

## Variable responses on early development of shallot (*Allium ascalonicum*) and mustard (*Brassica juncea*) plants to *Bacillus cereus* inoculation

### ABSTRACT

**Aim:** Auxin, a phytohormone secreted by plant growth-promoting rhizobacteria is one of the direct mechanisms vital for plant growth promotion. A laboratory experiment was conducted to observe the effect of IAA-producing and non-IAA-producing diazotroph *Bacillus cereus* strains on early growth of shallot (*Allium ascalonicum*) and mustard (*Brassica juncea*) plants.

**Methodology and Results:** Treatments evaluated were as follows: Control = uninoculated, no inoculation, UPMLH1 = IAA-producing *B. cereus* UPMLH1, and UPMLH24 = non-IAA-producing *B. cereus* UPMLH24. Inoculation with IAA-producing *B. cereus* UPMLH1 significantly increased shallot adventitious roots (root number and length) and shoot growth (19 to 54% increment). Inoculation of non-IAA-producing *B. cereus* UPMLH24 did not significantly improve growth of adventitious roots of shallot as compared to uninoculated control, except its shoot (up to 40% increase). However, primary roots and shoot growth of mustard plants significantly increased through inoculation with IAA-producing and non-IAA-producing strains (14 to 73% increment).

**Conclusion, Significance and Impact of Study:** The results indicated that exogenous IAA secreted by *B. cereus* UPMLH1 might have play an important role in inducing roots of shallot bulbs and it may have a variable promotional effect depending on plant species.

**Keyword:** Indole-3-acetic acid; Inoculation; Mustard; Plant growth-promoting rhizobacteria; Shallot