cultivar. Probably the initial infection started on this cultivar and therefore more time had been available to build up the infection level. Thus, other cultivars may not be more resistant than Cortez White. *M. euphorbiae* was found on up to 13 leaves per plant on Cortez White. Also some bracts were infected (Fig. 5).



Fig. 5. Yellow-orange urediniospores of *Melampsora euphorbiae* on a bract of poinsettia (*Euphorbia pulcherrima* cv. Cortez White). Photo by V. Talgø.

The pale yellow necrotic spots on the upper surface of the leaves, often surrounded by a dark red margin, were scattered or confluent in small groups and reduced the commercial value of the plants considerably.



Fig. 6. Urediniospores of *Melampsora euphorbiae* from poinsettia (*Euphorbia pulcherrima* cv. Cortez White). Photo by M. L. Herrero.

The uredinia were 0.3 to 0.5 mm in diameter with capitate paraphyses. The heads of the paraphyses were 17.5 to 22.5 µm in diameter and had hyaline walls that were apically thickened up to 6.5 µm. Urediniospores (Fig. 6) were 17.5-21.5 (26.5) × 15.0-19.0 µm, subglobose or ellipsoidal with 1.5 to 2.5 µm thick hyaline and echinulate walls. On fresh material spore contents were yellow-orange.

A small number of subepidermal telial sori forming small, dark gray crusts were found close to the uredinia on a few leaves of Cortez White from three different greenhouse locations.

The one-celled teliospores were 27 to 55 µm long and 13 to 16 µm wide, with pale brown walls 1.0 to 1.5 µm thick, apically thickened to 2.5 µm.

Poinsettia is the biggest flowering potted plant culture in Norway with approximately six million plants produced yearly. Most cuttings are from Norwegian stock plants, but a significant percentage is imported. Thus, it is not known whether the pathogen was introduced on imported cuttings or from infected *Euphorbia* spp. near the greenhouses.

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