

**APPLICATION OF *Hydrangea macrophylla* LEAF
EXTRACTS (HmLE) ON GROWTH AND YIELD
PERFORMANCE OF *Vigna radiata* (L.)**



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SRI LANKA

2018

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ABSTRACT

Increase of population growth and consumption requirements are placing unprecedented demands on agriculture. Now a day's approximately a billion of people are suffering from malnutrition, Chronic Kidney Diseases, Cancers and other health problems because of modern agriculture practices. The modern agricultural practices also tremendously degrading soil and aerial environment. To feed the world's growing population future food security and sustainability is very important to achieve global food production and environment sustainability. Agricultural system should be improved by reducing soil degradation and protection of biodiversity. Therefore, using of natural substances or exploring other alternative solutions are very vital replace the usage of synthetic fertilizers and other agro-chemicals.

Foliar fertilization is one of the very important methods to apply nutrients to crops. It has been used as a mean of supplying supplemental doses of minor and major nutrients, plant hormones, stimulants, and other beneficial substances. In this regard, initially an extract was prepared using the leaves of *Hydrangea macrophylla*. The *Hydrangea macrophylla* liquid extract has Nitrogen (400 ppm), Phosphorous (69 ppm) and Potassium (982 ppm), Magnesium, Manganese, Iron, copper and Zinc. A pot experiment was conducted using *Vigna radiata*-variety MI 5. This experiment was conducted in the Crop Farm, Eastern University Sri Lanka to find out the effects of *Hydrangea macrophylla* Leaf Extract (HmLE) on growth and yield of *Vigna radiata* variety MI 5. The experiment was arranged in Completely Randomized Design with 5 treatments and 4 replications. Once a week HmLE was applied at different concentrations (T2: 10% HmLE, T3: 20% HmLE, T4: 50% HmLE and T5: 100% HmLE) and distilled water was applied as control (T1). The performance

was recorded from two Weeks After Planting (WAP) up to eight WAP. Foliar application of HmLE had significant ($P < 0.05\%$) effects on tested parameters of *Vigna radiata* compared to the control treatment. The 20 % HmLE increased plant height (32.81%), root length (21.78%), chlorophyll content (48.27%), leaf area (113%), number of flowers per plant (50%), number of pods per plant (85.71%), dry weight of stem (132.93%), dry weight of root (75.32%), number of effective nodules (224.32%) and inter node length (72.59%) compared to the control. This may be due to the availability of micro, macro nutrients and gibberellins activity inducing ability in the HmLE. Therefore, 20% HmLE is recommended to apply for *Vigna radiata* which is environmental friendly.

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