Research Paper

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Integrated nutrient management in acid lime A.M. MUSMADE, D.D. JAGTAP, C.V. PUJARI AND S.A.HIRAY

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ABSTRACT

An experiment was conducted during 2001-02 to 2003-04 on integrated nutrient management of Citrus at AICRS, Mahatma Phule Krishi Vidyapeeth, Rahuri. Three years pooled data revealed that the plant growth, fruit yield and quality of acid lime was significantly improved due to combined application of neem cake and FYM along with inorganic fertilizers. Significantly higher yield (147.65 kg plant⁻¹) with better quality fruits were obtained from the 10 year old trees receiving 600:300 : 600 gm NPK + 15 kg each of FYM and neem cake per plant per year with maximum monetary returns *i.e.* Rs. 5.45 per rupee investment than other treatment combinations. It was also useful to sustain the residual soil fertility.

Key words : INM, FYM, Neemcake, Acid lime

cid lime (Citrus aurantium) is a nutrient sensitive A and responsive fruit crop and requires adequate nutrition for proper growth and development. The integration of inorganic fertilizer along with organic culture may not only maintain the soil fertility and fruit quality but infuse long term sustainability in the productivity level because of availability of nutrients in soil for next season crop. Incorporation of organic manures is a common practice to improve the yield of many fruit crops. But sufficient scientific information on the effect of neem cake in association with FYM on the yield and quality of acid lime along with or without inorganic fertilizers is not available. Hence, in this study, the effect of organic source of nutrient through FYM and neem cake alone and integration with N, P and K on the yield and quality of acid lime was undertaken.

MATERIALS AND METHODS

An experiment was conducted on 10 year old orchard of acid lie cv. SAI SARBATI at AICRP on Citrus (Tropical fruits), Mahatma Phule Krishi Vidyapeeth, Rahuri during 2001-02 to 2003-04. The soil of experimental field was inceptisol, alkaline (pH 8.07) in reaction with low salt content (0.28 dSm⁻¹). The organic carbon (0.38 %) and available nitrogen (159 kg /ha) and phosphorous (9.80 kg/ha) were low and higher in available potassium (470 kg/ha). The calcium carbonate (9.80 %) was medium. The experiment was conducted with four replications The trial was laid out in Randomized Block Design design with two plants as unit in each treatment.Thw chemical analysis of neem cake and FYM were done which contained 4.3 per cent (N), 0.98 er cent (P), 1.10 per cent (K) and 0.55 per cent (N), 0.35 per cent (P) and 0.78 per cent (K), respectively.

The treatment details are as under

 T_1 : Recommended dose of fertilizer (600 :300:600 g NPK plant)

 T_2 : Neem cake 7.5 kg plant⁻¹

 T_3 : Neem cake 15 kg plant⁻¹

 $T_4: T_1 + T_2 (RDF + 7.5 \text{ kg neem cake plant}^{-1})$

 $T_5: T_1 + T_3 (RDF + 15 \text{ kg neem cake plant}^{-1})$

 T_6 : 7.5 kg neem cake plant⁻¹ + 50 per cent RDF plant⁻¹

 T_7 : 7.5 kg neem cake plant⁻¹ + 75 per cent RDF plant⁻¹

The application of FYM @ 15kg per plant was the common dose to all seven treatments. The basal dose of phosphorous, potassium, FYM, neem cake and 40 per cent nitrogen was given in the month June. The remaining dose of nitrogen was given into two equal splits in the month of September and January.

The initial soil properties and residue soil fertility was assessed in relation to nutrient management every year by adopting the standard sampling technique and method of analysis every year. The six month old leaves of non fruiting terminals were sampled for nutrient concentration and uptake at fruit development stage. Fruits were analysed for quality parameters at harvest. The leaf and fruit sample analysis were carried out by following methods.

The soil and leaf analysis was carried out as per methods described by AOAC (1975) and Jackson (1973). The data on plant growth, fruit characters and yield were recorded at the time of fruit harvesting. The experiment was conducted for three years and pooled data of three years are presented