

## Abstract template

# Can Phosphate Solubilising Bacteria be of use on phosphate saturated soils?

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Due to decades of excess phosphorus fertilization in Flanders, most acid sandy soils became P saturated. This saturation implies that farmers in these areas are bounded to very strict P fertilization rules. The bulk of the (excessive amount of) P in the soil is strongly adsorbed and not directly available for plant uptake. Therefore, it is necessary to look for a way to make the P more available to the crop, even in these P saturated soils. Phosphate solubilising bacteria (PSB) transform unavailable P into plant available forms, and could thus prove to be very useful even in P saturated soils under severe fertilization restrictions. The goal of this research is to investigate the survival and performance of PSB in conditions of high total P content in soil.

Five PSB species, namely three *Bacillus* and two *Pseudomonas* species, were selected. Firstly they were tested on different media with different amounts of insoluble phosphate, to check their survival and their P solubilising potential under completely controlled conditions. Then the bacteria will be brought in a more realistic environment, namely in quartz sand with a nutrient solution that supplies all nutrients to the bacteria except P. The P will be provided in an insoluble form as  $\text{FePO}_4$ ,  $\text{AlPO}_4$  or  $\text{CaPO}_4$ . In a next step, the bacteria will be inoculated in P saturated soil under controlled conditions, to test their P solubilising capacities under these specific conditions, and crop P uptake will be monitored simultaneously.