

Report on Blackleg Workshop

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A workshop on blackleg disease was held on the afternoon of 30 September 1999, after the International Rapeseed Congress had concluded. Barbara Howlett (Australia) opened the Workshop by welcoming the participants. More than 75 people from several countries were present, attesting to the importance of blackleg of canola and other Brassicas, which is caused by the fungus *Leptosphaeria maculans*.

The first session, 'Blackleg Around the World', was chaired by Dan Phillips (USA) and Denis Ballinger (Australia). A brief overview of the incidence and severity of blackleg in recent years in respective countries was presented by Martin Barbetti (Australia), Gosia Jedryczka (Poland, Russia, Czech Republic and Slovakia), Annette Penaud (France), Dan Phillips (USA), Jeremy Sweet (UK), Prem Kharbanda (Canada) and Erika Auret (South Africa). Blackleg is found in all countries where canola crops are grown and appears to be increasing in incidence and severity in some countries. A canola industry has been established in South Africa during the last few years (about 26,000 ha sown in 1999) and is based on Australian spring cultivars such as Monty, Rainbow and Karoo. Already several diseases including blackleg are apparent in crops.

The second session, 'Blackleg Disease Resistance', was chaired by Ginette Séguin-Swartz (Canada) and Phil Salisbury (Australia). G. Séguin-Swartz described early resistance responses (browning, callose deposition and lignification) observed in cotyledons of *Brassica* species artificially inoculated with vegetative spores of the blackleg fungus. Darush Struss (Germany), Rheinhold Mayerhofer (Canada), and Anne-Marie-Chèvre (France) reviewed current knowledge on blackleg resistance genes. Several genes have been mapped in the A and B genomes of Brassicas, but none have been cloned as yet and the mechanism of action of these genes remains unclear.

The final session, 'Genetic Diversity of the Blackleg Fungus', was chaired by Gosia Jedryczka (Poland) and Barbara Howlett (Australia). The nomenclature and taxonomy of *Leptosphaeria maculans* is confusing as this fungus appears to comprise several species that look similar, even at the microscopic level. Strains are usually classified into two pathotypes (aggressive, Tox+, highly virulent, strongly pathogenic, virulent, 'A' group or non-aggressive, Tox-, weakly virulent, weakly

pathogenic, non-virulent, avirulent or 'B' group) based on their ability to cause stem cankers on canola and also to produce the phytotoxin sirodesmin PL.

Barbara Howlett and Birger Koopmann (Germany) discussed molecular characterization of the isolate collection of the International Blackleg of Crucifers Network. Barbara Howlett reported that all isolates of both pathotypes examined had unique 'fingerprints' as revealed by Amplified Fragment Length Polymorphisms (AFLPs) and that the 'A' group isolates cluster in geographic regions, Australia, Europe and North America, on the basis on their genetic diversity. Birger Koopmann reported that some of the isolates recovered from weeds were genetically distinct from isolates of the 'A' and 'B' group. G. Jedryczka described the pathogenicity and genetic diversity of isolates in Poland, where the majority of isolates are classified as 'B' group, on the basis of morphological and molecular data (including the lack of sirodesmin PL). However, these isolates cause serious damage (stem cankers) on canola. Soledade Pedras (Canada) emphasized that the use of the terminology, Tox+ and Tox-, to describe isolates that produce (or cannot produce) sirodesmin PL is inappropriate, as members of the *L. maculans* species complex synthesize a range of chemically diverse toxins. These toxin profiles may be a useful 'chemical fingerprinting' method for classifying isolates.

In her concluding statements, Ginette Séguin-Swartz remarked on the current high level of activity in blackleg research and that this workshop could only touch on a few aspects, due to time restrictions. Reflecting upon the complex situation with blackleg, in terms of incidence and severity of the disease, and the complicated taxonomy of the blackleg fungus, she suggested that it would be useful to meet again in the next few years to review findings and see if the picture can be clarified. She brought the Workshop to a close by thanking the chairpersons, speakers and the audience for their interest and participation.