Identifying the Best Soil Incorporation Stage of Horse Gram [*Macrotyloma uniflorum* (Lam.) Verdc.] as a Green Manure Crop

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Horse gram [*Macrotyloma uniflorum* Lam. (Verdc.)] is a legume which can be easily grown in Sri Lanka. However, long life cycle duration and poor productivity due to lower flowering in some growing areas of the country are some of the restrictions in horse gram cultivation. Due to the higher growth rate of the plant, there is a high potential of horse gram to be used as a green manure. Therefore, identification of the correct soil incorporation stage of horse gram as a green manure under Sri Lankan conditions is very important. With that objective, the experiment was conducted at the University Sub-campus, Mahailluppallama and horse gram seeds were broadcasted evenly over nine plots at the rate of 25 Kg ha^{-1}. Then, the plants were cut and biomass was mixed into soil at three treatment stages as; 6 weeks after sowing (WAS, T1), 8 WAS (T2) and 10 WAS (T3). Soil samples were collected at treatment imposition and, in one-week intervals after treatment imposition in three replicate plots per treatment at 0-15 and 15-30 cm depths and analyzed for nutrients. Simultaneously, plant biomass samples were collected every week in three replicates. Results revealed that, plant drymatter, N, P and K additions to the soil with values of 2839.6, 32.15, 6.25 and 24.06 kg ha^{-1} respectively were significantly greater ($P<0.05$) in T3 compared to T1 and T2. The N, P, K levels at the 0-15 and 15-30 cm depths of soil were greater compared to the initial soil nutrient levels in the T3 treatment during the period from zero to four weeks after soil incorporation. Therefore, according to the overall results of the study, 10 WAS can be recommended as the best stage to incorporate horse gram into soil to get the maximum benefits as green manure.

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