

Utilization potential of *Annona glabra* leaf and seed extracts as organic liquid fertilizer for *Raphanus sativus*

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Annona glabra commonly known as Pond Apple is an invasive tropical fruit tree which grows in wetlands in Sri Lanka. Its seedlings carpet the banks of watercourses, preventing other plant species from germinating and growing. Hence, it replaces the native vegetation and poses threats to the survival of native plant communities. Because of its higher growth rate, *A. glabra* is an excellent source of biomass and hence this study aimed to identify utilization potential its biomass as organic fertilizer. Oven dried powdered leaves of *Annona glabra*, *Pongamia pinnata*, *Moringa oleifera* and seeds of *A. glabra* (100 g each) were digested separately for two weeks with 600 ml cow urine with frequent agitation. Commercial fertilizer (Maxicrop) and distilled water were used as a standard and a control respectively. Nutrient contents of all filtrates were analyzed for total nitrogen (Kjeldhal method), total phosphorus (Molybdo- vandate method), potassium, magnesium, calcium, zinc and iron contents (Atomic absorption spectrophotometer). Foliar applications of 1:15 diluted extracts to radish (*Raphanus sativus*) were done in completely randomized block design with six replications at twice a week for 6 weeks in Mirigama. Shoot height, number of leaves, leaf area, and fresh and dry weights of shoot and root biomasses of *R. sativus* were determined for all treatments. The data were analyzed using the MINITAB R16 statistical package and ANOVA. Soil pH and organic carbon contents of the study site were 5.98 ± 0.37 and 6.32% respectively. Nutrient contents of *A. glabra* leaf extract (total nitrogen: 4452.0 mg/L, total phosphorus 1181.5 mg/L, potassium 3079.1 mg/L) and seed extract (total nitrogen: 2311.0 mg/L, total phosphorus 1447.5 mg/L, potassium 2658.8 mg/L) were determined. Application of both *A. glabra* leaf and seed extracts to *Raphanus sativus* showed significantly higher ($p < 0.05$) growth performances of shoot height (29.62 ± 1.744 cm), root length (14.3 ± 0.054 cm), fresh shoot weight (75.33 ± 7.49 g/plant), fresh root weight (21.33 ± 7.97 g/plant) and dry shoot weight (30.4 ± 0.38 g/plant) than commercial fertilizer, *Pongamia pinnata* and *Moringa oleifera* leaf extracts. In conclusion, combine application of *A. glabra* leaf and seed extracts is better than that of the other leaf extracts for growth and yield enhancement of *R. sativus*. As a results of an increase in the urban demand for organic horticultural products, study of uses of *A. glabra* extracts for the other crops are of great importance. Keywords: *Annona glabra*, *Raphanus sativus*, invasive species, organic fertilizer,