



RESEARCH PAPER

Integrated use of organic and inorganic fertilizers with bio-inoculants on yield, soil fertility and quality of Nagpur mandarin (*Citrus reticulata* Blanco)

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Abstract : The experiment was conducted to study the impact of integrated use of organic and inorganic fertilizers with bio-inoculants on yield, quality and soil fertility of Nagpur mandarin (cv. NAGPURI SANTRA) during 2011-12. The experiment was conducted on 11-12 years old (Bearing) citrus (cv. NAGPURI SANTRA) orchard planted under high density (6 m × 6 m) comprising five treatments, viz., control (RDF as per package of practice), 100 per cent RDF + VAM + PSB + *Azospirillum* (100 g/plant), 100 per cent RDF + VAM (500 g/plant) + PSB (100 g/plant) + *Azospirillum* (100 g/plant), 75 per cent RDF + VAM (500 g/plant) + PSB (100 g/plant) + *Azospirillum* (100 g/plant), 50 per cent RDF + VAM (500 g/plant) + PSB (100 g/plant) + *Azospirillum* (100 g/plant). The experiment was laid out in Randomized Block Design with four replications. The highest fruit yield (112.75 kg tree⁻¹) was recorded in recommended dose of fertilizer (100% RDF + VAM 500 g/plant) + PSB (100 g/plant) + *Azospirillum* (100 g/plant) followed by 100 per cent RDF + VAM + PSB + *Azospirillum* (100 g/plant) (99.01 kg tree⁻¹). The yield was increased, respectively to the extent of 36 and 19 per cent over control. The fruit weight also influenced significantly with the application of RDF (100% RDF + VAM 500 g/plant) + PSB (100 g/plant) + *Azospirillum* (100 g/plant) (149.98 g fruit⁻¹). The fruit diameter also exhibited similar trend. Similarly, N (2.57%), P (0.36%) and K (1.69%) content in leaves were recorded maximum in RDF (100% RDF + VAM 500 g/plant) + PSB (100 g/plant) + *Azospirillum* (100 g/plant). Fruit quality attributes in terms of total soluble solids (TSS), total sugars and ascorbic acid were improved with RDF (100% RDF + VAM 500 g/plant) + PSB (100 g/plant) + *Azospirillum* (100 g/plant), however, maximum acidity was found in control treatment. The post harvest fertility status in terms of organic carbon (6.6 g kg⁻¹), available N (257.53 kg ha⁻¹), P₂O₅ (26.86 kg ha⁻¹) and K₂O (542 kg ha⁻¹) were improved with RDF (100% RDF + VAM 500 g/plant) + PSB (100 g/plant) + *Azospirillum* (100 g/plant).

Key Words : Nagpur mandarin, Bio-inoculants, Yield, Soil fertility, Total soluble solids, Ascorbic acid, *Azospirillum*

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