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An endophytic Bacillus strain promotes growth of oil palm seedling by fine root biofilm formation (Article)

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Abstract

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Plant-microbe interaction is one of the most important determining factors that could influence plant health and soil fertility. In this research, plant-microbe interaction between Bacillus salmalaya strain 139SI and oil palm (Elaeis guineensis Jacq.) was initiated by inoculating B. salmalaya strain 139SI at the early stage of oil palm seedling growth. Colonization of the strain 139SI on oil palm seedling roots and its mechanisms of plant growth promotion were evaluated and characterized. Analysis of strain 139SI colonization showed that the strain colonizes and attached to the root surface by forming biofilm. The strain 139SI was identified as endophytic bacteria as it shows the ability to colonize plant rhizosphere and penetrate into the plant internal root tissue. The results also indicate that the strain was positive for indole acetic acid (IAA), nitrogen fixation, phosphate solubilization, and siderophores production. The plant growth promoting features of strain 139SI were further confirmed by growth enhancement of oil palm seedling inoculated with this strain. The overall findings of this study suggest that associations of this novel strain could enhance growth quality of oil palm seedlings, hence, enable better adaptation of the seedlings to the environmental conditions of the planting site. © 2017

SciVal Topic Prominence

Topic: solubilization | phosphates | phosphate-solubilizing bacteria

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Reaxys Database Information

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