

**A PRELIMINARY INVESTIGATION ON OPTIMUM SPACING FOR FIELD ESTABLISHMENT OF THE MEDICINAL PLANT *Phyllanthus debilis***

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*Phyllanthus debilis* Klein ex Willd. (Ela-pitawakka), an annual herb, native to Southern India and Sri Lanka, is in demand worldwide for its medicinal properties. It has been found to inhibit DNA polymerase of the hepatitis B virus and other hepatitis-DNA-viruses. Even though the whole plant of *P. debilis* has been widely used in herbal drug preparation in Sri Lanka, the systematic cultivation methods for growing in large scale is not well established. In view of this, a field experiment was carried out to investigate the effect of plant spacing (number of plants per unit area) on growth and development in terms of mean plant height, root collar diameter, number of primary and secondary leafy branches, total biomass production and resource allocation.

A randomized complete block design with 5 spacing treatments (T1 –T5), each with 3 replicates was adopted for this study. The seedlings were planted in 50 cm x 50 cm plots, with a border of 30 cm, filled with a mixture of dried cow-dung and topsoil in equal parts. In the different spacing treatments (T1-T5), plants were spaced at, 20 x 20, 16.6 x 16.6, 10 x 10, 7.1 x 7.1, 5.5 x 5.5 cm comprising 4, 9, 25, 49, 81 plants per plot, respectively. The seedlings transplanted in the experimental plots were 30 days old and about 8 cm tall, bearing 5-7 leafy branches. The non-destructive growth parameters of *P. debilis* plants were recorded at 15-day intervals, and the biomass after 2 months growth was determined by oven drying the seedlings at 80 °C for 48 h.

Two months after field planting, the different spacing treatments significantly affected the root collar diameter, number of leafy branches, primary branches, dry weight of individuals and total biomass production of seedling per unit area. Mean plant height among spacing treatments was not significantly different ( $P < 0.05$ ). The tallest ( $59.5 \pm 6.6$  cm) plants were observed in T1. Mean root collar diameter ( $3.71 \pm 0.24$  mm), the number of leafy branches ( $28 \pm 8$ ) and the number of primary branches ( $21 \pm 2$ ) of *P. debilis* were significantly greater in T1 spacing treatment compared to the four remaining treatments. Growth parameters and dry weight per plant increased with increase in spacing among plants.

This study provides an insight to the performance of *P. debilis* grown at different densities under field conditions. It appears from the present data that the biomass increases with decreasing interplant spacing.

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