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Effect of different fertilizer levels on physical yield, parameters of *Withania somnifera* (L.) Dunal.from three different growth stages

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Withania somnifera (L.) Dunal. (Solanaceae) possesses many therapeutic values and hence it is widely used in Ayurveda and traditional systems of medicine for triggering of both physical and mental health. Even though this plant plays a vital role in human health, information on effect of different fertilizer levels on growth parameters are scattered or lacking. Therefore, the present study was undertaken to compare the growth parameters of *W. somnifera* cultivated in three different fertilizer levels at just before flowering, just after flowering and fully maturity stages. Data on growth parameters including plant height, plant spreading, girth of the stem, number of leaves, number of branches, number of flowers and number of pods per plant were recorded in just before flowering, just after flowering and fully maturity stages. Data were analyzed using the General Linear Model (GLM) procedure of SAS statistical package followed by Duncan's multiple range test (DMRT) for mean separation. The results clearly demonstrated that growth data (plant height, plant spreading, number of branches, number of leaves, number of flowers, plant girth, leaf area, root diameter and root length) of all 3 growth stages were significantly ($P<0.05$) different in plants treated with organic or inorganic fertilizer compared to the control. Further, significantly higher growth parameters were observed in all three growth stages, in plants treated with organic fertilizer compared to the plants treated with inorganic fertilizer or control treatments. In addition to the growth parameters, higher yield parameters (fresh weight, dry weight and fresh to dry weight ratio) were also exhibited in plants treated with organic fertilizer. Remarkably, higher growth and yield parameters reported from plants treated with organic fertilizer over the inorganic fertilizer and control may be because organic fertilizer increases the soil physical, chemical and biological properties.

Keywords: *Withania somnifera,* Solanaceae, fertilizer application, yield and growth parameters

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