**Applied biotechnology to combat the leaf rust caused by *Puccinia triticina* and powdery mildew caused by *Blumeria graminis* in polish wheat cultivars**

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The main purpose of crop production is to achieve the highest possible yield while minimizing use of pesticides. Growing varieties with beneficial traits, also with a high potential of yield is closely connected with their resistance to fungal and viral diseases. The important role is playing breeding for resistance. At present, many tools of molecular genetics and biotechnology exist which can be successfully used to obtain plant disease resistance.

Leaf rust and powdery mildew are occurring in all wheat growing regions of Poland and every year contribute to losses in cereal production. The main reason for these losses is the cultivation of varieties that are susceptible to these diseases.

The aim of presented research is:

• pyramiding of leaf rust and powdery mildew resistance genes in a one genotype;

• to clarify the location Lr55 gene in wheat genome;

• screening for resistance leaf rust and powdery mildew.

**Key words:** resistant varieties, resistance genes, powdery mildew, gene pyramids, leaf rust