

### Impact of green manure *Gliricidia sepium* on early growth of Coffee

A field experiment was conducted at Export Agriculture Research Station, Matale, on Reddish Brown Latasolic soils to investigate the effect of inorganic fertilizer, gliricidia green manure (GM) and combinations of them on growth of coffee and on soil chemical properties. Four months old coffee seedlings were field planted in 45x45x45 cm spacing. To provide shade, 2 m long *Gliricidia* sticks were planted at the same distance, in between the coffee rows. The five treatment combinations tested were control, full amount of inorganic fertilizer (100 N, 75 P<sub>2</sub> O<sub>5</sub>, 100 K<sub>2</sub> O, 14 MgO g/ plant/ yr), ½ of the inorganic fertilizer + 10 kg of (GM), ½ of the inorganic fertilizer + 20 kg of (GM) and 20 kg of GM alone. Green manure was applied per plant basis in 4 split applications and inorganic fertilizer was applied in two split applications. Growth of coffee plants was monitored for two years.

All the green manure applied treatments recorded significantly (P=0.05) higher plant height, number of lateral branches per plant and lateral spread over the control. Except half fertilizer with 10 kg GM treatment, other two green manure treatments gave a significant higher leaf count over the control. Furthermore, number of lateral branches per plant, lateral spread and number of leaves per plant in half fertilizer with 20 Kg GM treatment was significantly higher over the full amount of inorganic fertilizer alone.

Total Soil N content in first 10 cm depth of either inorganic fertilizer or green manure treatments was increased by two fold in comparison to the control (0.12%) Combination of both tends to increase the same by about 2.5 fold. Exchangeable K content increased from 100mg/ kg (control) to 170 mg/ kg with inorganic fertilizer but with green manure the same was increased to 440-66-30 mg/ kg, depending on the rate. Increase in exchangeable soil Mg content in inorganic fertilizer treatment was over two fold while with green manure treatments, the same was 2.5 to 3 fold in comparison to control (481 mg/ kg). Soil organic matter content of 10 and 20 kg GM treatment were 2.21 % and 3.36% in comparison to 1.11% and 1.10% found in control and inorganic fertilizer plots, respectively. The improvements soil properties were found even at the deeper soil layers (20-30 cm).