**Mapping of the Lr55 brown rust resistance gene in common wheat (*Triticum aestivum* L.)**

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Wheat leaf rust is one of the most serious diseases of spring and winter wheat. The greatest losses are recorded in winter wheat. The symptoms are observed at all stages of plant development. In case of severe paralysis, the losses caused by this disease range from 40 to 50%. In Poland, the average yield loss is estimated at about 5 to 10%.

The main objective of today's plant production is to achieve the highest possible yield while minimizing the use of plant protection products. The cultivation of varieties with favourable economic features, including high yielding potential, is closely related to their resistance to fungal and viral diseases. An important role is played by the resistance breeding of cereals, which makes use of many tools of classical and molecular genetics. Molecular markers, commonly used for selection of gene(s) and genetic mapping for resistance to fungal diseases of cereals, including brown rust of cereals and grasses, play an important role.

Up yo now, there are no reports on molecular markers that can be successfully used to select a gene for the resistance to brown rust of cereals and grasses in plant breeding material. Therefore, the aim of this study is to determine molecular marker(s) in bread wheat, coupled with the gene of resistance to leaf rust *Lr55*. The plant material consisted of two mapping populations: F2 (*Lr55*×Bogatka) and F2 (*Lr55*×Nadobna). In total, 15 DArTs and 68 SSR markers were used to map the *Lr55* gene. On the basis of genetic analyses, the following conclusions can be drawn:

* It was confirmed that the *Lr55* gene is located on the 1BS chromosome.
* The mapped fragment is associated with the region syntenic to *Elymus trachycaulis.*
* Based on the obtained segregations for the mapping population (Bogatka × *Lr55*), molecular markers were determined, which can be used for selection of the *Lr55* gene in plant material.

Detailed data are in the process of publication.