

## **Water deficit stress effects on N<sub>2</sub> fixation in cowpea inoculated with different Bradyrhizobium strains**

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### **Abstract**

The objectives of this experiment were to select strains of *Bradyrhizobium* sp. resistant to water stress, envisaging an increase in N<sub>2</sub> fixation in cowpea (*Vigna unguiculata* (L.) Walp.), and to verify the plant's adaptive physiological responses to water stress. The experiment was carried out in greenhouse conditions using random complete blocks subdivided into plots adjusted to soil water potential levels of -6.0, -75.0, and -85.0 kPa, and subplots containing strains of *Bradyrhizobium* sp. (SEMIA 6145, 6086, 6002 and NFB 700), with four blocks. The soil was a Yellow Latosol with pH 6.3. The crop used was cowpea cv "IPA 204". Stress was applied continuously beginning 15 days after planting, by the control of water potential through a porous cup. Various parameters were evaluated every seven days, until final harvest at 45 days. There was significant interaction between *Bradyrhizobium* strains and water stress. At the more negative  $\psi_{\text{sim}}$ , plants inoculated with the SEMIA 6145 had higher LHb concentration, ureide-N,  $\psi_{\text{iw}}$  and root dry matter, forming associations of greater symbiotic efficiency, while plants inoculated with SEMIA 6086 were not resistant to stress. LHb concentration apparently was not inhibited at  $\psi_{\text{iw}}$  -1.0 MPa in cowpea. The *Bradyrhizobium* strains may have affected the metabolism of N assimilation and/or transport.