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357-5 Growth and Micro Nutrient Nutrition of Cacao Influenced by Source of Iron.

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Productivity and sustainability of cacao (*Theobroma cacao* L.) in tropical soils is affected by the availability of micronutrients in the soil. Deficiency of iron (Fe) in soil pose a major growth limiting factor for cacao in highly weathered, coarse textured and leached soils.. Different forms of Fe fertilizers have been developed to improve Fe availability to plants in various types of soils. Information is lacking on the cacao response to various source of Fe. A greenhouse experiment was conducted to evaluate the effects of five iron sources (FeSO<sub>4</sub>·7H<sub>2</sub>O, FeEDDHA, FeDTPA, FeEDTA, FeHEDTA) at 10 mg Fe/kg soil mix on growth and micro nutrient nutrition of cacao. Iron sources had significant effects on biomass accumulation of leaf, shoot and root, leaf area, content of chlorophyll a and b, carotenoid, and SPAD values. Total biomass accumulations and leaf areas were highest with FeEDTA and lowest with FeSO<sub>4</sub>. Concentrations of chlorophyll a and b and carotenoids were highest with FeDTPA and lowest with FeSO<sub>4</sub>. Iron sources also had significant effect on shoot concentrations of Cu, Fe, Mn, and Zn but had no effect on the concentrations of B. The concentrations of Cu and Fe were highest with FeHEDTA and FeEDTA respectively and lowest with FeSO<sub>4</sub>. However, the concentrations of Mn, and Zn were highest with FeDTPA and lowest with FeHEDTA. Overall Fe concentrations were positively correlated with B (r=0.92\*\*) and Cu ((r=0.35 NS), however they were negatively correlated with Mn (r=-0.60\*\*) and Zn (r=-0.46\*). Overall addition of Fe chelates to soil improved Fe supply and resulted in decrease shoot concentrations of Mn, and Zn

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