

Oral presentation: 101

## **Isolation of fungal spp. associated with the rhizosphere of Suwandel, a traditional Sri Lankan rice variety and their phosphate solubilizing ability**

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Rice (*Oryza sativa* L.) is the staple food in Sri Lanka. Cultivation of traditional rice varieties using organic farming practices is a solution for the high agrochemical usage on improved rice varieties. Amongst microorganisms, rhizosphere fungi promote plant growth by enhancing phosphate availability to plants through solubilizing insoluble inorganic phosphate in phosphorous deficient environments. Therefore, this study was focused on the isolation and identification of rhizosphere fungi of rice variety Suwandel and determination of their phosphate solubilizing ability as a mean of using the high phosphate solubilizing fungal spp to enhance the growth and yield of rice. The isolation of fungal spp from the rhizosphere of Suwandel plants was carried out by soil dilution plate technique. Phosphate solubilizing ability of isolated fungi was determined both qualitatively and quantitatively. In qualitative evaluation, all isolated fungi were inoculated on Pikovskaya's agar medium, each with 5 replicates and the Phosphate Solubilization Index (PSI) was calculated using the diameter of clear zones produced by the respective fungi. In quantitative evaluation, the available phosphorus content was evaluated after growing each fungus in Pikovskaya's broth with 3 replicates and removing the cellular contents by centrifuging. Absorbance of each supernatant was measured using Murphy and Riley method. In the present study, 20 different rhizosphere fungi associated with the roots of Suwandel were isolated and identified. From the total isolated rhizosphere fungi, *Penicillium* sp. 1, *Penicillium* sp. 2, *Chaetomium*, and *Aspergillus* sp. showed phosphate solubilizing ability. Amongst them, *Penicillium* sp. 1 showed a significantly high ( $P \leq 0.005$ ) phosphate solubilizing ability, according to Tukey's pairwise test. According to the quantitative evaluation, all tested fungi showed solubilized phosphorous concentrations in the range of 40 - 50 mg/L. Fungal isolates that showed higher PSI on solid agar medium showed a similar trend in liquid broth medium. These isolated phosphate solubilizing fungi have potential to be used in growth enhancement of rice.

**Keywords:** Phosphate solubilization, Pikovskaya's medium, rhizosphere, suwandel