

# Analysis of soybean seed germination parameters in the presence of actinobacteria

Rafael Ferreira Silva <sup>1</sup>, Patrícia Pereira Fontes <sup>1</sup>, Thiago de Freitas Ferreira <sup>2</sup>, Mariana Dias de Melo <sup>1</sup>, Maria Eduarda Leandro Assis <sup>1</sup>, Denise Mara Soares Bazzolli <sup>1\*</sup>.

<sup>1</sup>Departamento de Microbiologia, Universidade Federal de Viçosa, Instituto de Biotecnologia Aplicada à Agropecuária - BIOAGRO/UFV, Vila Matoso, 205 - Santo Antonio, Viçosa - MG, 36570-000.

<sup>2</sup>Instituto de Biotecnologia Aplicada à Agropecuária - BIOAGRO/UFV, Vila Matoso, 205 - Santo Antonio, Viçosa - MG, 36570-000.

\*Denise Mara Soares Bazzolli. E-mail: dbazzolli@ufv.br

The bioinputs market is expanding in Brazil and soybean cultivation is increasing demand for the use of these bioinoculants, which aims to improve the plant's performance in the field. The application of biologicals in the crop can be carried out through an inoculant jet at sowing, which establishes direct contact between beneficial microorganisms and the seed. Another commonly carried out practice is the prior treatment of seeds with the biological product. Therefore, the present work evaluates the germination of soybean seeds in the presence of *Streptomyces sp* isolates with biotechnological potential for seed protection against phytopathogens, in addition to the inoculation method. Ten isolates used belong to the Laboratory of Molecular Genetics of Bacteria (LGMB) located at the Institute of Biotechnology Applied to Agriculture (BIOAGRO). To prepare the inoculum, the microorganisms were obtained after cultivation in a Petri dish containing ISP-2 agar (International *Streptomyces* Project) and incubation in BOD at 28°C for seven days. The evaluations took place according to the rules for seed analysis (RAS) (BRASIL, 2009). Thus, 100 seeds of the UFVS83C11 variety were wrapped in germination paper and kept in a greenhouse at a temperature of 20°C to 30°C. After 90 hours, the germination rate and root length were evaluated. To seedling vigor in the sand, a promising isolate was chosen, in which 50 seeds of the same variety were evaluated in two treatments: immersion or application during sowing. Distilled water was established as a positive control for germination. Germination rates on filter paper of seeds related to *Streptomyces sp* isolates did not differ significantly from the control, with averages more significant than 95%. However, 3 isolates negatively affected radicle length, statistically lower than the others. In the vigor test, the inoculum reduced root length and fresh weight to relation control but increased the germination rate. Furthermore, the prior immersion method demonstrated a lower percentage of germination compared to inoculation at sowing, both for bacterial solution and water. It is concluded that *Streptomyces sp* isolates do not significantly interfere with the soybean seed germination rates. The best method to evaluate this interaction is inoculation at sowing. However, future investigations in soil are necessary to evaluate the greater diversity of interactions between these bacteria and the plant and identify the impact on the crop cycle.

**Key words:** *Streptomyces*; seed; germination.

O trabalho avaliou a germinação de sementes de soja na presença de isolados de *Streptomyces sp*, além do método de inoculação. A taxa de germinação em papel germitest com os isolados não diferiram significativamente do controle. No teste em areia, a utilização do inóculo reduziu o comprimento da raiz e o peso fresco, mas aumentou a taxa de germinação. O método de inoculação na semeadura mostrou maior porcentagem de germinação. Assim, os isolados de *Streptomyces sp* não interferem significativamente na taxa de germinação de sementes de soja e o melhor método para avaliar essa interação é a inoculação na semeadura.

**Palavras-chave:** *Streptomyces*; semente; germinação.

Acknowledge: CNPq, Sítio Barreiras Fruticultura Ltda, Fapemig, Capes.