Today, food security has to be reached through the sustainability approach, where the farming systems in order to remain productive in the long term have to replenish the nutrient reserves removed from soil. The need to develop sustainable practices and use renewable resources, highlight the potential role of Biological Nitrogen Fixation (BNF) as a primary N source in agriculture. Mungbean (*Vigna radiata*) has been suggested as a short-duration summer crop to be incorporated into the soil after harvesting the grain/pods. It is a well-adapted crop to the dryland conditions in the tropics and subtropics, but due to the lack and variation of summer rains, the plants are exposed to several water deficits and salt stress, which results in lower grain yields and inefficient BNF. It has been proved that the use of Plant Growth Promoting Rhizobacteria (PGPR) have the potential to diminish the negative effects caused by drought and salinity stress.

The aim of this research work was to identify the effects of different PGPR and *Rhizobium phaseoli* on mungbean N_2 fixation under dryland conditions in Pakistan.

In a field trial, two mungbean accessions were tested with 5 inoculation treatments: *Pseudomonas fluorescens* (Mk20), *Bacillus subtilis* (Y16), *Rhizobium phaseoli* (M9), the combination of the three bacterial strains (MIX) and without any bacterial strain (Control). Plants were harvested at maturity to assess N_2 fixation (%Ndfa), total N content and biomass accumulation. Chlorophyll content and proline content were assessed at flowering stage.

MIX and Mk20 obtained the highest %Ndfa, while MIX and Y16 accumulated the highest total dry matter. In contrast, Control had the lowest chlorophyll content, total dry matter and %Ndfa. These results suggested that all bacterial inoculations increased biomass and chlorophyll content, but particularly the combination of the three bacterial strains (MIX) enhanced N_2 fixation. Y16 concentrated the highest proline content, which is a response related to drought stress, suggesting that the best inoculation treatment to enhance BNF and yield could be the combination only between *Pseudomonas fluorescens* (Mk20) and *Rhizobium phaseoli* (M9).