

## ***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.***

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Overview: The authors investigated the potential of increasing phosphate availability by the addition of P-solubilizing bacteria (PSB) to the cheaper insoluble rock phosphate fertilizer compared to traditional fertilization approaches (poultry manure and soluble P fertilizers). The study found no significant increase in phosphate availability

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when PSB were applied in combination rock phosphates. However, a combination of reduced soluble P fertilizers or poultry manure in combination with rock phosphates and PSB yielded similar levels of available P. Chilli phosphorus use efficiency (PUE) was greatest with either soluble fertilizer and poultry manure additions. A treatment of reduced poultry manure in combination with rock phosphates and PSB resulted in a similar PUE and holds promise that we could replace some of the fertilizer with rock phosphates without jeopardizing plant phosphorus availability and PUE.

General comments: 1) Title is very long. I recommend making it more concise. 2) Why were soils of a near neutral pH selected? Would you not expect the least amount of an effect of solubilizing bacteria under those conditions? Does this represent the most common soil type in the region? Please elaborate on why the specific soils were used in the experiment. a. Also, the soil used had a pH of 6.89 while the data in the experiments shows pH values starting at 7.57-8.10. What caused the basifying effect? b. I would argue that the main reason you see a strong acidifying effect is because the addition in the PSB treatments temporarily increased the pH more than other treatments. The decrease during the experiment could have just as well arisen from a “move back to equilibrium” as well as due to any microbial activity. Please revise or defend your position on your PSB acidification rationale. 3) You seem to use “mineralization” and “solubilization” interchangeable. Please define the each term clearly and if they do represent the same thing use only one consistently. 4) Could you provide some more details on the selected cultures for the experiment? Why were these expected to have an effect? 5) Your discussion section repeats a lot of the result description from the result section. Please tidy up and make more concise. For example: 1) “Application of PSB. . .PSK on RP” seems to just describe results and not related to a specific part of the discussion; 2) first sentence on page 1855: “The P released. . .mineral pool”; 3) please make the first paragraph of discussion section 4.2 (page 1856) more concise. 6) What is the source of the “thoroughly processed soil” on page 1847? 7) Would the logical deduction on mid page 1854 not be that RP works best in acidic soils while poorly in neutral (your study) and alkaline soils? Please include some hypothesis on

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why or why not you think that might be. 8) I find the P-fixation mechanism not strong since most of your soils are near neutral. Could you provide some alternative reasoning or provide the reasoning why these soils still have such high sorption capacity. What level of sorption capacity would be expected in the soil type used? 9) Figure 3 has only 11 bars and not the 12 needed to represent all treatments, thus, unable to assess what the data suggests. Please correct. 10) The paper has a decent amount of typo's. Please read carefully and correct. See specific comments for details on the once I caught.

Specific Comments: 1) Page 1841, line 24: workout should be worked out. 2) Page 1845, line 23: change to "were" 3) Page 1845, line 23-25: correct to "Soil samples were pre-incubated. ... 4) Page 1846, line 12: and "the" weight 5) Page 1853, line 19: access incorrect word usage, for example determine would work. Pleas correct. 6) Page 1855, first sentence: poor sentence, unclear what is meant. Please rephrase. 7) Page 1857, line 11: wordy, for example: . . .full DAP saving almost 50%.... 8) Page 1855, line 8: Poor sentence structure; should be: . . .that "the" combination. ... 9) Figure 2 and Table 3 seem to show duplicative information. Do not see the value of figure 2. Please remove or justify its usage.

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Interactive comment on Biogeosciences Discuss., 12, 1839, 2015.