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Cristiano Dela PICCOLLA[1], Etelvino Henrique NOVOTNY[2], Ryosuke TAJIMA[3] and Masanori SAITO[3]

[1]Graduate school of Soil and Plant Nutrition, Center of Nuclear Energy in Agriculture, University of Sao Paulo
[2]EMBRAPA Soils, Brazil
[3]Field Science Center, Graduate School of Agricultural Science, Tohoku University

Phosphorus low content in soils located in the tropics limits crop yield, principally when below optimum fertilizer doses are applied. One way for plants to overcome phosphorus deficiency is through the establishment of a symbiotic interaction with arbuscular mycorrhizal fungi (AMF), which are organisms ubiquitous in soils. However, plant colonization with AMF is not abundant and beneficial for plant growth at all times, but certainly could be enhanced through soil management practices such as addition of organic material and small amounts of nutrients. Biochar, a product obtained by pyrolysis of organic materials has higher stability in soils than vegetal wastes and contains soluble nutrients in its ash fraction. Therefore, biochar could be employed to assist AMF symbiosis, plant nutrient uptake and growth.

Our objective was to evaluate the effect of addition of two contrasting biochars to soil on plant-AMF symbiosis, plant growth and nutrient uptake. Biochars produced from *Eucalyptus* wood chips pyrolysis at 300 and 700 °C were applied to a red soil from Okinawa, Japan. The soil was autoclaved and inoculated with AM fungi, *Glomus* sp. R10. A dwarf cultivar of sorghum was cultivated for 4 and 8 weeks in growth chamber. Additionally, spore germination of AMF fungus, *Gigaspora margarita*, was evaluated in two germination media (soil and sand) in order to verify the effect of biochar in media with contrasting buffer capacity.

Biochar produced at 700 °C increased soil pH and diminished toxic aluminum in the pot experiment, which augmented plant root growth through formation of longer and thinner roots. Ameliorated root system increased plant colonization by AMF (symbiosis) and consequently phosphorus uptake. We attributed lack of effect of biochar 300 °C on plant symbiosis and growth to spore germination inhibition verified for this biochar. Conversely, 700 °C biochar increased hyphae length in germinated spores.