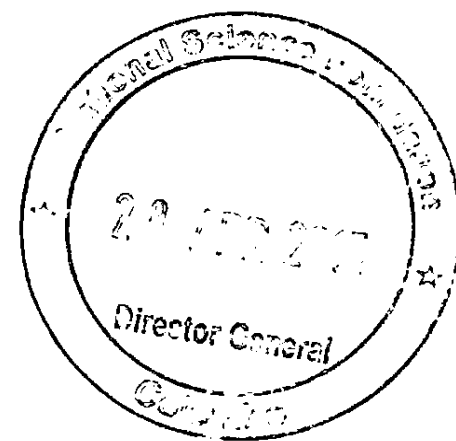


## Section 2

### Executive Summary of the project



The objective of this study was to isolate and characterize efficient phosphate solubilizing bacteria (PSB) from Eppawala rock phosphate (Rock-P) deposit, Sri Lanka, and to evaluate their ability to solubilize Rock-P and to promote early growth of rice. Twenty PSB strains were isolated from Eppawala rock phosphate deposit. Evaluation of their ability to solubilize  $\text{CaHPO}_4$ ,  $\text{AlPO}_4$  and  $\text{FePO}_4$  and Rock-P on modified Pikovskaya agar and liquid media, revealed six efficient Rock-P solubilizers and were chosen for further studies. The strain EP-11 released, the highest amount of soluble P, 118 ppm in liquid medium containing Rock-P (1% (w/v), <0.037 mm). P Solubilization activity of all six strains occurred with significant drop in culture pH. Characterization of six strains by 16S rRNA-RFLP genotyping revealed that they belong to three RFLP genotypes. The isolate EP-11 remarkably improved the soil available P, rice plant height, biomass and P uptake of traditional rice variety Suduheenati and modern variety BG352 grown in pots- cultures supplemented with Rock-P as the sole P fertilizer. The most prominent effect on growth of rice seedlings was observed on Suduheenati variety where soil P, plant shoot length, dry weight, and plant P content were increased by 226%, 80%, 300%, and 70%, with respect to uninoculated control. Whereas with Bg 352 those values remained 99%, 48%, 150% and 27% respectively. The present results demonstrate that capability of this strain to convert insoluble Rock-P into plant available forms and therefore hold a great potential for development as biofertilizer to enhance soil fertility and promote plant growth.