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16th International Rapeseed Congress

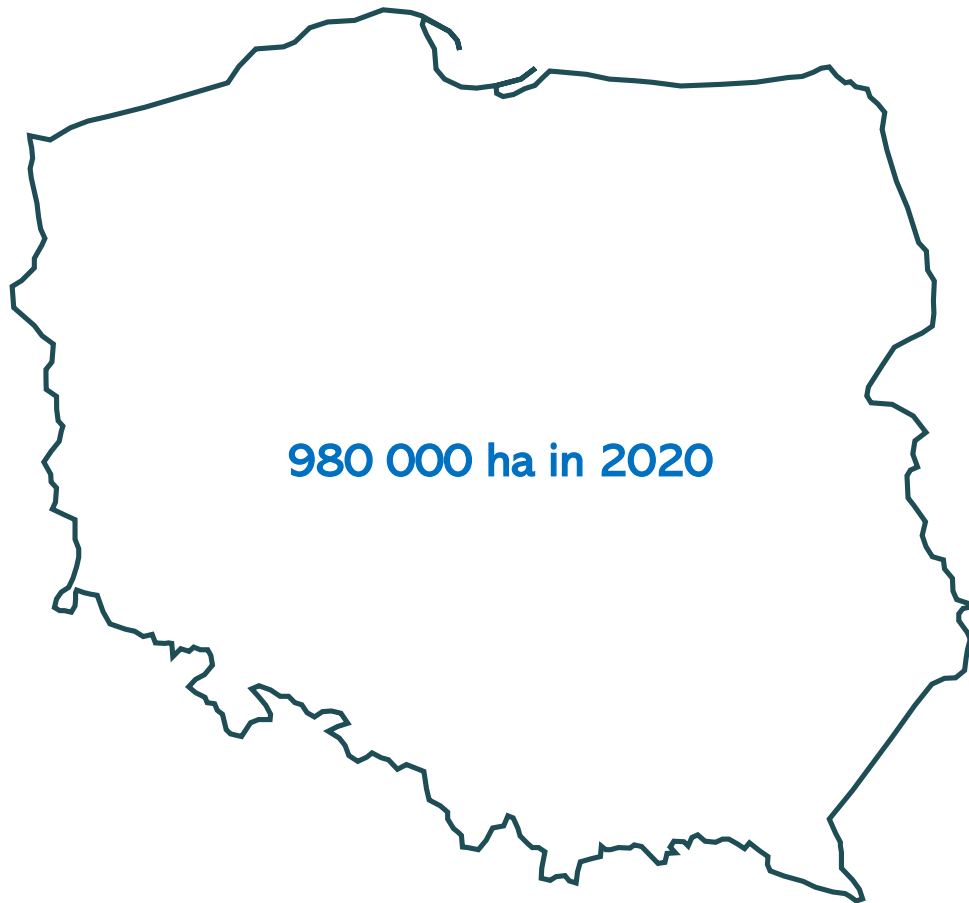
FROM GENES TO FIELD: ADVANCES IN BREEDING AND MANAGEMENT OF BLACKLEG DISEASE IN POLAND

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Poland is the third biggest rapeseed producer in the EU



Rapeseed accounts for 97% of total oilseed crop production in Poland

The crop area has significantly increased over the last 70 years

Blackleg - one of the major threats in rapeseed production

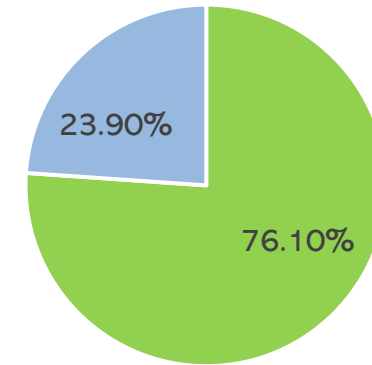
Plenodomus lingam

(*Leptosphaeria maculans*)

Plenodomus biglobosus

(*Leptosphaeria biglobosa*)

Pathogen samples extracted from experimental station
RGD Dłóń, Western Poland (2022)



■ *P. lingam* ■ *P. biglobosus*

Annual yield losses in Poland: 10-15%, depending on weather conditions

Main strategies: use of fungicides and resistant cultivars, agricultural control

Canada

AvrLm2, AvrLm4, AvrLm5, AvrLm6, AvrLm7, AvrLm 1 1, AvrLmS

USA

AvrLm 1, AvrLm6, AvrLm7

Germany

AvrLm6, AvrLm7, AvrLm 1 1, AvrLepR1, AvrLepR2

Poland

AvrLm4-7, AvrLm2 (own screening study)



Current *P. lingam* race structure in Poland is poorly recognized

Disease severity depends on many factors

↑ Warm and wet weather



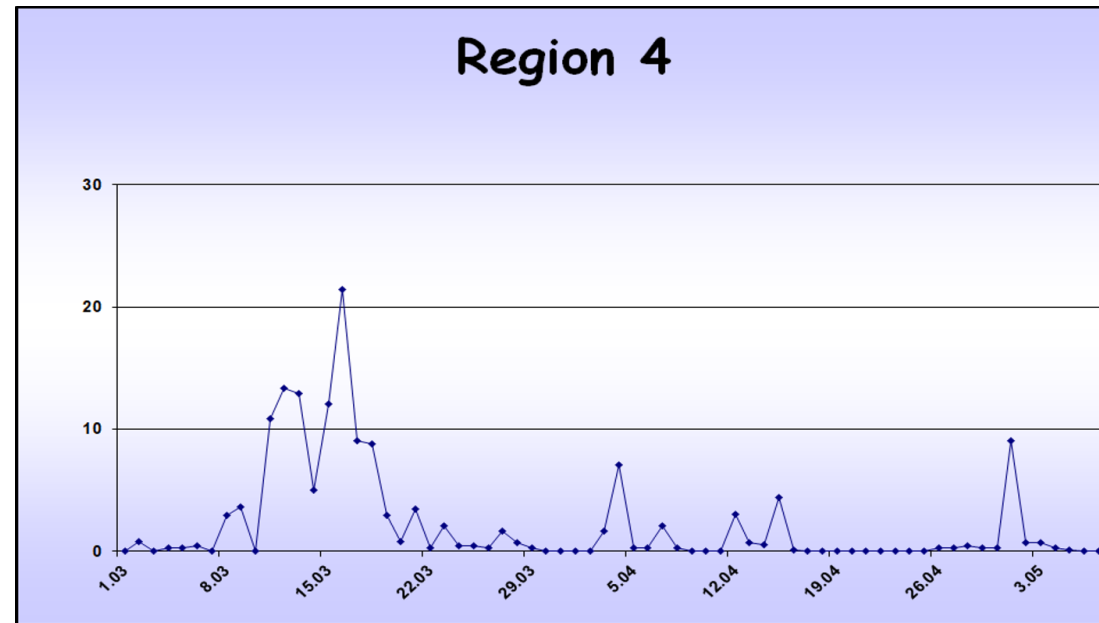
↓ Prolonged winter



J. Szwarc

SPEC – powerful tool for *Plenodomus* monitoring

One of the biggest spore release monitoring systems in the world



Updates: March-May, September-November

The status of blackleg resistance in Polish oilseed rape cultivars



Post Registration Variety Testing – allows precise selection of the most suitable cultivar in different regions of Poland

COBORU provides information on the general level of resistance of chosen cultivars to blackleg

Example: cv. Artemis – 11% of plants infested

cv. Trezzor – 10% of plants infested

Interspecific hybrids have a great potential in resistance breeding

Hybrid combination	Year of observation				
	2018	2019	2020	2021	2022
<i>B. napus</i> cv. Californium × <i>B. fruticulosa</i> - PI649097	4.6	0	0	0	4
<i>B. napus</i> cv. Jet Neuf × <i>B. carinata</i> PI 649096	3	3.5	0.5	0	3

Study performed on F₆ – F₁₀ generations

Future prospects – comprehensive research for effective blackleg management

- Extended characterization of *Plenodomus* population in Poland
- Further interspecific breeding
- Integrating field and molecular/sequencing data
- Development and validation of new, effective markers for blackleg resistance – new research grant by Janetta Niemann, Assoc. Prof. PhD (*Polish Ministry of Agriculture and Rural Development, project number 27*)





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Thank you

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