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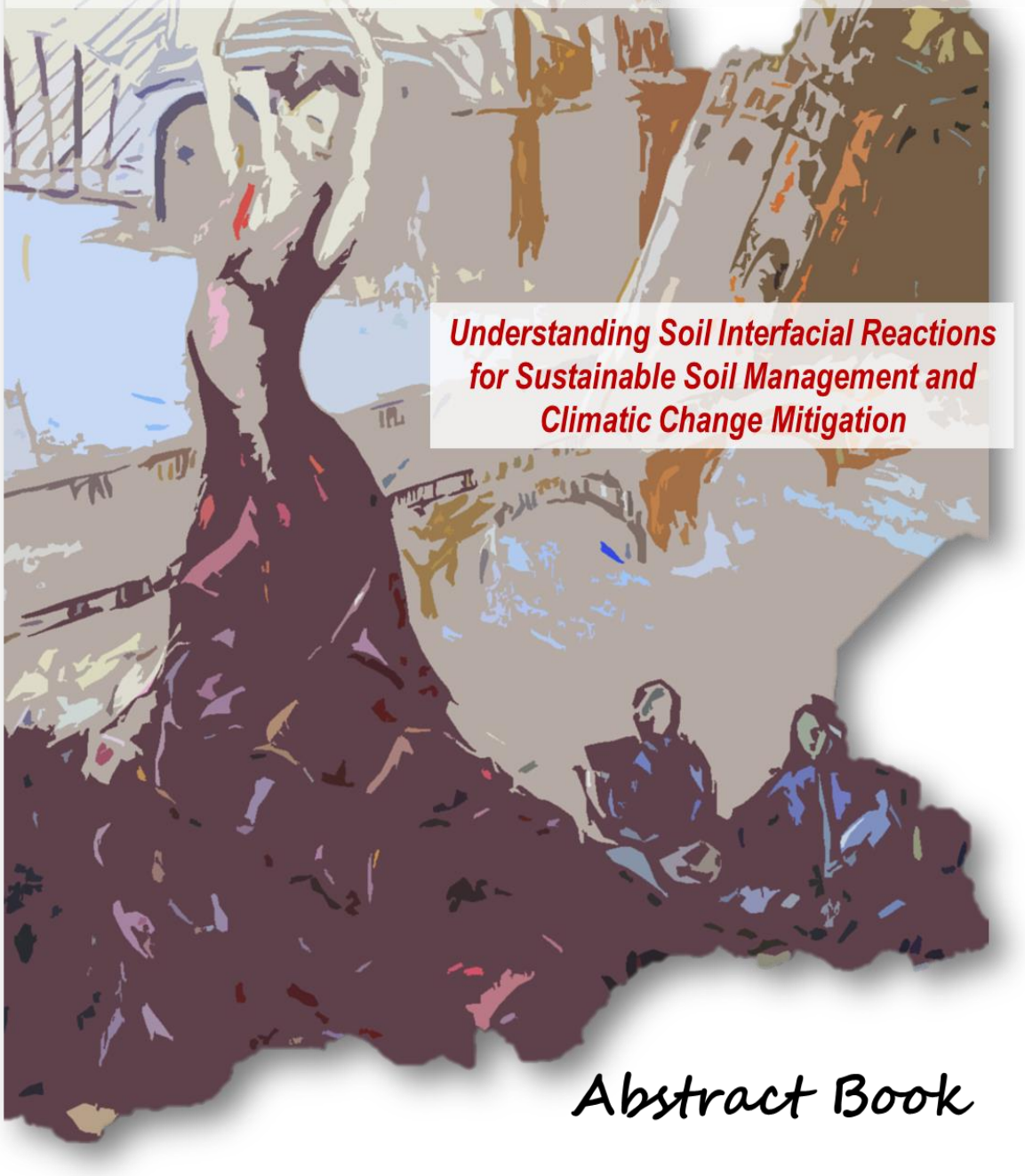

Understanding Soil Interfacial Reactions for Sustainable Soil Management and Climatic Change Mitigation

Abstract Book

8th International Symposium of Interactions of Soil Minerals with Organic Components and Microorganisms

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Plenary Session

were measured. The nitrogen phosphorus and potassium contents in soil (Common bean plant before sowing and after harvesting) were analysed.

Results. The results showed that PlantaStim inoculation increased the number of pods plant1 by 23% number of grains plant1 by 8% and weight of grains plant-1 by 16 % compared to control. Rhizobium 3 inoculation rose the height of plant by 24% length of root by 45% dry weight of root by 31% number of pods plant1 by 34% number of grains plant1 by 48% and weight of grains plant-1 by 80%. Inoculation with Rhizobium 9 significantly increased the number of nodules number of grains plant-1 number of grains pod-1 weight of grains plant-1 and 1000 grains weight of bean compared other treatments. Rhizobium 3 and rhizobium 9 had enhanced total N content P content and K content of soil compared to control and without PlantaStim.

Conclusion. It is concluded that a significant positive effect of inoculation with rhizobium 9 on growth nodulation and yield of common bean plants compared to control and PlantaStim.

Keywords: COMMON BEAN, MICROBIOLOGICAL PREPARATIONS, CHEMICAL PROPERTIES OF SOIL PLANT, GROWTH YIELD

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AMORPHOUS SILICA BIOMINERALIZATIONS AS A SILICON SOURCE AND ITS ROLE ON THE NUTRIENT AND MICRONUTRIENTS DYNAMICS ON SOUTHEASTERN BUENOS AIRES AGROECOSYSTEMS

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Silicon (Si) in soil proceeds from minerals of lithogenic origin and amorphous silica biomineralizations. Grasses are the main producers of these biomineralizations known

as silicophytoliths. Recently Si has been recognized as a beneficial element being important for the agricultural sustainability and environmental preservation. Southeastern Buenos Aires has Argiudolls characterized by its high fertility and aptitude for crop development. Ultimately the agricultural practices had been grown and consequently the level of soil degradation has been improved due to the increase in the content of trace metals (MT) and the decrease of nutrient contents among others. The aim of this work was to analyze the Si effects on the phosphorus and heavy metals contents in the soil-crop system. To that purpose Si fertilizers were applied to the soil before sowing the wheat plants. Soil and plant samples were taken on September and December. Si content available phosphorus (P) and HM ((Cu Cd Pb Mn Zn Fe Ni Cr) contents were determined in soil solution as well as the silicophytoliths and HM contents on different organs of the plant material (leaf stem and infructescence) all them through standard methodologies. In soil solution an inverse relationship between Si and P was observed (Si increases 215umol/L while P decreases 7ppm) as well as between Si and HM (Si raised 13mg/L Si while HM dropped 0.24mg/L). On wheat plants there was a positive relation between silicophytoliths and HM contents registered (augment of 193mg/g silicophytoliths and 129ug/g HM respectively). Is worth nothing that the values obtained here are between those allowed by FAO and UE. Concluding Si could improve the P bioavailability for the crop and also some phytoremediation processes as it diminishes de HM content in the soil solution and promotes their capture by the plant but without trespassing the threshold values which allow the farmers to continue with its economic exploitation as usual. Thus will be relevant to continue evaluating the Si application since it would improve the development of a sustainable and profitable agriculture.

Keywords: SILICOPHYTOLITHS, FERTILITY, PHYTOREMDIATION, CROPS PAMPEAN PLAIN