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***Pueraria phaseoloides* and *Croton laccifer* as sources for green manure formulations in Sri Lanka**

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One of the critical problems that Sri Lanka is facing today is the inorganic fertilizer problem, which has severely affected the economy and agriculture in the country. For this crisis, a potential and a profitable solution can be obtained using local green manures. Green manures are the plants that are incorporated into the soil while still green. They facilitate the plant growth by enhancing the soil health and fertility. In Sri Lanka, several plant species, *Gliricidia sepium*, Pora wel (*Pueraria phaseoloides*), Kappetiya (*Croton laccifer* L.), Ipil ipil (*Leucaena leucocephala*)-and Gansooriya (*Thespesia populnea*) are used as green manures since the past. This study evaluated the effectiveness of *Pueraria phaseoloides* and *Croton laccifer* L. as local green manures. In this research, experiments have been done on total nitrogen content, nitrogen release into the soil, impact of green manure on a selected plant growth (*Capsicum annum*) and changes in soil parameters after the application of green manure. For the determination of nitrogen amount, the Kjeldahl method and Ion selective nitrate probe were used. Results indicated that *Pueraria phaseoloides* leaves contained the highest amount of nitrogen as ammonium nitrogen (0.63%), while its stems contained the highest amount of nitrogen as nitrate nitrogen (0.11%). Similar observations were also made with *Croton laccifer*, where its leaves showed the highest amount of nitrogen as ammonium nitrogen (3.05%). Nitrogen release experiments showed that the nitrogen levels in soil increased over the time after the incorporation of plant materials. Incorporation of *Pueraria phaseoloides*, into soil increased the ammonium nitrogen percentage from 0.11% to 0.7% and the nitrate percentage in soil was increased from 0.005% to 0.09%. Similarly, incorporation of *Croton laccifer* into soil increased ammonium nitrogen percentage from 0.11% to 0.92%. In the growth experiment, *Pueraria phaseoloides* and *Croton laccifer* plant materials were incorporated into soil, in pots, where chilli was used as the test plant. Results showed a 49.1% and 43.4% increase in height for *Pueraria* and *Croton*, respectively and a significant difference in plant height ($P < 0.001$) when compared to the control. Furthermore, the water holding capacity of soil was tested to study the changes of soil parameters after the incorporation of green manure. The results indicated that there was a significant increase, 20.9% and 16.5% for *Pueraria* and *Croton*, respectively in the water holding capacity of soil with and without the incorporation of *Pueraria phaseoloides* and *Croton laccifer* plant materials. The overall results indicated that *Pueraria phaseoloides* and *Croton laccifer* can be used as a potential solution for the fertilizer problem.

Keywords: Green manure, Ammonium, Nitrate, Pueraria, Croton