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Disease Notes

First Report of *Plasmodiophora brassicae* on Rapeseed in the Grand Duchy of Luxembourg

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Abstract

Rapeseed (*Brassica napus* L.) is the third most important crop after wheat and barley in the Grand Duchy of Luxembourg. Since 2005, clubroot symptoms in this crop have been reported by farmers in the Gutland Region. In February 2009, plants of the hybrid rapeseed cv. Exocet, with stunted growth, yellow leaves, and club-shaped roots, were sampled from a field in Oberkorn village near Differdange. Microscopic observations of the rapeseed root fragments revealed the presence of the three life stages characteristic of *Plasmodiophora brassicae* Woronin. Plasmodia and zoosporangia were observed in the root hairs and resting spores were present in root

galls. Individual spores were 2 to 3 µm in diameter. Total DNA was extracted from the root galls with a FAST DNA Kit (MP Biomedicals, Irvine, CA). The internal transcribed spacer region (ITS) and 5.8S gene of the rDNA region were amplified with ITS5 and ITS4 primers as described by White et al. (2) and part of this region was sequenced. A BLASTn search in GenBank revealed that the sequence closely resembled (98% identity) sequences of *P. brassicae* (Genbank Accession No. EF195335) from an isolate of the pathogen from Switzerland. To confirm the presence of the pathogen, seeds of the susceptible ecotype cvi-0 of *Arabidopsis thaliana* were grown in a soil sample (1 liter) collected near the infected rapeseed plants. After 55 days of growth in a glasshouse at 15 to 20°C, the roots of 11 plants were analyzed. Two showed clear clubroot symptoms and four others exhibited small swellings. The remaining five plants were symptomless, but plasmodia and zoosporangia were found in root hair cells. Clubroot caused by *P. brassicae* has previously been described on *B. napus* and other crucifers (1). To our knowledge, this is the first report of clubroot disease caused by *P. brassicae* in Luxembourg. Because its presence has since been observed in new fields in the Gutland Region and because of the ability of the pathogen to survive for a long period in the soil, this disease could represent a severe threat for cropping of Brassicaceae in Luxembourg and neighboring countries.

References: (1) I. R. Crute et al. Plant Breed. Abstr. 50:91, 1980. (2) T. J. White et al. Page 315 in: PCR Protocols: A Guide to Methods and Applications. M. A. Innis et al., eds. Academic press: San Diego, 1990.

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