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Research Paper

Effect of organic manures, consortium of biofertilizers and inorganic fertilizers on yield, nutrient uptake and profitability of mint (*Mentha arvensis* L.)

V. RAJAMANICKAM, S. VENKATESAN AND ARUMUGAM SHAKILA

See end of the article for authors' affiliations

Correspondence to:
V. RAJAMANCKAM
Tamil Nadu Agricultural University, COIMBATORE (T.N.) INDIA

ABSTRACT

An experiment was carried out in the Medicinal Plant Unit, Department of Horticulture, Annamalai University to study the effect of organic manures, consortium of biofertilizers and inorganic fertilizers on the fresh herbage yield, dry matter production, nutrient uptake and profitability of mint. The experiment was carried out by following the principles of Randomized Block Design in three replications. The results of the experiment revealed that application of 100% NPK + vermicompost @ 5 t ha^{-1} + consortium of biofertilizers significantly increased the nutrient uptake, fresh herbage yield and dry matter production. However, application of 75 % NPK + vermicompost @ 5 t ha^{-1} + consortium of biofertilizers resulted in the maximum profitability when compared to the other treatments.

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Key words : Mint, FYM, Vermicompost, Nitrogen, Phosphorus, Potassium, Consortium of biofertilizers

Mentha species are known from time immemorial as kitchen herbs. They have been found in Egyptian graves and are described in old Chinese literature. Regular cultivation started around 1870 in Japan (Atal and Kapur, 1982). Mint is the world's third most valuable flavouring agent, being exceeded in popularity by vanilla and citrus flavours (Fenarolics, 1971). Japanese mint (*Mentha arvensis* L.) is an important essential oil bearing crop of India and its oil is a natural source of menthol which is widely used in pharmaceutical and cosmetic preparations. Apart from menthol, the other notable constituents of this oil are menthone and methyl acetate. The oil composition and yield may vary under different agroclimates, soil conditions and nutrient application (Duhan *et al*., 1977).

Fertilization has played and it continues to play a pivotal role in the green revolution of Indian agriculture. Among the plant nutrients, nitrogen, phosphorus and potassium are the most important macro nutrient elements that decide the yield level of crops. With the indiscriminate use of fertilizers and chemicals there is increased risk of health hazards. Besides continuous use of chemical fertilizers has resulted in the depletion of soil health and also the increasing cost of chemical fertilizers and their ill-effects on physico-chemical properties of soil has resulted in the decline in yield after continuous cropping. Under such a condition, it has become imperative to use all the available sources of plant nutrients in a judicious way to minimize the fertilizer use and at the same time to sustain soil fertility and crop productivity on a long term basis. The integrated nutrient management system comprising of the use of fertilizers along with organic manures and biofertilizers is gaining momentum in the present day farming situation. In this context, the present investigation was undertaken in order to study the effect of organic manures, consortium of biofertilizers and inorganic fertilizers on yield, nutrient uptake and profitability of *Mentha arvensis* L.

MATERIALS AND METHODS

The investigation was carried out in the Medicinal Plant Unit, Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalainagar during January 2009 to April 2009. The experiment was laid out by following the principles of Randomized Block Design in three replications. The experiment consisted of 16 treatments *viz*., T_1- Control (without nutrients), T_2- 100% NPK alone (200:50:40 kg ha^{-1}), T_3- 100% NPK + VC (5 t ha^{-1}), T_4-T_3 + CBF, T_5 - 75% NPK + VC (5 t ha^{-1}), T_6 – T_5+CBF, T_7- 50% NPK + VC (5 t ha^{-1}), T_8- T_7+CBF, T_9-100% NPK + FYM (25 t ha^{-1}), T_{10} – T_9 + CBF, T_{11}-75% NPK + FYM (25 t ha^{-1}), T_{12}- T_{11}+CBF, T_{13}-50% NPK + FYM (25 t ha^{-1}), T_{14} – T_{13}+CBF, T_{15}- 75% NPK + VC(2.5 t ha^{-1}) + FYM(12.5 t ha^{-1})+ CBF,