

Productivity, Andrographolide, and NPK Content Influenced with Organics and Inorganics in Kalmegh

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Abstract

- Integrated use of castor cake 2.5 t and NPK 80:30:50 kg ha⁻¹ with split application of N (50% at TP and 50% in two splits at 25 and 40 DAP) produced highest dry herbage yield.
- Combined use of castor cake 2.5 t and NPK 80:30:50 kg ha⁻¹ (50% N at TP and 50% at 25 DAP) recorded highest quality in terms of andrographolide content.
- Increased supply of NPK either through organics or inorganics showed positive and linear increase in andrographolide content.

Kalmegh (*Andrographis paniculata* Nees) is being used since centuries in Asia as an alternative medicine to cure various health ailments. However, the quality, efficacy, and safety are major challenges due to lack of standard production protocols. A study was conducted with organic and inorganic nutrient sources, and split application of N to increase the herbage yield and quality as well, while maintaining/improving the soil fertility. Castor cake 2.5 t ha⁻¹ recorded highest plant height, branches, and plant N and K content, whereas, P content was higher with vermicompost 7.5 t ha⁻¹. Application of NPK 80:30:50 kg ha⁻¹ with or without split application of N increased plant height and branches per plant, and plant NPK content. Interaction effects showed that combined use of castor cake 2.5 t ha⁻¹ along with NPK 80:30:50 kg ha⁻¹ and 2/3 split application of N recorded significantly higher herbage yield (8.1 t ha⁻¹), and andrographolide content (24.2 mg g⁻¹). Positive and linear regression [N ($R^2 = 0.64$), P ($R^2 = 0.40$) and K ($R^2 = 0.16$)], and significant correlation [N ($r = 0.80$) P ($r = 0.63$) and K ($r = 0.40$)] at $P = 0.01$ were found between NPK applied and andrographolide content in plants. Vermicompost 7.5 t ha⁻¹ and NPK 80:30:50 kg ha⁻¹ (50% N in 2–3 splits) improved soil NPK content. Thus, integrated use of castor cake 2.5 t ha⁻¹ along with NPK 80:30:50 kg ha⁻¹ (N in 2/3 split applications) found optimum to harvest maximum commercial produce of better quality and improved soil fertility.