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Integrated Nutrient Management in Bottle gourd [*Lagenariasiceraria (Mol) Standl.]* Variety *Kashi Ganga* on the Plant Disease Incidence, TSS and Economics under Malwa condition of Madhya Pradesh

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ABSTRACT: The investigation entitled, "Integrated Nutrient Management in Bottle gourd [Lagenariasiceraria (Mol) Standl.] Variety Kashi Ganga on the Plant Disease Incidence,TSS and Economics under Malwa condition of Madhya Pradesh" was conducted during the Kharif season of the year 2019-20 in the Department of Horticulture, College of Agriculture, Indore (M.P.). The experiment conducted in randomized block design and replicated thrice. There were 15 treatments T0 No application of INM(Control), T8 50%NPK+50%Biofertilizer,T9 50%NPK+50%Humic acid, T10 50 % NPK+25% Vermicompost+25% Compost, T11 50% NPK+50% Vermicompost +Biofertilizer,T1250% NPK +25% Humic acid, T1350% NPK + 16.6% Vermicompost +16.6%Compost+16.6%Humicacid,T14 50% NPK+ 16.6% Vermicompost+ 16.6% Compost +16.6% Humic acid+ Biofertilizer. From the outcome, it can be concluded that the applied of different treatment combination of integrated nutrient management at proved to be effectively minimizes the disease and insect incidence of bottle gourd. The data on the treatment in T10 (50%NPK+ 25%Vermicompost+25%Compost)(23.50 pest and 21.67 disease) was found most effective in minimum the red pumpkin beetle population and powdery mildew in the bottle gourd.. The similar treatment produced highest B:C(4.53). Bottle gourd fruit produce under integrated nutrient management exhibited significant differences on total soluble solids. TSS in fruits was range from 5.50 to 2.50 0Brix.

KEYWORDS: Biofertilizer, Integrated Nutrient Management (INM), *Lagenariasiceraria (Mol) Standl.*,Total Soluble Soilds (TSS), Economics.

INTRODUCTION

Bottle gourd *[Lagenariasiceraria(Mol.)Standl*.] belong to the family cucurbitaceae. It's originated from South Africa and has a chromosome number of 2n=22. It is an important crop of India. It is cultivating in summer and rainy season throughout the India. India occupy an area of 0.158 mha with production 2.67 million tonnes and productivity 16.8 t/ha (NHB 2017-18).It is highly nutritious crop contains, energy 21kal, protein 0.5, fat 0.19 gm, carbohydrate 5.2g, fiber 0.6g, p 34mg, Iron 2.4 mg, B carotene 25 ug, (Leghari*et al*.2014). As its seeds are good source of protein and oil. They are an excellent source of essential fatty acids, antioxidants, vitamins and sterols. They contain high level of vitamin E, A and C (Hassan *et al*. 2008). The tender fruits are also used to prepare sweets, rayata, and pickles. The dried shells of mature fruits are extremely hard and are used as containers, water jugs, domestic utensils, musical instruments floats of fishnets or ornamental items. For increasing the production and productivity, excessive inorganic fertilizers are applied. It degrade the soil and environmental health and affect the human body. Currently the main focus is to decrease the application of chemical fertilizers for reducing production cost and environmental pollution. The use of organic manure with reduced quantity of inorganic fertilizers increase soil health, growth and yield of bottle gourd. Various organic sources like vermicompost, humic acid, biofertilizer, farm yard manure improved production and soil health and quality of produce.The humic acid which comprised a mixture of weak aliphatic and aromatic organic acid improve the soil fertility and increase the availability of nutrient that from the soil and consequently affect plant growth and yield of crop. The biofertilizers is important to substitute of chemical fertilizers for health and production. Biofertilizer have ability to harnesscarbon, solar energy and atmospheric nitrogen to soil effectively to enrich soil for better plant growth. Biofertilizers are efficient, eco-friendly, environmentally safe, cost effective economically viable and ecologically sound.These are playing a significant role in improving nutrient availability to crop plants. Amongst bio fertilizers, Azotobacter, PSB, Rhizobium strains play an important role in harvesting the atmospheric nitrogen through its fixation in the roots. It is given a primary importance in non-symbiotic and associative nitrogen

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fixation and was recognized to play a unique role in nitrogen economy of many crops. Biofertilizers like PSB, VAM and Azotobacter can improve plant survival, vegetative growth and production. The farm yard manure is FYM is.India most common manure inrich source of organic matter and able to replenish most of the macronutrients being taken up by crop. (Abdel-nasser and Hussein, 2001). FYM is good source of different plant nutrients like N, P and K and judicious application of FYM along with inorganic nutrients might be helpful to obtain a good economic returns as well as for providing favorable conditions for subsequent crop. The benifit of integrated use of nutrients of nitrogen generally superior over use of each component separately.

MATERIALS AND METHODS

The present experiment was conducted at research farm of college of agriculture, Indore. The observation were recorded for the disease and insect incidence, B:C , TSS form five randomly selected plants from each replication. All the agronomic operation were practices as per recommended and treatments were applied on time. The data on various crop characters were subjected to statistical analysis by adopting appropriate method of analysis of variance as described by Fisher (1958).

Experimental design: R.C.B.D. (Randomized Complete Block Design)

Experimental details: The experimental material for present investigation was comprised of 15 treatment with three replication. The details of experimental plan of present investigation as per proposed technical programme are given below:

Symbol	Treatment
T_0	No application of INM
T_1	100% NPK
T_2	100%Vermicompost
T_3	100% Compost
T_4	100%Biofertilizer
T_5	100%Humic acid
T_6	50%NPK+50%Vermicompost
T_7	50%NPK+50% Compost
T_8	50%NPK+50%Biofertilizer
T_9	50%NPK+50%Humic acid
T_{10}	50%NPK+ 25%Vermicompost+25%Compost
T_{11}	50%NPK+25%Vermicompost+25%Biofertilizer
T_{12}	50%NPK+25%Vermicompost+25%Humicacid
T_{13}	50%NPK+16%Vermicompost+16%Compost+16% Humic acid
T_{14}	50%NPK+16%Vermicompost+16%Compost+16% Humicacid+BF

RESULTS AND DISCUSSION

The data on disease and pest incidence under different treatment combination of integrated nutrient management the revealed that the data significantly affected. The data on the treatment with 50%NPK+ 25%Vermicompost+25%Compost was found most effective in minimum the red pumpkin beetle population and powdery mildew in the bottle gourd. This was followed by the treatment with 50% NPK + 50% Vermicompost. The similar was both are effective in controlling disease and pest infestations. Treatment T_0 (No application of INM (Control) shows maximum disease and pest incidence. It might be due to that the application of 50% NPK + 25% Vermicompost + 25%Compost in the crop received high nutrients, organic acids, etc. Theunissen*et al.*(2010) reported that the percentage of humic acid in vermicompost contributes to plant health, as it promotes the synthesis of phenolic compounds such as anthocyanins and flavonoids which may improve the quality and act as a deterrent to pest and disease.

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Table 1: Present incidence of powdery mildew disease and red pumpkin beetle and TSS as effected by different treatments on bottle gourd.

	Treatments	PowderyMildew (disease)	Red pumpkin beetle(pest)	TSS (^{0}Brix)
T_0	No application of INM(Control)	49.83	57.85	2.50
T_1	100% NPK	41.55	51.83	3.97
T_2	100%Vermicompost	45.00	49.67	2.97
T_3	100% Compost	43.00	44.67	3.50
T_4	100%Biofertilizer	47.00	49.00	2.50
T_5	100%Humic acid	42.33	44.33	3.63
T_6	50%NPK+50%Vermicompost	28.52	29.00	5.00
T_7	50%NPK+50% Compost	36.37	39.33	4.13
T_8	50%NPK+50%Biofertilizer	45.00	48.33	3.30
T_9	50%NPK+50%Humic acid	35.96	39.00	4.00
T_{10}	50%NPK+25%Vermicompost+25%Compost	21.67	23.50	5.50
T_{11}	50%NPK+25%Vermicompost+25%Biofertilizer	32.66	35.65	4.57
T_{12}	50%NPK+25%Vermicompost+25%Humic acid	33.67	36.67	4.83
T_{13}	50%NPK+16%Vermicompost+16%Compost+16%Humic acid	36.11	43.33	4.33
T_{14}	50%NPK+16%Vermicompost+16%Compost+16%Humic acid+BF	41.81	48.33	3.67
S.Em.±		0.90	1.24	0.30
	CD at 5%	2.60	3.61	0.89

The recorded of the present experiment revealed that the significant influence of treatments on TSS (^{0}Brix) the treatment T_{10} (50% NPK +25 % Vermicompost + 25% Compost) reflected maximum TSS content. The minimum TSS content was found in the treatment T_0 (No application of INM (Control). The result is in close conformity with the finding by Das *et al* (2015) in bottle gourd and Kanaujia and Daniel (2016) in cucumber. Colour of fruit was not affected by different treatments. Higher return and less cost of cultivation are desirable traits for getting higher returns that there was significant effect of various treatments on the crop economics. Hence, economics of the treatments was workout on data related to economics of various treatments. The maximum gross return (197026.66), net profit (154326.67) and benefit: cost ratio (4.53). The present study also indicated that, among the different treatment the cost: benefit ratio was maximum return with the treatment T_{10} (50% NPK + 25% Vermicompost + 25% Compost) (4:53) followed by T_6(3.38). Minimum was recorded in T_0 (No application of INM (Control)(1.42). Similar are results agree with kumar*et al.*(2012), Baghel*et al.*(2017) and Prasad *et al*. (2015) in Bottle gourd.

Table 2: Effect of integrated nutrient management on economics of different treatment.

Treatments	Expenditure (Rs/ha)	Gross Income (Rs/ha)	Net Income (Rs/ha)	B:C ratio
T_0	36950	52620.00	8520.00	1.42
T_1	44450	91103.33	54153.33	2.04
T_2	61950	64436.66	19986.67	1.04
T_3	47950	65916.66	3966.67	1.37
T_4	41950	55543.33	7593.33	1.32
T_5	40950	78506.66	36556.67	1.91
T_6	53200	179990.00	139040.00	3.38
T_7	46200	131103.33	77903.33	2.83
T_8	43200	66660.00	20460.00	1.54

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T_9	42700	94803.33	51603.33	2.22
T_{10}	43450	197026.66	154326.67	4.53
T_{11}	41325	153326.66	109876.67	3.71
T_{12}	44450	162956.66	121631.67	3.66
T_{13}	43500	142953.33	98503.33	3.28
T_{14}	44100	82213.33	38713.33	1.86

REFERENCES

1. Baghel,S.S; Bose,U.S; Singh,S.S.(2017). Impact of different organic and inorganic fertilizers on sustainable production of bottle gourd [*Lagenariasiceraria (Mol). Standl]*. *Int. J. Pure App. Bio. sci.*5(**2**): 1089-1094.
2. Das, R; Mandal, A.R; Das, S.P. and Kabiraj, J. (2015). Evalution of integrated nutrient management on the erformence of bottle gourd [*Lagenariasiceraria(Mol) Standl]*. *J. Appl.Nat. Sci.*7(**1**):18-25.
3. Hassan,L.G.; N. A. Sani; Dangoggo. andladan, M. J. (2008). Nutritional value of bottle gourd. *[Lagenarisiceraria (Mol).Standl]*. Global. *J. Pure Applied Sci; 14*(**3**)*:301-306.*
4. Kanaujia, S.P. and Daniel, M.L.(2016). Integrated nutrient management for quality production and economics of cucumber *.Annals Pl. Soil Res.* 18(**4**): 375-380
5. Leghari, M.H; Mugheri, A.A; Sheikh, S.A. and Wahocho, N.A.(2014) Response of nitrogen levels on the growth and yield of bottle gourd *[Lagenariasiceraria (Mol). Standl] .Int, J. Agro. Agri. Res. (IJAAR).* 5(**6**): 86-92.
6. National Horticulture Board (2017-18). Statistical status report at Guragoan (Haryana) , India.
7. Prasad, G.; Nandi, A. and Swain, P. K. (2015). Soil amendment and integrated nutrient management on growth, yield, soil health, and Economics of bottle gourd. *Int. J.Veg. Sci.* 22(**1**):3-13.
8. Theunissen,T ., Ndakidemi, PA, Laubsher, C.P.,(2010). Potential of vermicompost produced from plant waste on the growth and nutrient status in vegetable production. *Int.J.Phys.Sci*.13(**5**)1964-1973.

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