

Co-Limitation of Iron Deficiency in Stem Allantoin and Amino-N Formation of Peanut Plants Intercropped with Cassava

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Abstract : Co-limitation of iron (Fe) deficiency in legume nitrogen fixation process is not well understood. Our objectives were to examine how peanut plants cope with Fe deficiency with the rhizobial inoculants and N-nutrient treatments. The study was conducted in the tropical Hainan Island during 2012-2013. The soil was strongly acidic ($\text{pH } 4.6 \pm 0.7$) and deficient in Fe ($9.2 \pm 2.3 \text{ mg/kg}$). Peanut plants were intercropped with cassava. The inoculants and N treatments were arranged in a split-plot design with three blocks. Peanut root nodulation, stem allantoin, amino acids and plant N derived from fixation (P) reduced with declining soil Fe concentrations. The treatment interactions were significant on relative ureide % and peanut yields ($P < 0.05$). Residual fixed N from peanut plants was beneficial to cassava plants. It was concluded that co-variance of Fe deficiency could influence peanut N fixation efficiency and rhizobia and N inputs could help improving peanut tolerance to Fe deficiency stress.

Keywords : amino acids, plant N derived from N fixation, root nodulation, soil Fe co-variance, stem ureide, peanuts, cassava

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