World Academy of Science, Engineering and Technology
International Journal of Agricultural and Biosystems Engineering
Vol:10, No:06, 2016

Effect of Phaseolus vulgaris Inoculation on P. vulgaris and Zea mays Growth and Yield Cultivated in Intercropping

Authors : Nour Elhouda Abed, Bedj Mimi, Wahid Slimani, Mourad Atif, Abdelhakim Ouzzane, Hocine Irekti, Abdelkader Bekki

Abstract : The most frequent system of cereal production in Algeria is fallow-wheat. This is an extensive system that meets only the half needs some cereals and fodder demand. Resorption of fallow has become a strategic necessity to ensure food security in response to the instability of supply and the persistence of higher food prices on the world market. Despite several attempts to replace the fallow by crop cultures, choosing the best crop remains. Today, the agronomic and economic interests of legumes are demonstrated. However, their crop culture remains marginalized because of the weakness and instability of their performance. In the context of improving legumes and cereals crops as well as fallow resorption, we undertook to test, in the field, the effect of rhizobial inoculation of Phaseolus vulgaris in association with Zea Mays. We firstly studied the genetic diversity of rhizobial strains that nodulate P.vulgaris isolated from fifteen (15) different regions. ARDRA had shown 18 different genetic profiles. Symbiotic characterization highlighted a strain that highly significantly improved the fresh and dry weight of the host plant, in comparison to the negative control (un-inoculated) and the positive control (inoculated with the reference strain CIAT 899). In the field, the selected strain increased significantly the growth and yield of P.vulgaris and Zea Mays comparing to the non-inoculated control. However, the mix inoculation (selected strain+ Ciat 899) had not given the best parameters showing, thus, no synergy between the strains. These results indicate the replacing fallow by a crop legume in intercropping with cereals crops.

Keywords : fallow, intercropping, inoculation, legumes-cereals
Conference Title : ICNF 2016 : International Conference on Nitrogen Fixation
Conference Location : London, United Kingdom
Conference Dates : June 23-24, 2016