

Breeding disease resistant *Brassica* oilseed cultivars for sustainable yield and quality

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Fungal pathogens cause yearly disease infection of rapeseed. Disease contamination results in the lowering of yield by 15-20%. Taxonomically similar pathogenes occur in all areas of rapeseed cultivation. The greatest loss in seed yield is caused by: *Leptosphaeria maculans* (Desm.) Ces. et de Not. /*Phoma lingam* (Tode ex Fr.) Desm. - stem cancer, *Sclerotinia sclerotiorum* (Lib.) de Bary - stem rot, *Alternaria* spp. - pod spot, *Pyrenopeziza brassicae* (Raw.) /*Cylindrosporium concentricum* (Grev.) - light leaf spot, *Verticillium dahliae* Kleb. - verticillium, *Botrytinia fuckeliana* (de Bary) Whetzel /*Botrytis cinerea* Pers.- mould, *Perenospora brassicae* Gam. - downey mildew, *Erysiphe cruciferarum* Opiz ex Junel. - powder mildew, *Mycosporella capsellae* sp.nov. /*Pseudocercospora capsellae* - white leaf spot. In order to develop cultivars resistant to these pathogenes the investigations are conducted on their aggressiveness and virulency. The methods applied to investigating the sources of resistance to fungal pathogens are the following:

- selection of resistant forms within population and their cloning,
- interspecific crossings and the introduction of genes of resistance from relative species,
- genetic transformation,
- development of doubled haploids from resistant forms.

Significant advancement in the search for genes of resistance to fungal diseases of *Brassica* species have been obtained by the development of new effective attestation methods, the use of molecular markers in selection and by the mapping of rapeseed genome. These methods allow to delineate the regions of DNA determining the resistance to a given pathogen.