

Panchagavya and its effect on the growth of the greengram cultivar K-851

G. KUMARAVELU AND D. KADAMBAN

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SUMMARY

Seeds of greengram [*Vigna radiata* (L.) Wilczek cv. K-851] were selected for Petriplate and pot studies. Experiments were initially conducted in Petriplates using Panchagavya (2, 3, 4, 5, and 6%). The germination study in Panchagavya (pre-soaking) revealed the stimulation of germination at 4%. Under irrigated conditions, the seeds germinated quickly in 2 and 3% Panchagavya treatment. In pot study, Panchagavya was foliar-sprayed at 10 DAS. The growth parameters were studied at 20 DAS. Seed germination was stimulated in pre-soaked condition than under irrigation. In Petriplate culture, under pre-soaked condition, the greengram seedlings showed significant growth increase at 4% Panchagavya treatment, whereas under Panchagavya irrigation, growth was promoted at 2%. Panchagavya promoted epicotyl elongation almost in all the treatments. Panchagavya of 6% irrigation generally inhibited the plant height, fresh and dry mass of the seedlings. In pot study, 3% Panchagavya spray at 10 DAS significantly increased the growth of greengram plants. The lateral roots, number of nodules, fresh and dry mass of the plants increased significantly at 3 and 4% treatment. At 5% foliar spray, growth was comparable to the control. The total leaf area of the plant also increased by 2 and 3% Panchagavya spray.

Key words : Panchagavya, Greengram, Pre-soaked treatment

Agriculture is the means of livelihood for millions of people in India with crops chiefly dependent on rainfall and fertilizers. India is not only self-sufficient in food production but also has a substantial reserve. The traditional practice followed in agriculture is application of chemical fertilizers, biofertilizers and organic manures. India is the third largest producer and consumer of fertilizers in the world. The increasing cost and unavailability of fertilizers, growing ecological concern and the governments interest in promoting the organic farming have forced us to try new methods of application of nutrients in the form of Panchagavya, vermiwash, vermicompost etc. Nene (1999) symphasized that cow dung had been used since long back in India as reported by Kautilya (321 – 296 BC), Varahamithira (505 – 587 AD), Surapala (1000 AD) and Someshwara Deva (1126 AD). It contained undigested fibre, epithelial cells, pigments and salts rich in nitrogen, phosphorus, potassium, sulphur, micronutrients, and intestinal bacteria and mucous. Singh (1996) recorded that cow dung had water 82% and solid matter 18% (minerals 0.1%, ash 2.4% organic manure 14.6%, Ca and Mg 0.4%, SO₄ 0.05%, silica 1.5%, N 0.5%, P 0.2%, and K 0.5%).

The beneficial role of Panchagavya on several crop plants was confirmed by several workers *viz.*, Beulah (2001) Beulah *et al.* (2002), Pathak and Ram (2002), Boomiraj (2003), Somasundaram (2003), Sridhar (2003), Yadav and Lourduraj (2005).

MATERIALS AND METHODS

The current trend in agriculture is the adoption of organic farming system. In India, pulse crops have been grown extensively in different parts because of their main adaptability to extreme stress conditions. Since the pulses are able to tolerate stressful conditions, *Vigna radiata* (L.) Wilczek (greengram) cultivar K - 851 was selected for the present study. Seeds of greengram were procured from a local seed farm in Puducherry. The seeds were surface sterilized in 0.1% mercuric chloride and thoroughly washed in glass distilled water before using it for the experiments. Seeds of uniform size, shape and colour were selected for the study.

Preparation of Panchagavya

Panchagavya nutrient solution was purchased from an agricultural research station, located near Puducherry. The stock solution (20 litres) contained cow dung (5 kg), cow's urine (3 litres), cow's milk (2 litres) cow's curd (2 litres), and cow's clarified butter / ghee (1 litre). The contents were allowed to ferment for ten days before use. From this stock solution, the following grades of solutions were prepared *viz.*, 2, 3, 4, 5 and 6% for the study. For control experiment glass distilled water was

Correspondence to:

G. KUAMARAVELU, Department of Botany, Kanchi Mamunivar Centre for Post Graduate Studies, Lawspet, PUDUCHERRY (U.T.) INDIA

Authors' affiliations:

D. KADAMBAN, Department of Botany, Kanchi Mamunivar Centre for Post Graduate Studies, Lawspet, PUDUCHERRY (U.T.)