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Effect of different mulching materials in combination with NPK fertilizer on soil chemical properties and tissue nutrient content of cocoa

A field experiment was conducted at Export Agriculture Research station, Matale in the mid country intermediate zone of Sri Lanka to evaluate the effect of application of different types of mulching materials with three regimes of fertilizers on soil chemical properties and tissue nutrient content of cocoa. The different types of mulches used were coir dust, gliricidia, dried cocoa pod husk and grass at a rate of 10kg/plant/year, and control without, mulch. The experiment also had three regimes of inorganic fertilizers namely no fertilizer, 50% of the recommended rate and the recommended rate (100 N, 75 P₂O₅, 100 K₂O and 14 MgO g/p/y). Higher percentages of soil nitrogen were recorded with the application of gliricidia or grass mulches irrespective of mineral fertilizer. The percentage of total N content in soil was significantly greater (0.33%) with

gliricidia alone than 100% recommended mineral fertilizer (0.18%). Application of dried cocoa pod husk without fertilizer gave soil N content of 0.19% which was not significantly different from the control (0.09%). Highest available P content of 8 ppm. was recorded with cocoa mulch and the recommended level of fertilizer. A greater soil exchangeable K content of 894 mg/kg were observed with cocoa husk mulch and 50% of the recommended fertilizer level. Exchangeable K content in soil was significantly higher even in mulching with cocoa husk and without fertilizer (295 mg/kg) than in control (144 mg/kg). A greater Mg content in soil was recorded with gliricidia and 50% of the recommended dose of fertilizer (593 mg/kg). Nitrogen content in cocoa leaves was increased significantly by application of mineral fertilizer. However, mulching had no impact on leaf N and P content. A greater leaf K content of 0.94% was showed with coir dust mulch and 50% of the recommended level of fertilizer followed by cocoa husk without fertilizer (0.91%). The results suggest that the possibility of cut down the chemical fertilizer for by 50% with the application of cocoa pod husk or gliricidia mulch at rate of 10 kg/plant/year.