



## Screening of the soil bacterial isolates for antagonistic activity against wheat rust *in vitro* condition

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### SCOPE

The systematic, unrestricted use of plant protection products based on chemicals, in recent years have revealed the disturbing results of the side effects of chemical pesticides. which negatively affects human health and the environment. That is why the search for alternative plant protection methods has attracted researchers worldwide attention. Thus, the application of microbial antagonists is an option in the integrated management of plant diseases to sustainable agriculture.

### METHODOLOGY

We have tested for antagonistic ability 25 microbial strains, which are isolated from the deferent agroclimatic region's soil in Georgia. In order to study the inhibitory effect of each microbial strain suspension against on rust spores, we used an *in vitro* test. Effective isolates have identified by the method of Next Generation Sequencing (NGS). For whole genome sequencing data analysis CLC workbench v12, RAST, and MG RAST – annotation tool, Geneious, CLustal W, and PhyML bioinformatics tools will be used.

### RESULTS AND DISCUSSION

Research results have shown, that from the total tested microorganisms seven strains from them have shown high effect, which are identified as a next microorganism: *Alcaligenes* spp.; *Alcaligenes faecalis*, *Pseudomonas prtoegens*, *Enterobacter ludwigii*; *Serratia inhibens* and *Serratia liquefactions*. The assay is intendent to study biological control efficient of this test microorganism to the wheat stem (*P.graminis f.sp.tritici*), leaf (*P.triticinia f.sp.tritici*) and yellow (*P.striiformis f.sp.tritici*) rusts.

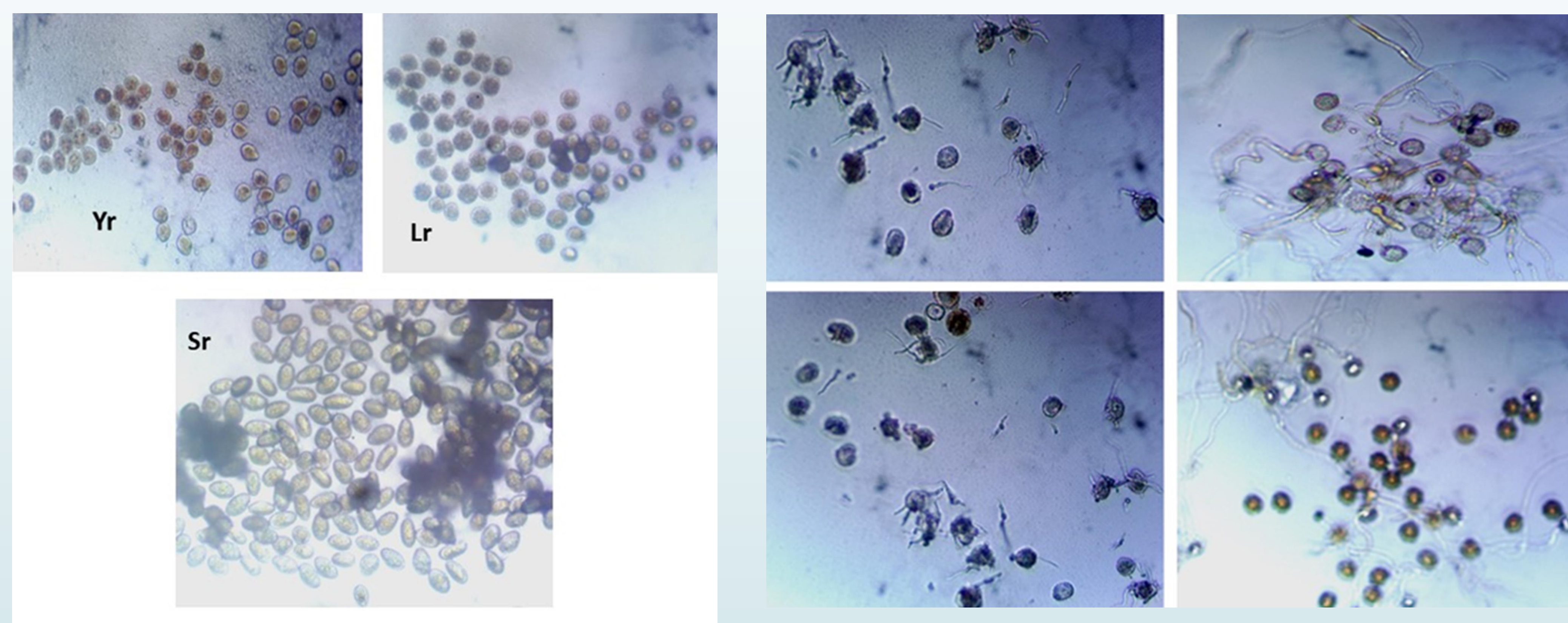
The majority of them showed a good inhibitory effect (88-100%), which the average percentage of germinated spores varied between 80-93%.

The average rate of germinated spores for all three rusts on the control variant was 82%

### CONCLUSIONS

Thus, Populations of phytopathogens can be limited by many different modes of action of antagonists without ecological destroyed and soil microorganisms may be successfully used in the future biological control measure. Result of this conducted trial revealed that this research is need to be continue and development.

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Inhibitory effect of antagonistic microorganisms on  
yellow, brown and black rust spores

Germinated spores in the control trial

