

**FOLIAR APPLICATION OF SEAWEED LIQUID EXTRACTS ON  
GROWTH PERFORMANCE OF *Glycine max* (L.)**



**B. W. LAKSHITHA WASANTHA BANDARA**



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EASTERN UNIVERSITY  
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## ABSTRACT

Ample amount of seaweed varieties found in the world which are usable for many purposes. Those are most valuable plant source found in the coastal areas. Due to the high fertilizer and pesticide usage in the world, people are facing lot of health problems and environmental issues. Farmers are using chemicals to increase growth and yield of plant or to reducing the pest and weeds problems. Instead of chemicals usage, seaweeds are better alternative to minimize those problems. In this regard, the first experiment was conducted to find out the seaweeds availability in the coastal Pasikudah area. Three different species available in plenty were identified in the experimental area and their Physio-Chemical properties were investigated. Hence, the first experiment revealed that *Sargassum crassifolium* has Nitrogen (1080 ppm), Phosphorous (192 ppm) and Potassium (4200 ppm), *Turbinaria turbinata* has Nitrogen (800 ppm), Phosphorous (28 ppm) and Potassium (3800 ppm), *Halimeda opuntia* has Nitrogen (500ppm), Phosphorous (33ppm) and Potassium (1170 ppm), Among the three species two most abundantly available species of *Sargassum crassifolium* and *Turbinaria turbinata* were selected for second pot experiment using two soybean varieties namely Pb-1 and MISB 01 as recommended by the Department of Agriculture, Sri Lanka.

The pot experiment was conducted in the Crop Farm, Eastern University, Sri Lanka to find out the effect of seaweed liquid extracts (*Sargassum crassifolium* and *Turbinaria turbinata*) on growth performance of two soybean varieties (Pb-1 and MISB 01). The Pb-1 and MISB 01 are the most popular varieties used for cultivation in Sri Lanka. The experiment was arranged in a factorial Complete Randomized Design (CRD) with six treatments and eight replications. Once a week seaweed extract 20% was applied to

both soybean varieties at weekly interval up to 6 weeks after planting and their performance were recorded.

Foliar seaweed extract applications of both seaweed varieties had significant ( $p < 0.05$ ) effect on the tested parameters of two soybean varieties. All the tested growth parameters were significantly affected by Seaweed Liquid Extracts (SLE).

Foliar application of *Sargassum crassifolium* extract and *Turbinaria turbinata* extract increased plant height (14.7% and 11.97%), leaf number (23.5% and 19.08%), leaf area (98.4% and 51%), Chlorophyll content (10.29% and 10.55%), number of flowers (133.89% and 87.08%), nodule numbers (176% and 88%), effective nodules (165.2% and 65.2%), nodule weight (147% and 90.26%), fresh shoot weight (72.61% and 46.03%) and dry matter content of shoot (107.7% and 50.9%) respectively, in MISB 01 variety.

The application of *Sargassum crassifolium* and *Turbinaria turbinata* foliar extracts increased plant height (11.0% and 8.26%), leaf number (32.09% and 25.92%), leaf area (96.04% and 59.12%), chlorophyll content (18.2% and 17.49%), number of flowers (104.25% and 29.78%), nodule numbers (130.4% and 47.82%), effective nodules (115.54% and 42.01%), nodule weight (221% and 135.23%), Fresh shoot weight (30.81% and 21.38%), dry matter content of shoot (93.52% and 59.11%) respectively in Pb-1.

Among two seaweed varieties, *S. crassifolium* giving the highest performance compared to the *T. turbinata* on number of flowers, number of nodules, nodule weight, effective nodules and biomass of both soybean Pb-1 and MISB 01 varieties.



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