



## Effect of INM and *Panchagavya* on soil fertility status of Ashwagandha (*Withania somnifera* L.)

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### ABSTRACT

The field experiments during *Rabi* 2007-08 and *Kharif* 2008 were conducted at college farm, ANGRAU on a sandy loam soil to study the effect of different levels of NPK, organic manures, *Panchagavya* and bio-fertilizers on changes in organic carbon, available N, P and K of ashwagandha grown soil. The organic carbon, available N, P and K were significantly improved with the conjunctive use of 150% NPK along with castor cake @ 2.5 t ha<sup>-1</sup> and bio-fertilizers in ashwagandha.

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**Key words :** Ashwagandha, Castor cake, Vermicompost, *Panchagavya*, Bio-fertilizers, Organic carbon, Available N, P and K

### INTRODUCTION

Intensive cultivation, growing of exhaustive crops, use of unbalanced and inadequate fertilizers accompanied by restricted use of organic manures and bio fertilizers have made the soils not only deficient in the nutrients, but also deteriorated the soil health resulting in decline in crop response to the recommended dose of fertilizers. Boosting yield, reducing production cost and improving soil health are three inter linked components of the sustainable triangle. Therefore, suitable combination of chemical fertilizers, organic manures and bio fertilizers need to be developed for particular crop. Ashwagandha (*Withania somnifera* L.) is an important medicinal plant, belonging to the family of Solanaceae, cultivated in different states of India. Most commonly its roots and occasionally leaf and seed are used in ayurvedic and unani medicines. The estimated annual production of ashwagandha roots in India is more than 1500 t and the requirement is about 7000 t necessitating the increase in its cultivation and higher production. In general, research on nutritional requirement of medicinal plants is very scanty. Ashwagandha crop gives very good response to

application of organic manures (Rajeshwar Rao and Rajput, 2005). Keeping in view, the present investigation was undertaken to generate integrated nutrient management for Ashwagandha grown in sandy loam soils in North Telangana Zone of Andhra Pradesh.

### MATERIALS AND METHODS

Field experiments were conducted at college farm, college of Agriculture, Hyderabad during *Rabi* 2007-08 (I year) and *Kharif* 2008 (II year) with Ashwagandha (*var.* Poshitha). The experimental soil was sandy clay loam in texture, having pH 7.60 and 7.54, EC 0.160 and 0.182 dS m<sup>-1</sup>, organic carbon 0.40 and 0.40 %, available N 203 and 200, available P 17.08 and 17.12, K 287 and 263 kg ha<sup>-1</sup> in *Rabi* 2007-08 and *Kharif* 2008, respectively. The experiment was laid out with split plot design having 16 treatment combinations (four main treatments-four levels of NPK fertilizers *viz.*, 0, 50, 100 and 150% NPK and four sub treatments-no manures, castor cake@2.5 t ha<sup>-1</sup>+BF, vermi compost @ 1 t ha<sup>-1</sup>+BF, *Panchagavya* @ 5% foliar spray+BF) with three replications. The manures were applied as per the treatments one week

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