

## Strategy of genetic protection of common spring wheat from leaf rust in Southern Ural due to changes pathogen population structures

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Breeding of spring common wheat in the Chelyabinsk Scientific Research Institute of Agriculture (ChRIA) has a traditional focus on resistance to a combination of stress abiotic and biotic stress factors. The varieties created by the institute play a significant role not only in increasing gross grain yield in the Chelyabinsk region, but also in improving the phytopathological situation. Leaf rust caused by *Puccinia triticina* Erikss. is a widespread and devastating disease in the South Ural. The use of the intraspecific genetic potential of common wheat is not able to provide a sufficient protection against the pathogen, therefore, since 1990, in ChRIA has been conducting targeted selection for leaf rust resistance with the involvement of donors with alien translocations carrying effective resistance genes. Firstly donors with translocation from *Aegilops umbellulata*, carrying gene *Lr9* (= *LrTr*) were used in 1990 and new varieties Duet, Chelyaba 2, Pamyati Ryuba, Chelyaba jubileinaya, Chelyaba stepnaya, Chelyaba rannaya were created. But in 2007 the effectiveness of *Lr9* was lost and the actual task of breeding has become the expansion of the genetic diversity of common wheat for leaf rust resistance. The new resistance donors with alien gene translocations from *Secale cereale*, *Aegilops speltoides*, *Agropyron elongatum*, *Agropyron intermedium*, *Aegilops tauschii*, *Triticum ventricosum* are involved. A new set of varieties such as Chelyaba 75, Chelyaba 80, Pamyati Odintsova, Ilmenskaya 2 was created. In whose genomes a new resistance gene *LrSp* from *Aegilops speltoides* was introduced. Presently the high effective gene *Lr24* may be recommended for breeding in Southern Ural. Also for stabilization of phytosanitary situation in the Ural' region, the effective combination of genes *Lr9* or *Lr19* with *Lr26* and other *Lr*-genes may use for developing of new resistant wheat varieties. Based on this principle the spring wheat variety Silach was created. The high resistance to leaf rust in this variety due to a combination of the *Lr9* with *Lr26* genes, each of which in separately is not effective to leaf rust population in Southern Ural. Permanent monitoring of virulence of *Puccinia triticina* population in Southern Ural will permit to identify the effective genes of combinations of genes providing reliable protection.

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