



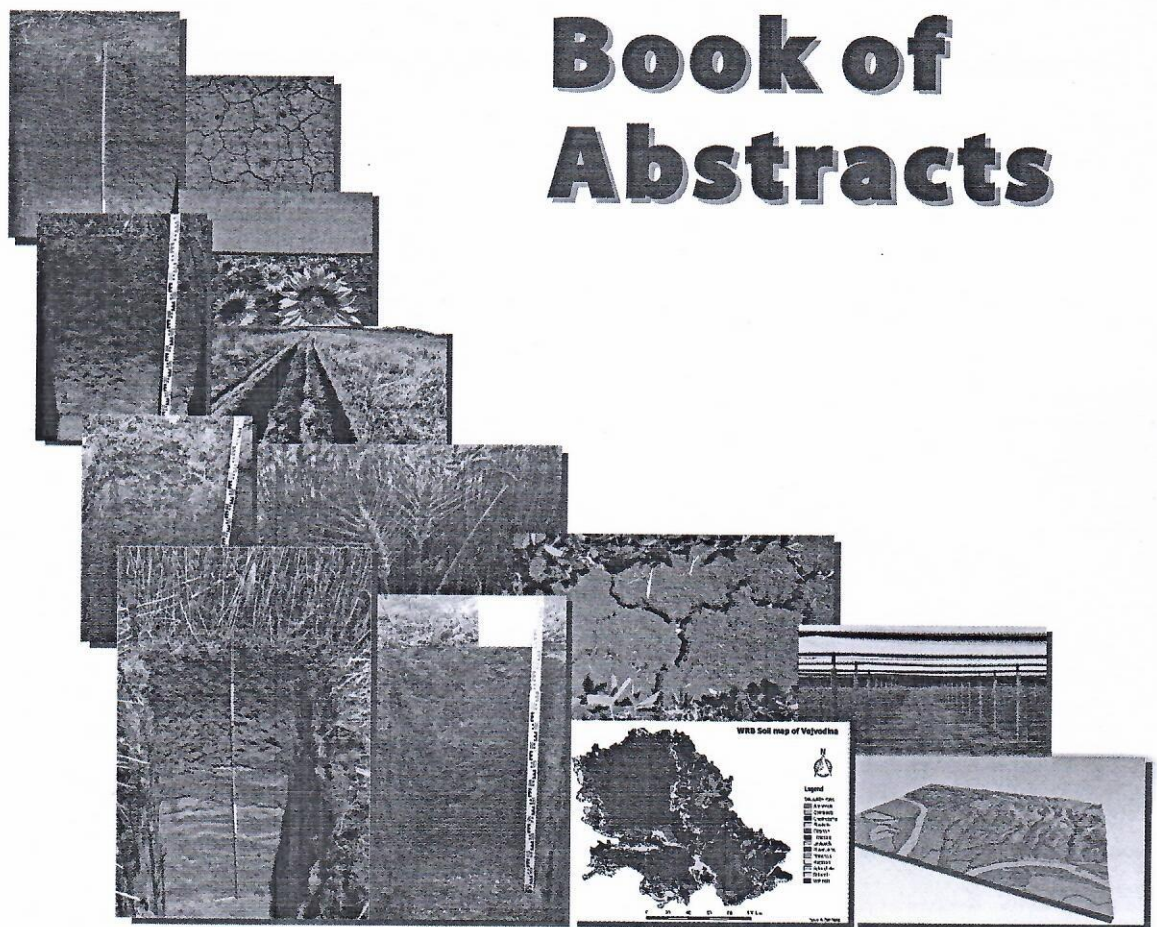
*2<sup>nd</sup> International and 14<sup>th</sup> National Congress of Soil Science Society of Serbia*  
**Solutions and Projections for Sustainable Soil Management**

**EDITORS:**

Milivoj Belić  
Ljiljana Nešić  
Maja Manojlović  
Vladimir Ćirić

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# Book of Abstracts



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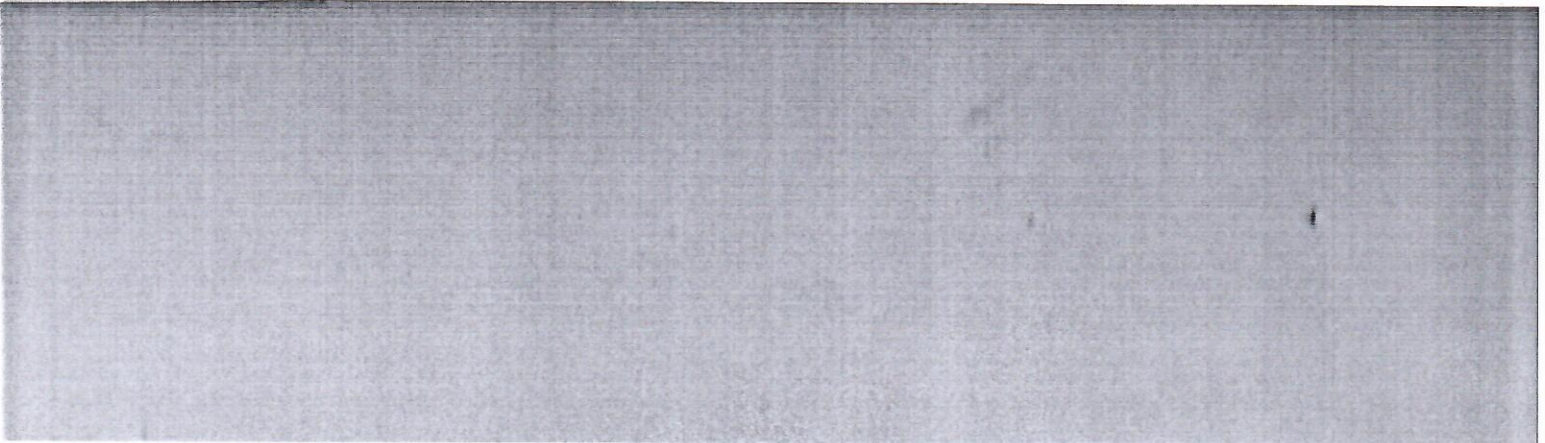
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## BOOK OF ABSTRACTS

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***Editors***

Prof. Dr Milivoj Belić  
Prof. Dr Ljiljana Nešić  
Prof. Dr Maja Manojlović  
Doc. Dr Vladimir Ćirić

***Editorial Assistant***

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## EFFECTS OF *PSEUDOMONAS* SPP. AND *RHIZOBIUM PHASEOLI* ON YIELD AND QUALITY OF GREEN BEANS (*PHASELOUS VULGARIS* L.)

Dragana Jošić<sup>a\*</sup>, Magdalena Knežević<sup>a</sup>, Milan Zdravković<sup>a</sup>, Radmila Pivić<sup>a</sup>

<sup>a</sup>Institute of Soil Science, 11000 Belgrade, Serbia

\*Corresponding author: [dragana.josic@yahoo.com](mailto:dragana.josic@yahoo.com)

**INTRODUCTION and OBJECTIVES:** Green bean (*Phaseolus vulgaris* L.) is a sort of legume, widely used for human consumption. Due to wide spectra of green beans use, there is a growing need for increasing its yield potential. *Pseudomonas* strains that belong to plant growth-promoting rhizobacteria (PGPR) have potential to enhance yield of legumes when co-inoculated with *Rhizobium*. The main objective of this research was to estimate the efficiency of indigenous *Pseudomonas* spp. and *Rhizobium phaseoli* on yield and overall plant quality of green beans.

**MATERIAL and METHOD:** The field experiment was conducted on pseudogley soil in Darosava, municipality Arandjelovac, Serbia, with randomized block design with three replications. The effect of *Pseudomonas* strains on symbiotic interaction between *Rhizobium* and green bean (*Phaseolus vulgaris* cv. Palanacka rana, IVCSP) was studied and compared to their effect on host plant when applied as single inoculum. Three control variants were used: control 0 (c0) without any fertilizer or inoculation, control N (cN), representing recommended dose of NPK through fertilizers, and control (cRhp) inoculated with *Rhizobium phaseoli* ISS375 strain 110 (Rhp110) only. Six *Pseudomonas* spp. and the same number of combinations with Rhp110 were used. Main yield and quality parameters of green beans inoculated with Rhp110 and indigenous *Pseudomonas* strains were measured in three harvest periods. N<sub>2</sub> fixation efficiency was calculated through differences in N content in control 0 and inoculated variants.

**RESULTS and CONCLUSIONS:** Control N was the highest one tested, with an average height of 69 cm, while the control 0 samples were 52 cm high. Plants inoculated with *Pseudomonas* Q1 strain were the highest ones among all inoculation variants. Plants treated with strain Q4 had the highest yield; Q4 + Rhp110 and B25 + Rhp110 combination also reached yield values higher than cN. Average yields were around 42 grams per plant during first and second harvests, while values significantly declined during third harvest (24 g/plant). Strain Q4 showed the highest effect during first (86.25 g/plant) and second (90 g/plant) harvest, while combination of Q4 + Rhp110 had the best activity during third harvest (28.57 g/plant). The highest average number of pods per plant (10.27) was noted in the cN, while the c0 samples had only 4.2 pods per plant in average. Although all single and mixed variants had higher numbers of pods per plant in comparison with the c0 for all harvests, the highest value was observed for Q4 strain application. During the first and second harvest, plants treated with strain Q4 had the highest number of pods per plant, while combination of Q4 + Rhp110 and B25 + Rhp110 was the most effective during the third harvest. Rhp110 in combination with Q4 and Q20 showed high N<sub>2</sub> fixation efficiency. In general, strain Q4 and combination Q4 and Q20 with Rhp110 seemed to be the most efficient in increasing parameters regarding yield potential and overall quality of green beans.

**KEY WORDS:** *Pseudomonas* spp., *Rhizobium phaseoli*, *Phaseolus vulgaris* L.

<sup>a</sup>Institute for Forage Crops,  
<sup>b</sup>Faculty of agriculture, Novi  
\*Corresponding author: [sne](mailto:sne)

**INTRODUCTION and**  
bacteria of the genus *Azotobacter*  
increased nitrogen content and  
biogenity.

**MATERIAL and METHOD:**  
whereby 5 samples were  
samples were characterized.  
**RESULTS and CONCLUSIONS:**  
azotobacter with increased  
significance in all cases  
grassland, while the lowest  
pH value in KCl was 4.16.  
source for metabolism of  
are limiting life factors with

**KEY WORDS:** azotobacter