

New Sources of Resistance to Downy Mildew in *Brassica napus* ssp. *Oleifera*

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Downy mildew (*Peronospora parasitica* (Pers.) Fr.) is the most frequently recorded disease of winter oilseed rape *Brassica napus* ssp. *oleifera* in the United Kingdom. Some cultivars are very susceptible at the seedling stage, but the disease is not thought to limit yield except, rarely, when seedlings are killed. Consequently, selection and breeding for resistance is not given a high priority at present. By contrast, elsewhere in northern Europe and Asia severe infection can cause regular, significant yield loss. However, the status of downy mildew in much of Europe may change with the recent predictions of climate warming and the possibility of milder, wetter winters in Europe would also be likely to favour downy mildew.

So far, the only reported major gene for resistance to downy mildew in *B.napus* ssp. *oleifera* was identified in the spring rape cultivar Cresor, but this resistance was overcome by two sexual progeny isolates derived from a homothallic isolate of *P. parasitica* at the University of Nottingham, UK.

We have screened a wide range of germplasm (*B. napus* ssp. *oleifera*) collected from sources in the UK, Canada, China, France, Germany and the USA. The screening was carried out, at the cotyledon stage, to four isolates of *P.parasitica*. One of these isolates (obtained from J.A. Lucas, University of Nottingham) was virulent on cv. Cresor. When the germplasm collection was screened for resistance, it was noted that some cultivars showed distinct variation in the level of resistance to downy mildew. However, we have identified two groups of new sources for resistance. The first group includes four genetically uniform genotypes/cultivars and 18 selected lines from different genotypes/cultivars, carrying resistance equivalent to that in Cresor. The second group consists of at least three selected lines from different genotypes/cultivars. These lines were resistant to all four isolates indicating new major gene(s) for resistance different from that expressed in Cresor. Both groups included spring and winter types. Also, new double low winter rape genotypes (low glucosinolate, low erucic acid) are included in the first group. Further work continues on this material to breed truly homozygous lines from the populations to further widen the base of available sources of resistance. The identity of these sources will be published elsewhere.

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