The Pharma Innovation Journal 2021; 10(8): 1211-1213

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; 10(8): 1211-1213

www.thepharmajournal.com
Received: 03-05-2021
Accepted: 12-07-2021

Sushil Kumar Upadhyay
Department of Horticulture, Kulbhaskar Ashram P.G. College, Prayagraj, Uttar Pradesh, India

Rajendra Prasad
Department of Horticulture, Kulbhaskar Ashram P.G. College, Prayagraj, Uttar Pradesh, India

Corresponding Author:
Rajendra Prasad
Department of Horticulture, Kulbhaskar Ashram P.G. College, Prayagraj, Uttar Pradesh, India

Studies on effect of organic manures and biofertilizers on growth and yield of radish var. Kashi Shweta

Sushil Kumar Upadhyay and Rajendra Prasad

Abstract
The Present experiment entitled "Effect of biofertilizer and organic manures on growth and yield of Radish (*Raphanus sativus* L.) Var Kashi Shweta" carried out in the Department of Horticulture, Kulbhaskar Ashram P.G. College Allahabad, in Rabi season during 2017-2018. The present investigation was comprised of 8 treatments inclding organic fertilizers and NPK soluble biofertilizer. The experiment was conducted in Randomized Block Design (R.B.D.) with three replications to observe the growth and yield parameters of radish. On the basis of present experiments it is concluded that the radish variety Kashi Sweta responded well with biofertilizer and organic manures in Allahabad Zone, good growth and yield parameters. The application of FYM @10t/ha (T1) was found superior as compared to other treatments and recorded maximum growth (*viz*. plant height, number of leaves plant-1, leaf area plant-1) and yield parameters (*viz*. root length, root diameter, root weight with top, root weight without top total yield per hectare, total yield per plot).

Keywords: Organic Manures, FYM, Vermicompost, NPK Liquid consortium Radish and Kashi Shweta

Introduction
Radish (*Raphanus sativus* L.) is a popular root vegetable of the Brassicaceae family, grown in both tropical and temperate regions around the world. In India, it is widely cultivated from the mountains of Jammu and Kashmir to the coastal areas of Kerala. Radish is grown for its young tender fusiform root, which is eaten raw as a salad or cooked as a vegetable. Radish is a good source of antioxidants, phenolic compounds and minerals such as calcium and potassium. It is also rich in Vitamin C which acts as an antioxidant to protect the cells of our body from damage. In addition, these nutrients also help in reducing high blood pressure and reduce the risk of heart diseases. It is also a good source of natural nitrates that improve blood flow. In modern agriculture, use of chemical fertilizer has been essential for sustainable yield but these are not eco-friendly. It is, therefore, necessary to restrict their use to certain limit (Dwivedi *et al*,2007) [3]. In order to save the agricultural products from contamination due to indiscriminate use of chemical fertilizers and pesticides, and due to the individual and collective efforts of the people for the protection of the environment, organic agriculture in India is scaling new heights. The important principle of the organic food movement is that it promotes ecological balance and sustainable use of natural resources and also works on the conservation of crop diversity. Increasing prices of inorganic fertilizers in our country have forced resourceless and small farmers today to look for alternatives to chemical fertilizers in agriculture. We all know that proper use of organic fertilizers is very important to get high quality production. Organic manure supplies almost all essential nutrients, improves soil structure, increases the number of micro-organisms as well as maintains the quality of crop production. Keeping above points in mind, the present experiment was planned and execute.

Materials and Methods
Field experiment entitled "Effect of Biofertulizer and organic manure on growth and yield of Radish (*Raphanus Sativus* L.)" was conducted at the Horticulture Farm K.A.P.G. Allahabad Utter Pradesh during Rabi season in the year 2017-18. The experiment consists of 8 treatment combinations comprising of organic manures with and without biofertilizer (*viz*. NPK liquid consortia Bio). The experiment was laid out in randomized block design with three replications. The soil of the experimental field was sandy loam with slightly alkaline (7.6pH). The pure healthy, disease and insect free vigorus and good quality of radish variety Kashi Sweta was used for sowing. The seeds were sown by hand dibbling method at 30X10 cm spacing.

As per the treatments different doses of FYM, Vermicompost and NPK Liquid consortium were applied individually and in different combinations in plots before sowing the seeds. The observations were taken on their vegetative growth and yield parameters.

Results and Discussion

Data presented in the table -1 expressed that application of organic manures improved plant height in comparison to control, in general. Among the treatments, T1 (FYM @10t/ha) recorded the maximum value of plant height during the different stages followed by T3 (NPK liquid consortia @100ml/10 kg seed treat.), T2 (Vermicompost @4t/ha). While, the minimum value of plant height was observed with To (control unit) followed by T7 (3.0 tonnes FYM/ha + 1.0 tonnes Vermicompost/ha + 100 ml NPK liquid consortia/10 kg seed treat.) at all growth stages. This may be due to better moisture holding capacity, supply of nutrients due to favorable soil conditions (Reddy *et al*. 1998). The findings are also agreements with the findings of Patil *et al*. (2007) [6] and Ngullie *et al*. (2009) [4] in onion, Pillai *et al*. (1985) [7]. At harvesting stage number of leaves per plant was influenced by treatments. T1 (FYM @10t/ha) recorded the maximum number of leaves per plant during different stages followed by T3 (NPK liquid consortia @100ml/10 kg seed treat.), T2 (vermicampost @4t/ha). However, minimum number of leaves per plat was observed with To (control unit) followed by T7 (3.0tonnes FYM/ha+ 1.0 tonnes Vermicompost/ha+100 ml NPK liquid consortia/10 kg seed treat.) at all growth stages this may be due to promotive effects of macro and micronutrients on vegetative growth which ultimately lead to more photosynthetic activity. The findings are also agreements with the findings of Singh *et al*. (2009) [11] and Patidar and Mali (2004) [5]. The leaf area per plant was influenced by the different treatments. Maximum leaf area per plant was influenced by treatments T1 (FYM @10t/ha) recorded the maximum leaf area during different growth stages followed by T3 (NPK liquid consortia @100ml/10 kg seed treat.). However, minimum leaf area per plant was observed in To (Control unit) followed by T7 (3.0 tonnes FYM/ha+ 1.0 tonnes Vermicompost/ha+ 100ml NPK liquid consortia/10 kg seed treat.) at all growth stage. This is due to physiological parameters like photosynthesis, stomata conductance and transpiration might have improved with the application of FYM. It enhances the absorption of nutrients from soil; enhance carbohydrate assimilation and production of new tissue. This findings also advocated by Singh *et al*. (2008) [10] and Sharma *et al*. (2011) [9]. The Findings pertaining the yield parameters *viz*. Root length, root diameter, root wt, total weight, yield per plot, yield per hectare. Treatments T1 (FYM @10 t/ha) was recorded highest root length and root diameter followed by T3 (NPK liquid consortia @100ml/10 kg seed treat.). However, lowest root length and root diameter was recorded in treatment T0 (Control unit), followed by T7 (3.3 tonnes FYM/ha+ 1.33 tonnes Vermicompost/ha+ 33.33ml NPK Liquid consortia/10 kg seed treat.). This is due to FYM import physical, chemical and biological property of the soil. This consequently increased the value of yield attributes. The findings are also agreements with the findings Yawalker *et al*. (2007) [12] and Chaudhary *et al*. (2007) [2]. Maximum root weight with top and root weight without top recorded maximum in treatments T1 (FYM @10t/ha), followed by T3 (NPK liquid consortia @100ml/10 kg seed treat.), T2 (Vermicompost @4 t/ha). However, lowest root weight with top and root weight without top was recorded in treatments to (control Unit) followed by T7 (3.0 tonnes FYM/ha+ 1.0 tonnes Vermicompost/ha+ 100 ml NPK liquid consortia/10 kg seed treat.). This is due to FYM also function as a source of food and source of energy for soil microflora which bring transformation of in organic nutrients presents in soil or applied in the form of fertilizers in readily utilizable from by growing plants. The findings is also agreements with the findings Yawalker *et al*. (2007) [12] and Anjaiah *et al*. (2005) [1]. The maximum total yield per plot recorded maximum is treatments T1 (FYM @10t/ha) followed by T3 (NPK liquid consortia @100ml/10 kg seed treat.) in all growth stage. However, the lowest yield per plot recorded in treatments to (control Unit), Followed by T7 (3.0 tonnes FYM/ha+ 1.0 tonnes Vermicompost/ha+ 100 ml NPK liquid Consortia/10 kg seed treat.). The finding is also agreements with the findings Anjaiah *et al*. (2005) [1], Sanker *et al*. (2009) [8] and Chaudhary et at. (2007) [2].

Table 1: Effect of biofertilizers and organic manures on growth and yield parameters in radishvariety Kashi Shweta

Treatment Symbol	Treatments Details	Plant height (cm)	Number of leaves per plant	Leaves area per plant (cm2)	Root diameter /Plant (cm)	Root length/Plant	Root Weight (g)	Total Plant weight (gm)	Total yield per plot (kg)
T0	Control unit (No use of fertilizer)	27.91	9.0	286.33	2.64	15.26	53.96	116.74	6.61
T1	FYM @10t/ha	31.28	10.42	351.04	3.26	16.8	64.15	144.10	14.41
T2	Vermicompost @4t/ha	30.58	10.13	332.33	3.03	16.26	59.88	134.40	12.09
T3	NPK Liquid consortium (Biofertilizer) @ 100ml/10kg seed treatment	31.15	10.33	333.37	3.11	16.76	62.02	140.08	13.72
T4	(5 tonnes FYM+ 2 tonnes Vermicompost)/ha	29.91	9.8	320.16	2.90	15.7	57.96	131.86	10.49
T5	5 tonnes FYM/ha+ 100ml NPK liquid consortium (Bio fertilizer)/10 kg seed treat	30.35	10.1	327.41	2.92	15.86	58.92	133.12	11.44
T6	2 tonnes Vermicompost/ha+ 100ml NPK Liquid consortium (Bio fertilizer)/10 kg seed treat	29.75	9.8	318.95	2.83	15.43	57.34	130.56	9.35
T7	3.0 tonnes FYM/ha+ 1.0 tonnes vermicompost/ha +100 ml NPK liquid consortium/10 kg seed treat	29.66	9.76	291.50	2.68	15.36	56.14	125.92	7.55
	±S.Em	1.731	0.4350	39.430	0.169	0.949	8.080	14.760	1.215
	C.D. at 5% level	5.252	1.322	119.624	0.514	2.878	24.510	44.781	3.687

References

1. Anjaiah T, Padmaja G, Raju AS. Influence of leaves of K and FYM on yield and K uptake by carrot (*Docus carota* L.) grown on alfisol. Journal of Research, ANGRAU. 2005;33(3):82-86.
2. Choudhary M, Soni AK, Jat RG. Effect of organic and

inorganic sources of nutrients on quality of brinjal (*Solanum melongena* L.) cv. Pusa Uttam. Haryana Journal of Horticulture 2007;36(2):118-119.
3. Dwivedi SV, Singh T, Mishra SK. Studies on the Efficacy of Graded Doses of Nitrogen Bioinoculant And FYM on Growth and Yield of Fennel (*Foeniculum Vulgare* Mill). Progressive Horticulture 2007;39(I):81-85.
4. Ngullie E, Singh AK, Singh VB. Effect of organic manures and biofertilizer on growth and yield of onion. Environment and Ecology 2009;27(1A):313-315.
5. Patidar M, Mali AL. Effect of FYM. Fertility level and biofertilizers on growth, yield and quality of sorghum. Indian Journal of Agronomy 2004;42:117-120.
6. Patil HM, Shete BT, Kolekar PT. Effect of Integrated nutrient management on growth and yield of onion (*Allium cepa* L.) seed production. International Journal of Agricultural Sciences 2007;3(2):83-86.
7. Pillai KG, Devi SL, Setly TKP. Research Achievements of All India Co-ordinate Agronomic Research project. Fertilizers News 1985;30:26-34.
8. Sankar VD, Veragagava thatham, Kannam M. organic farming practices in the white onion (*Allium cepa* L.). Journal of Eco friendly Agriculture 2009;4:17-21
9. Sharma I, Phookan DB, Boruah S. Effect of organic manures and biofertilizers on yield and economics of cabbage (*Brassica oleracea*. L. var. capitata) Journal of Eco-Friendly Agriculture 2011;6:6-9.
10. Singh JP, Shukla IN, Gautam RKS, Singh B, Kumar S. Effect of different level of N and P under varying plant geometry on growth and yield of okra (*Abelmoschus esculents* L. Moench). Progressive Agriculture 2008;8(1):21-24.
11. Singh SP, Chaudhary R, Mishra AK. Effect of different combination of organic manure on growth and yield of ginger (*Zinziber officinale*.). Journal of Eco friendly Agriculture 2009;4:22-24.
12. Yawalker KS, Agrawal JP, Boked S. Manure and fertilizer Agri-Horticultural publishing House. Nagpur. 490010. India 2007.