

Growth and physiological responses to shade and nitrogen fertilizer levels on *Gynura procumbens*

ABSTRACT

Gynura procumbens, is one of the most common medicinal plants belonging to the family of Asteraceae. Its non-toxic leaves have been documented as having phytochemicals with high potentials to be used in phytomedicine. It could be improved through varying agronomic practices such as light intensity and nitrogen fertilization that have been documented to be the main limiting factors in the production of primary and secondary metabolites. The present study evaluated 4 shade levels (0, 30, 50 and 70%) and 4 nitrogen fertilizer rates (0, 100, 200 and 300 kg N ha⁻¹) on growth and physiological responses of *Gynura procumbens*. Results showed that significant interaction between shade and nitrogen fertilizer were recorded on plants grown under 30% shade with 300 kg N ha⁻¹ fertilizer rate resulting in high total leaf fresh weight (TLFW) (213.64 g), total fresh weight (TFW) (323.98 g), total leaf dry weight (TLDW) (21.26 g) and total dry weight (TDW) (43.13 g), together with increased number of branches, higher crop growth rate and relative growth rate. While, the control treatment of full sunlight (0% of shade) and no nitrogen application (0 kg N ha⁻¹) revealed the lowest fresh and dry biomass yield of TLFW (29.37 g), TFW (44.63 g), TLDW (2.70 g) and TDW (4.83 g) due to low net photosynthesis rate, total chlorophyll content, leaf area and number of branches under same treatment. The study concluded that for high biomass production, *Gynura procumbens* is to be grown under 30% shade level with 300 kg ha⁻¹ nitrogen fertilizer.

Keyword: *Gynura procumbens*; Shade; Nitrogen; Growth; Yield; Biomass