D-79 The effects of rhizosphere bacteria on seed germination and root and shoot length of seedlings of chilli cultivars

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Rhizosphere micro-organisms are known to produce different substances with properties of phytohormones. However different micro-organisms may have different effects on different cultivars of a crop plant. This has not been studied so far. The effect of 50 isolates of rhizosphere bacteria belonging to 18 species, on seed germination and root and shoot elongation of seedlings of 3 chilli cultivars was studied. The cultivars used were *Capsicum annuum* var. *acuminatum* cv. MI-1 and MI-2 (Heen miris) and var. *grossum* cv. CA-8 (Malu miris). Bacterial isolates have rhizosphere origin and plants were collected for isolation from various regions of Sri Lanka. Bacteria were grown in a 10 ml Nutrient Broth in boiling tubes. Filter paper strips of 2.5 x 14 cm were placed in the tubes so as to immerse one end in the bacterial suspension. Eight chilli seeds per strip were placed in a groove made by folding the filter paper 1 cm from the top and allowed to germinate. The seeds were "bacterized" by ascending liquid with bacteria. All treatments were repeated 3 times and scored percentage of germination and root and shoot elongation after 10 days, 14 days and 16 days respectively.

Only 36% of the isolates showed some effect. One *Pseudomonas fluorescens* strain showed negative effect on all parameters. Only one *P. fluorescens* strain affected positively the root elongation of MI-1; others had either no effect or significant negative effect on root growth. Only 2 strains reduced seed germination. Root and shoot elongation of MI-1 responded markedly for bacteria. Seed germination of CA-8 was increased by 8 strains.

Although *P. fluorescens* strains are considered as plant growth promoting bacteria, there are some strains with deleterious effects on plant growth. Various cultivars respond differently to given rhizosphere bacteria.