Effect of Organic Acids Amendment on the Growth and Yield of Soybean (*Glycine max*) in Ultisol

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Abstract	Aluminum toxicity and low soil P are the major fertility constraints in Ultisols. The mechanism of resistance to aluminum toxicity has been attributed to the Al-dependent release of organic anions from roots. The present study examined ameliorative effect of adding free citrate, malate and lactate into the soil to the growth and grain yield of soybean. The organic acids were added at equivalent weight ratios of 1:2,1:1 and 2:1 to exchangeable Al. Significantly longer root lengths, higher root biomass and higher shoot biomass were recorded in soil amended with malate and lactate at equivalent weight ratio of 1:2 to exchangeable Al. However, addition of organic acids at equivalent weight ratio of 2:1 produce significantly shorter root lengths, lower root biomass and lower shoot biomass. Severe growth retardations were observed in lactate (2:1) amended soil. While showing ameliorative effect on soybean growth in Ultisol, addition of lactate at equivalent weight ratio of 1:2 resulted in higher aluminum concentration in plant organs. Amendments using lactate at equivalent weight ratio of 1:2 also increase grain yield of soybean. (C) 2010 Friends Science Publishers
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