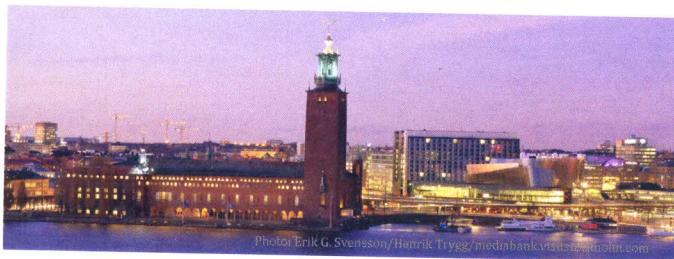


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Hormonal changes and growth of rice plants in response to bioagents and silicon fertilization application

Silva B G¹, Sousa P T¹, Souza A C A², Filippi M C³

¹ Amazonia Federal Rural University, Avenue Presidente Tancredo Neves, Belém, 66077-830, BRAZIL (gisele.barata@ufra.edu.br)

² Master in Agronomy, Street José Needermeier, Goiânia, 74360-340, BRAZIL Goiás Federal University, Highway GO-462, Goiânia, 74800-000, BRAZIL

³ EMBRAPA Rice and Beans, Highway GO-462, Santo Antônio de Goiás, 74800-000, BRAZIL

The demand for increased productivity of rice requires sustainable agricultural practices such as the combination of bioagents and Silicon fertilization, which has been shown that promotes plant growth. The objective was to determine the changes in growth, physiological and biochemical patterns of rice plants when treated with rhizobacteria (*Burkholderia pyrrocinia*: R-46; *Pseudomonas fluorescens*: R-55), *Trichoderma asperellum* (Ta) and fertilized with calcium silicate and magnesium (Ca Si Mg).

Three assays, E1, E2 and E3 with three replications were conducted. E1: 16 treatments combined four Ca Si Mg (1,2,4 and 8 t ha⁻¹) doses, three bioagents (R-46, R-55 and Ta) and control; E2 and E3: the E1 top six treatments were evaluated for total sugar content, nitrate reductase activity, four hormones (indole-3-acetic acid (IAA), gibberellic acid, salicylic acid and jasmonic acid) contents, physiological parameters (CO₂ assimilation, transpiration; stomatal conductance, water use efficiency) and photosynthetic pigments.

Plants fertilized with 2 t ha⁻¹ Ca Si Mg and treated with all three bioagents showed higher biomass (68%), total sugar and gibberellin content, CO₂ assimilation and improved efficiency in water use. However, this same treatment also presented, a lower nitrate reductase activity, plant transpiration and AIA contents. The best contents of jasmonic (28%) were observed in plants treated only with bioagents Ta. The synergistic interaction between silicon fertilization and bioagents promoted rice plants growth through physiological changes and hormonal modulation.

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