With regard to the role of rhizobium-cassava bacteria and nitrogen fixation on the fertilization improvement, enhancing soil conditions and reducing chemical fertilizers application and study about effective factors in improving these activities would be required. Thus, to study the biological phosphate and superphosphate triple fertilizers influence on evaluation and nitrogen fixation of Medicago sativa cv. Robinsas, an experiment was carried out as a factorial form in a randomized complete block design with three replications in the Agricultural Department of Shahed University in 2005. In which superphosphate triple fertilizer was used per level 30, 75, 125 kg/ha and biological phosphate fertilizer of Bacter 2 was applied in two levels (with inoculation and without inoculation, with biological phosphate). The results showed that inoculation treatments with biological phosphate and phosphate fertilizers amount of 75 and 125 kg/ha has increased the amount of seed yield and root weight of root and rhizome percent in growing leaf or part of plant. The trend of these characters has belong to the without inoculation treatment as amount of 3.5 and 17 kg/ha of phosphate and superphosphate triple fertilizers. The results also showed that there is a significant difference between inoculation treatments with different levels of phosphate fertilizer in root characters, such that more phosphate increasing in an inoculated with biological phosphate (inoculation treatment and phosphate fertilizer amount of 125 kg/ha) and decreasing trend in same characters, while in treatments without using biological phosphate with phosphate concentration increases in all characters before increase.

Keywords: Biological phosphate, Medicago sativa, Bacter 2, inoculation, nitrogen fixation, Medicago sativa cv. Robinsas