

**COMPARISON OF SOIL QUALITY PARAMETERS UNDER
DIFFERENT VEGETATIONS**

C J Gagaweera, G A Chandana & R T Seresinhe
Faculty of Agriculture, University of Ruhuna

A short-term field experiment was conducted to study the effects of different vegetation covers on the soil fertility status. Soil samples were taken from several fields from Mapalana farm. The treatments were grass x legume mixed sward (T₁), grass monoculture (T₂), legume monoculture (T₃), vegetable (T₄), coconut field with natural vegetation (T₅), forest land (T₆), bare land (T₇) and cover crop grown with rubber (T₈).

Each field was divided in to 20 x 20 m four blocks and four random samples from each block were taken at 0-10 cm depth. Soil samples were passed through 0.2 mm sieve and finely ground for subsequent analysis. Samples were analysed to determine the pH and organic matter content. Soil nitrogen percentage was analysed by the Kjeldhal method. Bulk density was determined using the soil core method and oven drying at 105⁰ C until a constant weight was obtained.

Soil organic matter content ranged from 3.622 % ± 0.819 (grass x legume mixed sward) to 1.433 % ± 0.833 (vegetable). Grass, legume, forest and coconut land had medium organic matter contents. Vegetable land had the least organic matter content may be due to chemical fertilizer application. Soil nitrogen percentage was also highest in mixed culture (0.1812 % ± 0.0016) followed by the legume crop (0.162 % ± 0.0089) showing the benefits of nitrogen fixation and transfer in increasing soil organic matter and nitrogen. The nitrogen content of coconut land was also higher (0.1384 % ± 0.0157) due to nitrogen recycling via buffalo manure. Similarly nitrogen percentage of the soil was lowest in vegetable cultivation (0.0571 % ± 0.0088).

In contrast, soil bulk density was higher (p<0.05) in coconut land (1.491 g/cm³ ± 0.1037). This may be due to the soil compactions occurred by long-term buffalo grazing. Undisturbed lands such as forest cover, cover crop with rubber plantation etc. had lower bulk densities (1.257 g/cm³ ± 0.369 and 1.255 g/cm³ ± 0.033 respectively). Highest value (P<0.05) of pH was observed in grass monoculture (6.3933 ± 0.311). Mild acidic conditions of

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soils were shown in mix culture (4.84 ± 0.29), vegetable (4.59 ± 0.22), bare land (4.89 ± 0.20) with cover crop grown with rubber (5.12 ± 0.25)

The study concluded that the grass x legume mix culture showed benefits of nitrogen fixation and transfer associated with higher total nitrogen and organic matter content in soil. Positive impact on soil nitrogen status on buffalo grazing showed negative impact on soil bulk density. Human intervention such as chemical fertilizer application etc also affect on soil characteristics.