

Laboratory of Resistance Genetics

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Research topics:

Research studies at the Laboratory concern resistance of winter oilseed rape (*Brassica napus* L.) to stem canker of crucifers (*Leptosphaeria maculans*, *L. biglobosa*), sclerotinia stem rot (*Sclerotinia sclerotiorum*) and dark leaf spot (*Alternaria* spp.), the resistance of narrow-leaf lupin (*L. angustifolius*) to stem blight (*Diaporthe toxica*) as well as the resistance of willows and poplars to rust (*Melampsora* sp.). Research is done using various genetic, phytopathological, biochemical and molecular methods including PCR, Real-time PCR and Pulse Field Gel Electrophoresis. Research concerns epidemiology of crop plant diseases and the detection of pathogens in the air and in tissues of host plants, using conventional and molecular techniques. The Laboratory has an very big collection of investigated phytopathogenic fungi.

Major research achievements:

- The maturation dynamics and species identification of pseudothecia and ascospores of the fungi causing stem canker of brassicas were evaluated using traditional and quantitative PCR.
- The mathematical model of pseudothecia maturation and the release of *L. maculans* and *L. biglobosa* ascospores was elaborated and parameterized to Polish climatic conditions.
- The polymorphism of mini and microsatellite sequences (*Lema* and *MinLm*), mating types (*Mat*), the frequency of avirulence genes (*AvrLm*) and races were characterized for *L. maculans* in Poland and Europe.
- Identification of species and pathotypes infecting common osier willow (*Salix viminalis*), aspen poplar (*Populus tremula*) and their hybrids.
- The national wide decision support system for the protection of oilseed rape against stem canker of brassicas was developed and applied in Poland (www.spec.edu.pl); the System is constantly operating since 2004.