539-6 Photosynthesis Influenced by Irradiance, External Carbon Dioxide Concentration and Temperature in Crotalaria Species.

Poster Number 251

See more from this Division: A06 International Agronomy
See more from this Session: Advances in International Agronomy (includes Graduate Student Competition) (Posters)

Monday, 6 October 2008
George R. Brown Convention Center, Exhibit Hall E

Virupax Baligar, *USDA-ARS-Sustainable Perennial Crops Lab, Beltsville, MD, James Bunce, USDA-ARS, Beltsville, MD and Nand Fageria, Soil Science, National Rice & Bean Research Center of EMBRAPA, Santo AntÔnio De Goias, Go & Usda-Ars, Belstiville, MD, Brazil*

Abstract:

Abstract

In tropical plantation crops perennial legumes are grown as understory cover crops or as green manure crops to improve soil fertility and to reduce soil degradation. These understory plants receive very limited irradiance and encounter elevated levels of CO_2 and temperature. A greenhouse experiment was conducted to evaluate the independent short-term effects of photosynthetic photon flux density (PPFD), external carbon dioxide concentration [CO_2] and temperature on net photosynthesis (P_N), internal CO_2 (Ci), stomatal conductance (Gs) and transpiration (E) in four *Crotalaria* species (*C. breviflora, C. mucronata, C. ochroleuca, C. spectabilis*). In all the Crotalaria species, increasing PPFD from 50 to 1500 µmol m^{-2} s^{-1} increased P_N by 21 fold. Increasing the external [CO_2] from 100 to 1000 cm^3 m^{-3} increased P_N by about 5 fold. Increasing the temperature from 25 to 35 °C increased P_N of *Crotalaria* species by 11%. Shade management is critical to maintaining the productivity of these tropical perennial legumes.

See more from this Division: A06 International Agronomy
See more from this Session: Advances in International Agronomy (includes Graduate Student Competition) (Posters)

<< Previous Abstract | Next Abstract >>