

Effect of various organic manures on growth, yield and quality of radish

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ABSTRACT

An experiment entitled 'Effect of various organic manures on growth, yield and quality of Radish' was conducted during *Kharif* season of 2005-06 at University Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (M.S.). The experiment was laid out in Randomized Block Design with four replications. In all seven treatments were imposed. The result of present investigation indicated that the yield per plot as well as per hectare and the NPK content in leaves and roots of radish were found highest in treatment with vermicompost with application rate of 16.67 q ha⁻¹.

Key words : Radish, Vermicompost, Quality, NPK content, Yield

INTRODUCTION

Among the root vegetable, Radish (*Raphanus sativus* L.) is the important vegetable crop. It is consumed as raw or as a salad. It is rich in calcium, potash, phosphorus and Vitamin C. It is rich source of ascorbic acid and variety of mineral salts.

In recent years use of organic manures like FYM, vermicompost and neem cake improving productivity of crops and maintaining soil fertility and productivity of soil are gaining prominence. The organic manuring has positive influence on soil texture and water holding capacity (Kale *et al.*, 1991). It also provides food for soil micro-organisms. This increases the activity of microbes which in turn helps to convert unavailable plant nutrient to available form. Changing trends towards increased environmental sensitivity, changing food habits, consumers demand for organic food products and supplements that are natural and organic are commonly realized now a days.

Recently emphasis has been given on organic vegetable production which minimises cost of production, increases quality of product, maintains fertility of soil. As a recent trend very little work was carried out on organic farming of radish. The present investigation has been planned to study the "Effect of various organic manures on growth, yield and quality of radish"

MATERIALS AND METHODS

An experiment was conducted at Main Garden, University Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during Aug.-Sept., 2005. The soil of experimental site was uniform in texture and was leveled.

The investigation was laid out in Randomized Block Design with seven treatments and four replications. The

Details of the treatments		
Treatments	Symbols	Details
RDCF	T ₁	N ₅₀ , P ₂₅ , K ₀ kg ha ⁻¹
Neem cake	T ₂	9.61 q ha ⁻¹
Vermicompost	T ₃	16.67 q ha ⁻¹
FYM	T ₄	10.00 t ha ⁻¹
City solid waste	T ₅	28.57 q ha ⁻¹
Compost	T ₆	10.00 t ha ⁻¹
Control	T ₇	No organic or chemical fertilizer

details of treatments are given below:

The good quality bold seed of radish variety Pusa Chetki was obtained from Main Garden, University Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (M.S.). The seeds were dibbled on 22nd August, 2005, at a distance of 30 x 20 cm. The layout is of ridges and furrows type. 15 days before sowing of seed the various organic manures were applied. Irrigation, thinning, gap filling, weeding, earthing and plant protection measures were followed timely. The observations were recorded on post harvest quality like N, P, K content in roots and leaves. The observations related to yield were recorded as yield per plot and per hectare. For the determination of per cent of N, P and K in leaves and root, firstly the leaves and roots were kept for sun drying then kept in hot air oven at 60°C. The fully dried leaves and roots were grinded through the grinder and by applying the following methods, the per cent of N, P and K was calculated.

Ingredient (%)	Method adopted
N	By Kjeldal's method
P	By colorimeter method
K	By spectrophotometer

RESULTS AND DISCUSSION

The results obtained from the present investigation are summarized below :

NPK content in leaves and roots of radish :

Data presented in Table 1, indicate that the content of N, P and K in leaves and roots was maximum in

fertilizers. However, the minimum yield was recorded in treatment T₇ *i.e.* absolute control. The increased yield per plot in vermicompost, may be due to more healthy growth, which ultimately leads to maximum yields. These results are in agreement with the findings of Shrivastava (1998), Buckerfield *et al.* (1999) in radish and Sood and Lal (2004) in potato.

Table 1 : Effect of various treatments on nitrogen, phosphorus and potassium content in leaves and roots

Sr. No.	Treatments	N, P, K percentage in leaf			N, P, K percentage in root		
		N	P	K	N	P	K
1.	T ₁ - RDCF	2.90	0.277	3.950	4.14	0.37	4.19
2.	T ₂ - Neem cake	2.89	0.272	3.935	4.11	0.35	4.14
3.	T ₃ - Vermicompost	2.92	0.280	3.955	4.16	0.38	4.20
4.	T ₄ - Farm yard manure	2.88	0.272	3.935	4.12	0.35	4.17
5.	T ₅ - City solid waste	2.87	0.275	3.900	4.07	0.32	4.11
6.	T ₆ - Compost	2.88	0.272	3.900	4.08	0.35	4.16
7.	T ₇ - Absolute control	2.83	0.260	3.517	4.01	0.30	3.98
	'F' test	Sig.	NS	Sig.	Sig.	Sig.	Sig.
	S.E. ±	0.007	0.004	0.007	0.013	0.011	0.014
	C.D. (P=0.05)	0.022	--	0.021	0.037	0.031	0.040

NS – Non significant

Table 2 : Effect of various treatments on yield per plot and yield per hectare of radish

Sr. No.	Treatments	Yield per plot (kg)	Yield per hectare (q)
1.	T ₁ - RDCF	10.24	316.04
2.	T ₂ - Neem cake	08.27	249.07
3.	T ₃ - Vermicompost	10.45	322.52
4.	T ₄ - Farm-yard manure	08.65	266.97
5.	T ₅ - City solid waste	07.53	232.40
6.	T ₆ - Compost	08.51	262.65
7.	T ₇ - Absolute control	07.12	219.75
	'F' test	Sig.	Sig.
	SE ±	0.28	8.64
	C.D. (P=0.05)	0.80	24.69

treatment T₃ *i.e.* vermicompost and the minimum content of N, P and K was observed in treatment T₇ *i.e.* absolute control. The results obtained are in agreement with the findings of Shafeek *et al.* (2003) in radish and also similar to findings of Raut and Malewar (1995).

Yield per plot and yield per hectare :

Data presented in Table 2, in concerned to yield per plot, revealed that maximum yield per plot and yield per hectare was recorded in treatment T₃ *i.e.* vermicompost, which was statistically at par with treatment T₁ *i.e.* application of recommended dose of chemical

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