

**STUDIES REGARDING THE INFLUENCE OF RHIZOBACTERIA
BRADYRHIZOBIUM JAPONICUM AND SALICYLIC ACID ON
WATER, MINERAL NUTRITION OF SOYBEAN UNDER
INSUFFICIENCY OF PHOSPHORUS AND MOISTURE OF SOIL**

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Nowadays the farmers are largely cash limited and mineral fertilizers being costly, restricts their capacity to purchase fertilizers and hence it is needed to develop sustainable agricultural production especially under scarce water and nutrient environments. The low yields of legumes are partly due to infertility caused by carbonated soils which have low nutrient contents, particularly of available phosphates, insufficient water supply and compatible *Rhizobium* for adequate N₂ fixation. In conditions of the Republic of Moldova phosphorus (P) deficiency of soil and drought are major environmental constraints which alter key physiological constituents and functions in plants. Nitrogen-fixing microorganisms besides their ability to assimilate nitrogen from atmosphere have a contribution for promoting the growth and nutrition of crops.

A study was carried out to determine the influence of rhizobacteria *Bradyrhizobium japonicum* and salicylic acid (SA) on water, nutrients contents in soybean leaves under low P supply and drought conditions. The soil was represented by chernozem carbonated with low available phosphates. Soybean seeds (cultivar Horboveanca) were inoculated with suspension of rhizobacteria *Bradyrhizobium japonicum* (Rh) before sowing. Plants were treated with two regiments of irrigation water: 70% of water holding soil capacity (WHC) and 35% of WHC as drought. The salicylic acid was applied as foliage treatment at concentration 0.5 mM during vegetation period of soybean. Plant physiological parameters were determined after drought period.

It was concluded that inoculation of soybean plants with rhizobacteria *Bradyrhizobium japonicum* and foliage application of salicylic acid improved water status and mineral nutrition of soybean plants cultivated under insufficiency of phosphorus and moisture of soil conditions.

Keywords: *Bardryzobium japonicum*, *Glycine max. L*, drought, phosphorus, nutrients, water.