

THE RIZOLIC BIOLOGICAL PREPARATION AS MEANS OF INCREASING QUANTITY AND QUALITY OF SOYBEAN YIELDS

Coscodan Mihail¹, Todiraş Vasile¹, Corcimarua Serghei¹, Iacobuță Maria²,
Prisacari Svetlana¹, Lungu Angela¹.

¹*Institute of Microbiology and Biotechnology, Technical University of Moldova,*

²*Research Institute for Field Crops "Selection"*

E-mail: mikhail_koshkodan@mail.ru

The last decades of the 20th century were largely focused on looking for optimal ways of stimulating the world economic development. To achieve that several new concepts were adopted. Among others, the concept of sustainable development was emphasized because of the increasingly precarious state of the environment and rapid population growth. According to the Report of the World Commission on Environment and Development "Our Common Future", there are five spheres that will attract a lot of attention within the nearest 30 years: water and sanitation, energy, health, agriculture, and biodiversity.

Within the spheres of agriculture and soil biodiversity, one of the ways to ensure sustainable development and to maintain soil productivity would be via substituting the chemical preparations with the biological ones. This implies isolation, selection, and introduction into soil of microorganisms that can increase soil fertility and, through that, the productivity and quality of crops. A good example here is the use of symbiotic microorganisms (rhizobia) for stimulating such leguminous plants as soybean, which are grown for obtaining plant proteins as well as for solving problems in the fields of energetics and environmental protection.

The symbiosis of the leguminous plants with rhizobia serves as a source of the biologically fixed nitrogen in soil, that is much more effective than the mineral nitrogen fertilizers. The biologically fixed nitrogen is safer for the human health and the environment, being at the same time relatively cheaper.

The purpose of this work was to test under field conditions the efficiency of the Rizolic biopreparation, containing the strain *Rhizobium japonicum* RD2, for three new varieties of soybean plants – Aura, Indra, and Enigma. According to the obtained results, the seed bacterization by Rizolic had mostly positive impact on the tested soybean varieties. The highest soybean yield was observed for the bacterized Enigma and Indra varieties (1430 and 1370 kg/ha respectively). The highest stimulation of the soybean yield was in the Indra case (+210 kg/ha as compared to the control without bacterization). The highest protein content was in the cases with the bacterized Indra and Aura varieties (39,3% and 39,5% respectively). Aura was the only variety of soybean plants that had a mixed reaction to the bacterization with *Rhizobium japonicum* RD2 – the protein content was 2,3% higher and the bean yield was 120 kg/ha lower (reaching the total amount of 1120 kg/ha) than the ones in the control without bacterization.

Our conclusion was that the Rizolic biopreparation can be successfully used for stimulating the productivity and the quality of soybean yields. The best results can be obtained for the Indra variety.

Keywords: *Rhizobium japonicum*, rizolic biological preparation, soybean yields.