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***Interactive comment on “Phosphorus release capacity of soluble P fertilizers and insoluble rock phosphate in response to phosphate solubilizing bacteria and poultry manure and their effect on plant growth promotion and P utilization efficiency of chilli (*Capsicum annuum* L.)” by M. K. Abbasi et al.***

**Anonymous Referee #2**

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Overview: The study examined the effect of poultry manure (PM) and PSB on efficiency of rock phosphate (RP), soluble P fertilizers (SSP and di-ammonium phosphate, DAP) on the capacity of a soil to release P, growth, yield, P-uptake and P utilization efficiency (PUE) of chilli (*Capsicum annuum* L.) grown under greenhouse conditions. Given the importance of find ways to improve the PUE in agricultural systems to increase yields

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and to reduce the P footprint in the environment, this type of studies are of high relevance.

General comments: 1) The title could be more concise, for example: Effect of phosphate solubilizing bacteria and poultry manure on plant growth and P utilization efficiency of Chilli (*Capsicum annuum* L.). 2) The soil used for the study showed initial pH values of 7.57 (lightly alkaline). There is evidence that in this type of pH, the phosphate could be in a complex form with Calcium. Therefore, some data is desired on Calcium and Magnesium contents. Please include this aspect on the discussion section. 3) RP works best in acidic soils, then what what the purpose of evaluate RP in the selected (slightly alkaline) soil? 4) What was the logic behind the mixtures of treatments of 50%:50%? 5) Did you measured the basal level of PSB of the evaluated soil? It would be important to determine the effect of the basal PSB present in the soil in the capacity to release phosphorous. Consequently, autoclaved soil would be an option in order to differentiate the PSB treatment as the soil used could have had a native PSB activity. Hence, fungi and mycorrhizae play a role in P mobilization affecting the P use efficiency. 6) As the value of organic matter is low in the soil used for the study, could this be a reason for the low solubilization of phosphorus that is retained in the soil? Please discuss. 7) What do you think is the reason behind the high levels of phosphorus in the day 0 of the incubation study. In fact for some treatments this time point show the highest P levels when compared to the other time points. Please discuss 8) What were the criteria to select Chilli to perform the study?

Specific Comments: 1) Page 1840, line 9: Correct soil type named as sandy loam, according to Table 1 is loam. 2) Please correct the pH value in Table 1 according to Table 2. 3) Please correct the phosphorus value of Table 1 with the data of Table o 3 of the soil incubation test. 4) Page 1844 Materials and Methods section 2.1 line 10, having discussion on complexation with iron and aluminum and this binding occurs more in acidic soils, that is not the case of soil in this study. 5) Please name treatments T0... T11 in the tables as named in figure 1.

**BGD**

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