

## Influence of organic-inorganic and biofertilizers and their interactions on flowering and fruitset of sweet orange (*Citrus sinensis* Osbeck L.)

R.M. DHEWARE AND M.S. WAGHMARE

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See end of the article for authors' affiliations

Correspondence to:

**R.M. DHEWARE**

Department of Horticulture  
Marathawada Agricultural  
University, PARBHANI  
(M.S.) INDIA

### ABSTRACT

Sweet orange trees were treated with recommended doses of fertilizers along with *Azospirillum* (10 g) and PSB (10 g) by mixing with FYM. The application of biofertilizers significantly increased the number of fruits / tree and average weight of fruit. The interactions were also found to have significant influence on number of fruits / tree and average weight of fruit. The results have shown positive response to soil inoculation of *Azospirillum* and PSB by increasing nitrogen fixation and nutrition status. The flowers increased with increasing fertility status and organic matter content of soil.

**Key words :** *Azospirillum*, Phosphate solubilizing bacteria (PSB) R.D.F., N.P.K. content

Sweet - orange is important fruit crop. India endowed with varied agro climatic condition where wide range of citrus species can be grown on commercial scale. So there is need to increase sweet - orange production. Balanced fertilizer application is one of important factors for getting maximum yield and quality fruits. Large scale use of chemical fertilizers cause problems of ground water and environmental pollution through leaching of volatilization. The disproportionate use of fertilizer has widened soil imbalance in terms of NPK ratio. A national assessment of nutrient efficiency reveals that nitrogen deficiency is universal and will continue. In future nearly 49 and 29 per cent of Indian soils will be deficient in phosphorus and potassium, respectively (Pandey and Singh, 1998). It has now been realized that use of chemical fertilizers must be integrated through more economic, renewable and environmental friendly organic fertilizer and biofertilizers. Sweet orange responds very well to nutrient management.

### MATERIALS AND METHODS

Experiment was conducted on eight years old sweet orange (variety Nuceller) on Jambheri Root Stock trees of uniform growth. They were spaced at 6 x 6 meters. An experiment was started in Mrig bahar (April - May) in year 2003 a subsequent second trial was conducted in Mrig bahar (April - May) in year 2004. The design of Experiment was Factorial Randomized Block Design with ten treatments and were replicated thrice. The plot unit for each treatment consists of one tree.

– Recommended doses of inorganic fertilizer @ 800: 400: 400 NPK gm / tree

Treatment details (I)			
	Sr. No	Symbol	Treatments
Factors – 1 Organic and inorganic fertilizers	1	F <sub>0</sub>	No Application of NPK
	2	F <sub>1</sub>	25% of recommended dose of NPK and FYM
	3	F <sub>2</sub>	50% of recommended dose of NPK and FYM
	4	F <sub>3</sub>	75% of recommended dose of NPK and FYM
	5	F <sub>4</sub>	Recommended dose of NPK&FYM
Factor – 2 Bio fertilizer	1	B <sub>0</sub>	No application of bio fertilizers
	2	B <sub>1</sub>	Application of the <i>Azospirillum</i> and PSB (Soil inoculation)

- Recommended dose of FYM @ 50 kg /tree
- Applied dose of bio fertilizers @ (a) *Azospirillum* @ 10 gm / tree (b) PSB @ 10 gm / tree

Well rotten FYM was applied to the respective plot as per treatment at beginning. Half dose of Nitrogen and full doses of phosphorus and potassium were applied in the form of urea, single super phosphate and murate of potash in the month of June 2001 and June 2002 remaining half dose of nitrogen was given one and half month after. Bio fertilizers such as *Azospirillum* and PSB were given both through soil inoculation. For Number of fruit, harvesting was carried out. Yield in respect of Number of fruits / tree was calculated, average weight fruit (g) of five randomly selected fruits were weighed form each