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Effects of different organic manures on yield and economics of *Amaranthus*

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Abstract
The experiment was conducted during *Kharif* seasons of 2019-20 at AICRP (Vegetables) RHREC, Dharwad, Karnataka. The experiment was laid out in a randomized block design (RBD) with seven treatments with three replications. Significantly increased in yield per plot and per hectare was recorded with the application of T_1 (RDF) of 8.7 kg and 183.05 q/ha followed by T_5 (Vermicompost @ 2 t/ha + PSB + Azospirrilum@5kg/ha each) of 7.60kg and 162.36.33q/ha. Higher gross return (Rs.146440), net return (Rs.113540) and B:C ration of 3.45 were reported in Treatment (T_1) RDF. While lower gross return (Rs.118776), net return (Rs.84526) and B:C ration of 2.47 were reported in T_3 FYM @ 20 t/ha.

Keywords: Organic manures, *Amaranthus*, yield and economics

Introduction
Vegetables are grown worldwide and make up a major portion of the diet of humans in many parts of the world. Vegetables play a significant role in human nutrition, especially as sources of vitamins, minerals, fiber and photochemical (Liua *et al*., 2001) [7] Vegetables in the daily diet have been strongly associated with improvement of gastrointestinal health, good vision and reduced risk of heart disease, stroke, chronic diseases such as diabetes, and some forms of cancer Keatinge *et al*.,2010 [5]. *Amaranths cruentus* is an important vegetable in human diet as a source of nutrients such as vitamin, minerals, sugar, water, protein and fiber needed for healthy body growth and sustenance (Bailey, 1992) [3]. The young leaves and stems are boiled as greens (Anon, 1984) [2]. They are grown as soup vegetables or for boiled salad greens (Adeyemi *et al*., 1987) [1]. The nutrient values of amarantus per 100% edible portion (leaves) as water 85 ml, calorie 48, protein 5 g, fat 0.7 g, carbohydrates 5 g, fiber 1.5 g, calcium 250 mg, iron 4 mg, B-carotene equivalent 1 800 mg, thiamine 0.1 mg, riboflavin 0.3 mg, niacine 1.5 mg and ascorbic acid 100 mg (Tindall, 1975) [10]. Amaranth is one of the few economic plants of great food value bestowed by nature with multiple uses. Crop yield is governed by several environmental factors as well as cultural practices. Among the various agronomic practices, judicious uses of nutrient management play an important role in increasing the yield of amaranthus. Proper nutrient management includes chemical fertilizer along with organic manures which supply major and micronutrients. Which also improves the growth, yield and quality of amaranthus as well as soil physical, biological and chemical properties? Among the several organic sources, farm yard manure and vermin compost play crucial role for yield and quality improvements as well as sustain the soil fertility status. Farm yard manure (FYM) is the principle source of organic matter in our country which has been used since antiquity of man. The organic carbon in the organic matter act as a source of energy for soil microorganisms and upon mineralization release essential elements during crop growth. In addition to supply of available plant nutrients directly (Cooke, 1967) [4], the use of FYM also mobiles the unavailable nutrients present in the soil. Vermicompost as organic fertilizer helps to improve the quality and quantity of yield as it contains nitrogen, phosphorus, potassium, organic carbon, sulphur, hormones, vitamins, enzymes and antibiotics. It is observed that due to continuous misuse of chemical fertilizers, soil losses its fertility and gets salty day by day. To overcome such problems, vermicompost application is the best solution. Precise information regarding appropriate organic manures requirements for grain amaranthus crop is very limited.

Keeping in view the above considerations, comprehensive research programme was planned to study the judicious use of optimum organic manures requirement for amaranthus.

Materials and Methods

The experiment was conducted during *Kharif* seasons of 2019-20 at AICRP (Vegetables) RHREC, Dharwad, Karnataka, (15.475° N latitude, 74.979° E longitude and 655 m altitude), The experimental soil was well drained and sandy loam in texture. The experiment was laid out in a randomized block design (RBD) with seven treatments with three replications. The experimental field was ploughed three times and all the cultural practices were done as per the package of Practices of University of Horticultural Sciences Bagalkot. The treatments Details shown in table No.1

Table 1: Treatment Details

Treatments	
T_1	RDF
T_2	Vermicompost @ 2 t/ha
T_3	FYM @ 20 t/ha
T_4	Poultry manure @5 t/ha
T_5	Vermicompost @ 5 t/ha + PSB + Azospirrilum@5kg/ha each
T_6	FYM @ 20 t/ha+ PSB + Azospirrilum@5kg/ha each
T_7	Poultry manure @5 t/ha+ PSB + Azospirrilum@5kg/ha each

Results and Discussions

Significantly increased in yield per plot and per hectare (Table-2) was recorded with the application of T_1 (RDF) of 8.7 kg and 183.05 q/ha followed by T_5 (Vermicompost @ 2 t/ha + PSB + Azospirrilum@5kg/ha each) of 7.60kg and 162.36.33q/ha and T_6 (FYM @ 20 t/ha+ PSB + Azospirrilum @ 5kg/ha each) of 7.63kg/ and 157.73 q/ha respectively. The beneficial effect of organic manures on yield attributes could be due to the fact that after proper decomposition and mineralization, the manure supplied available nutrients directly to the plant and also had solubilising effect on fixed forms of nutrients in soil having medium status of nutrient might have increased availability of macro and micro nutrients by improving root rhizophere Similar results were also reported by Prajapati *et al.*, 1997 [8].

The data parenting to Economics presented in (Table 3) result raveled that Higher gross return (Rs.146440), net return (Rs.113540) and B:C ration of 3.45 were reported in Treatment (T_1) RDF. While lower gross return (Rs.118776), net return (Rs.84526) and B:C ration of 2.47 were reported in T_3 FYM @ 20 t/ha, this results aggress the findings of Solanki *et al*., 2017 [9].

Table 2: Effects of Different Organic manures on yield of *Amaranths*

Treatment.	Treatments	Green leaf yield /plot (kg)	Green leaf yield /ha (q)
T1	RDF (100:50:50 NPK+12.50 ton FYM)	8.70	181.25
T2	Vermicompost @ 2 t/ha	7.23	150.69
T3	FYM @ 20 t/ha	7.33	152.78
T4	Poultry manure @5 t/ha	6.65	138.54
T5	Vermicompost @ 2 t/ha + PSB + Azospirrilum@5kg/ha each	7.60	158.33
T6	FYM @ 20 t/ha+ PSB + Azospirrilum@5kg/ha each	7.63	159.03
T7	Poultry manure @5 t/ha+ PSB + Azospirrilum@5kg/ha each	6.67	138.89
	S.Em±	0.41	8.71
	CD(0.05)	1.19	26.01
	CV%	9.81	9.81

Table 3: Effects of Different Organic manures on Economics of *Amaranths*

Sl. No.	Treatments	Green leaf yield /ha (q)	Cost of cultivation (Rs./ha)	Gross Return (Rs./ha)	Net returns (Rs./ha)	B:C Ratio
T_1	RDF	181.25	32900	146440	113540	3.45
T_2	Vermicompost @ 2 t/ha	150.69	30250	119200	88950	2.94
T_3	FYM @ 20 t/ha	152.78	34250	118776	84526	2.47
T_4	Poultry manure @5 t/ha	138.54	27750	112664	84914	3.06
T_5	Vermicompost @ 2 t/ha + PSB + Azospirrilum@5kg/ha each	158.33	32000	129888	97888	3.06
T_6	FYM @ 20 t/ha+ PSB + Azospirrilum@5kg/ha each	159.03	34900	126184	91284	2.62
T_7	Poultry manure @5 t/ha+ PSB + Azospirrilum@5kg/ha each	138.89	29750	112136	82386	2.77

References

1. Adeyemi MO, Fakore MA, Edema AO. Effect of poultry Manure and cutting height on the performance of Amaranthus hybridus. Nigerian Journal of Agronomy, 1987;2(1):12-20.
2. Anonymous. Amaranth: Modern Prospects for an Ancient crop. National Academy press Washington D.C, 1984,
3. Bailey JM. The leaves we eat. South Pacific Commission Handbook, 1992, 31.
4. Cooke. Crosby-Lockwood, London 1967, 526.
5. Keatinge JDH, Waliyar F, Jammadass RH, Moustafa A, Andrade M, Drechsel P *et al*. Relearning old lessons for the future of food: By bread alone no longer- diversifying diets with fruits and vegetables. Crop Science, 2010;50(1):51-62.
6. Adebayo RK, Hassan UF, Adamu HM, Hassan HF, Baba H, Ajiya DA. Levels of heavy metals and their health risk assessment from wastewater irrigated spinach in railway quarters, Bauchi, Bauchi state, Nigeria. Int. J Adv. Chem.

Res. 2020;2(2):12-17. DOI: 10.33545/26646781.2020.v2.i2a.22
7. Liua S, Leee IM, Ajania U, Colea SR, Buring JE, Mansona JA. Intake of vegetables rich in carotenoids and risk of coronary heart disease in men: The physicians' health study. International Study of Epidemiology 2001;30:130-135.
8. Prajapati DR, Modhwadia MM, Kaneria BB, Khanpara VD, Mathukia RK. Effects of Organic Fertilizers on the Growth and Yield of Amaranthus, GAU Research Journal 1997;22(2):101-103.
9. Solanki RP, Patel HA, Odedra RK, Dodia VD, Bariya AR, Patel SB. Effect of organic manure on yield attributes, nutrient content and uptake of grain amaranthus (*Amaranthus paniculatus* L.). International Journal of Agriculture Sciences 2017;9(34):4510-4511.
10. Tindall HD. Commercial vegetable growing: Oxford Tropical Handbook. Oxford University Press 1975.
11. Khalid U, Ahmad E, Khan MU, Ahmad A, Imdad A, Javed I. Integrated weed management in okra. Pakistan Journal of Weed Science Research. 2005;11(1, 2):55-60.