High and stable oat yields and ecological safety of products are difficult to achieve in Western Siberia due to the diseases that significantly affect cultivars. Along with the smut fungi (*Ustilago avenae* (Pers.) Jens. and *Ustilago kollerii* Wille.), oat is also affected with crown rust (*Puccinia coronata* Corda) and red-brown spottiness (*Drechslera avenae* Eidam.).

**Research objective:** a study of resistance of oat cultivars from the VIR global gene pool to harmful disease agents in the south of Western Siberia and identification of genetic sources of immunity.

**Ustilago avenae** (Pers.) Jens.

![Image of loose smut on oat heads](image1)

**Puccinia coronata** Corda.

![Image of crown rust on oat culms](image2)

**Drechslera avenae** Eidam.

![Image of red-brown spottiness on oat leaves](image3)

The genetic sources for breeding smut-immune and highly productive oat cultivars are represented by cvs. *Azur* (Czech Republic), *Navarro, Belle, Rodeo* (USA), *SDS Baler* (Canada) and *Pallinup* (Australia). Many of them demonstrated high values of productivity elements, namely 422 to 768 productive stems per 1 m², large grain (1000 grains weight of 33-38.5 g), a panicle with a large number of grains (36-78) and productivity at the standard cultivars level, or higher by 74-188 g/m².

Such tolerant cultivars as *Azur* from the Czech Republic, and *Belle, Burt* and *Navarro* from the USA may be used as promising breeding materials. Their productivity was 35-55% higher than that of the best standard cv. *Phobos*.

An assessment under natural conditions has found such Russian cultivars as *Drug, Lgovskiy 1026, Mirny and Isetskiy*, as well as *cv. Maris Tabard* from Great Britain, *Astor* from the Netherlands and a French cv. *Multigrap* to be resistant to the agent.

**CONCLUSION**

Resistance of oat plants to infectious diseases should be considered as a priority biological property when assessing initial material. Only immune cultivars can fully use the productivity potential and ensure high quality of grain. The genetic sources of resistance have been included in crosses aimed at producing new hybrid pool and selecting immune forms.