

## ANTAGONISTIC PROPERTIES OF RHIZOBACTERIA IN RELATION TO PHYTOPATHOGENS OF WHEAT

Zakiryaeva S.<sup>1</sup>, Atadjanova Sh.<sup>1</sup>, Khomidjonova S.<sup>2</sup>, Shakirov Z.<sup>1</sup>

<sup>1</sup>Institute of Microbiology of the Academy of Sciences of the Republic of Uzbekistan, Uzbekistan

<sup>2</sup>National University of Uzbekistan named after Mirzo Ulugbek, Uzbekistan

e-mail: szakiryaeva@gmail.com

CZU:579.264:579.8+632.4:633.1

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Plant protection from phytopathogens is becoming an increasingly severe problem in modern agriculture and agricultural microbiology. Today, there is a trend around the world towards an increase in the number of phytopathogenic micromycetes in agricultural soils due to the unreasonable introduction of chemical ameliorants into the soil and mismanagement in agricultural practices. This trend leads to the development of various diseases of agricultural plants, their death, a decrease in productivity, as well as a decrease in soil fertility. Therefore, in recent years, the microbiological method of plant protection has become widespread.

The aim of our research was to study the antagonistic activity of rhizobacteria in relation to wheat phytopathogens. The objects of research were local active strains of phosphate and potassium-mobilizing wheat rhizobacteria of the genera *Rahnella*, *Enterobacter*, *Pantoea*, *Pseudomonas*, *Bacillus* and phytopathogenic wheat fungi. As test cultures in determining the antagonistic properties of rhizobacteria, 6 strains of phytopathogenic fungi (*Fusarium graminearum*, *F. oxysporum*, *F. tricinctum*, *F. avenaceum*, *Bipolaris sorokiniana*, *B. spicifera*) of wheat were taken from the collection of the Institute of Genetics and Experimental Plant Biology of the Academy of Sciences of the Republic of Uzbekistan. The antagonistic activity of rhizobacteria against phytopathogenic wheat fungi was studied by the well diffusion method on Czapek's medium.

We have studied the antagonistic activity of rhizobacteria against phytopathogenic fungi causing various wheat diseases. The data obtained by us showed that 22 strains of rhizobacteria, of all tested, exhibit strong antagonistic activity in relation to one or another test culture. Thus, the *Pseudomonas* spp. 10R exhibited varying degrees of antagonistic activity against all test cultures of phytopathogens. Whereas other strains of *Bacillus cereus* 7R and *Pseudomonas kilonensis* 9R were active only against 3 phytopathogens - *F. graminearum*, *B. sorokiniana* and *B. spicifera*, the inhibition zones was 90%. The strains of the species *Rahnella aquatilis*, only 2 strains No. 10 and 14 showed antagonistic activity against 2 test cultures - *F. graminearum* and *B. spicifera*, the zones of inhibition was 100%. The bacterial species *Enterobacter cloacae*, strain No. 7 had a stronger antibiotic property. Thus, the zone of inhibition in relation to *B. sorokiniana* was 100%, *F. graminearum* and *F. oxysporum* - 90%, *F. tricinctum* - 80%. The *B. megaterium* 22R strain was also active against two phytopathogens, *F. graminearum* and *F. avenaceum*, the zone of inhibition was 80%. The *B. subtilis* 24R strain showed antagonistic activity against 5 test objects, although the zones of inhibition were insignificant, so the zone of inhibition against *F. graminearum* was 16 mm, *F. tricinctum* and *B. sorokiniana* - 11 mm, *F. avenaceum* - 20 mm, on *B. spicifera* - 22 mm. The *P. agglomerans* 1R strain showed antagonistic activity only against *F. graminearum* (8 mm), *F. tricinctum* (10 mm), and *F. avenaceum* (11 mm).

Thus, under laboratory conditions, the antagonistic activity of wheat rhizobacteria in relation to wheat phytopathogens was determined. *Pseudomonas* spp. 10R, *B. cereus* 7R, *P. kilonensis* 9R, *R. aquatilis* 10, 14, *E. cloacae* 7 and *B. megaterium* 22R bacterial strains exhibited the highest antagonistic activity against phytopathogenic wheat fungi among all the studied strains.