

Original Research Article

Effect of Different Organic Sources on Quality of Watermelon (*Citrullus lanatus* Thunb.)

B. M. Kharat^{1*}, S. J. Shinde² and S. D. Patil¹

¹Horticulture Department, College of Agriculture, Parbhani, India

²Horticulture Department, College of Agriculture, Golegaon, India

*Corresponding author

ABSTRACT

The experiment on effect of different organic sources on quality of watermelon (*Citrullus lanatus* Thunb.) was carried out at Organic Research and Training Centre, Vasantarao Naik Marathwada Krishi Vidyapeeth, Parbhani during summer season in year 2018-19. The experiment was laid out in Randomized Block Design in nine treatments with three replications. The treatments were T₁ [RDF 100% through FYM], T₂ [RDF 100% through vermicompost], T₃ [RDF 50 % through FYM + RDF 50% through Vermicompost], T₄ [RDF 100% through FYM + Jeevamrut 3 Application], T₅ [RDF 100% through vermicompost + Jeevamrut 3 Application], T₆ [RDF 100% through FYM + Biofertilizer (*Azotobacter*)], T₇ [RDF 100% through Vermicompost + Biofertilizer (*Azotobacter*)], T₈ [RDF 100% through FYM + Panchagavya 3 Application] and T₉ [RDF 100:50:50 N:P:K (Control) Kg/ha]. In respect of quality character it was also observed that in treatment T₆ [RDF 100% through FYM + biofertilizer (*Azotobacter*)] was found with significantly high percent of TSS (11.00 °Brix), total sugar (5.11 %) and reducing sugar (1.72 %) as compared to other organic sources and control. But in some of the observations it was observed that the effect of different organic sources along with control was non-significant.

Keywords

FYM,
Vermicompost,
Biofertilizer,
Jeevamrut,
Panchagavya,
Quality

Introduction

The watermelon production done worldwide and China rank 1st with total area of 1,892,570 ha and production of 79,244,271 tones. India rank 25th with an area of 30,110 ha and production of 427,105 tones, (Anonymous 2018)^a. In India the state Uttar Pradesh rank 1st in production and productivity with 619.65 tonnes and 24.60 % share of total production respectively and Maharashtra rank 10th in production and productivity with 46.99 tonnes and 1.87 % share of total production respectively (Anonymous 2018)^b.

After the period of green revolution farmer started use of high amount of chemical fertilizer but heavy use leading in depreciation of fertility of soil and heavy use of chemical pesticide also lead many health issues. So, people getting aware about their health and nutrition. Due to this demand organic cultivation getting momentum and started knowing the importance of organically grown vegetables and fruit and because of this farmer also changing their cultivation habit from chemical to organic. Considering the above facts present investigation was undertaken to study the effect of different organic sources on yield

and yield attributing character of watermelon (*Citrullus lanatus* Thunb.).

Materials and Methods

The present investigation was carried out during *summer* season of the year 2018-19 at Organic Farming Research and Training Center, VNMKV, Parbhani to study the effect of different organic sources on yield and yield contributing attributes of watermelon (*Citrullus lanatus* Thunb.). A field experiment was laid out with nine treatments *viz.*, T₁ [RDF 100% through FYM], T₂ [RDF 100% through vermicompost], T₃ [RDF 50 % through FYM + RDF 50% through Vermicompost], T₄ [RDF 100% through FYM + Jeevamrut 3 Application], T₅ [RDF 100% through vermicompost + Jeevamrut 3 Application], T₆ [RDF 100% through FYM + Biofertilizer (*Azotobacter*)], T₇ [RDF 100% through Vermicompost + Biofertilizer (*Azotobacter*)], T₈ [RDF 100% through FYM + Panchagavya 3 Application] and T₉ [RDF 100:50:50 N:P:K (Control) Kg/ha].

The treatments were replicated three times in a Randomized Block Design. The hand dibbling of healthy seeds was done in summer season at spacing of 150 cm X 37.5 cm by dibbling method. Recommended dose Nitrogen, phosphorus and potash were applied to control through urea, single superphosphate and murate of potash, respectively at 100 kg N/ha, 50 kg P₂O₅/ha and 50 kg K₂O/ha. Full dose of P₂O₅ and K₂O were applied respectively to control. Farmyard manure was applied at the rate of 25 tons per hectare and vermicompost at the rate of 4 t/ha at the time of land preparation as per treatment. Jeevamrut (500 liter/ha), panchagavya (200 liter/ha) and biofertilizer (*Azotobacter*) (2.5 liter/ha) was applied as per treatments in three application. First applied by drenching and other two by spraying at 15

DAS, 30 DAS and 45 DAS respectively to the treatment.

Observations on Total soluble solid (⁰Brix) , Total sugar, Reducing sugar, Non-reducing sugar and Ascorbic acid are taken into consideration.

Results and Discussions

Total soluble solid (⁰ Brix)

It was observed that total soluble solids (11.00 ⁰Brix) found significantly maximum in the treatment T₆ [RDF 100% through FYM + Biofertilizer (*Azotobacter*)] which was at par with the treatments T₄ [RDF 100% through FYM + Jeevamrut 3 Application] and T₇ [RDF 100% through Vermicompost + Biofertilizer (*Azotobacter*)] with TSS (10.60 ⁰ Brix) and (10.60 ⁰ Brix) respectively, followed by the treatment T₂ [RDF 100% through vermicompost] which was found significantly minimum TSS (10.00 ⁰ Brix) in fruits of watermelon. It might be due to accumulation of fructose in fruit tissues of watermelon and this are in conformity with Thriveni *et al.* (2015) in bitter gourd, Singh *et al.* (2017) in cucumber and Kaur and Kaur (2018) in cucumber.

Total sugar (%)

It was observed that total sugar (5.11%) found significantly maximum in the treatment T₆ [RDF 100% through FYM + Biofertilizer (*Azotobacter*)] which was at par with the treatment T₄ [RDF 100% through FYM + Jeevamrut 3 Application] (5.03 %), followed by treatments T₉ [RDF 100:50:50 N:P: K (Control) Kg/ha], T₇ [RDF 100% through Vermicompost + Biofertilizer (*Azotobacter*)], T₅ [RDF 100% through vermicompost + Jeevamrut 3 Application] and T₈ [RDF 100% through FYM + Panchagavya 3 Application] with total sugar (4.89 %), (4.86 %), (4.70 %)

and (4.66 %) respectively in watermelon. The treatment T₂ [RDF 100% through vermicompost] was found minimum total sugar (4.41 %) in watermelon. It might be due to accumulation of fructose in fruit tissues of watermelon and this are in accordance with findings of those observed by Thriveni *et al.*, (2015) in bitter gourd, Singh *et al.*, (2017) in cucumber and Kaur and Kaur *et al.*, (2018) in cucumber.

Reducing sugar (%)

It was observed that reducing sugar (1.72 %) found significantly maximum in the treatment T₆ [RDF 100% through FYM + Biofertilizer (*Azotobacter*)] which was at par with the

treatment T₄ [RDF 100% through FYM + Jeevamrut 3 Application] (1.70 %) followed by the treatment T₅ [RDF 100% through vermicompost + Jeevamrut 3 Application] (1.65 %). However, the treatment T₂ [RDF 100% through vermicompost] found significantly minimum reducing sugar (1.20 %) in watermelon. The total sugar (%) and reducing sugar (%) were significantly increased in the treatment T₆ [RDF 100% through FYM + Biofertilizer (*Azotobacter*)] than other treatment might be due to accumulation of fructose in fruit tissue of watermelon and present finding are in conformity with Nayak *et al.*, (2016) in pointed gourd.

Table.1

Sr. No.	Treatment details	Total Soluble Solid (^o Brix)	Total Sugar (%)	Reducing Sugar (%)	Non-Reducing Sugar (%)	Ascorbic Acid (mg/100 g)
T ₁	RDF 100% Through FYM	10.13	4.50	1.30	3.20	7.46
T ₂	RDF 100% Through vermicompost	10.00	4.41	1.20	3.21	7.56
T ₃	RDF 50 % Through FYM + RDF 50% Through Vermicompost	10.33	4.48	1.41	3.07	7.85
T ₄	RDF 100% Through FYM + Jeevamrut 3 Application	10.60	5.03	1.70	3.33	7.96
T ₅	RDF 100% Through vermicompost + Jeevamrut 3 Application	10.07	4.70	1.65	3.05	7.68
T ₆	RDF 100% Through FYM + Biofertilizer (<i>Azotobacter</i>)	11.00	5.11	1.72	3.39	7.66
T ₇	RDF 100% Through Vermicompost + Biofertilizer (<i>Azotobacter</i>)	10.60	4.86	1.47	3.39	7.49
T ₈	RDF 100% Through FYM + Panchagavya 3 Application	10.53	4.66	1.52	3.14	7.35
T ₉	RDF 100:50:50 N:P: K (Control) Kg/ha	10.47	4.89	1.42	3.47	7.12
S.E (±)		0.17	0.15	0.04	0.15	0.16
C. D at 5%		0.52	0.46	0.13	NS	NS

The overall assessment of the result of present investigation on the "Effect of different organic sources on yield and yield attributing character of watermelon (*Citrullus lanatus* Thunb.)" concluded that use of treatment T₆ [RDF 100% through FYM + Biofertilizer (*Azotobacter*)] was found superior quality character viz. Total soluble solid, Total sugar and reducing sugar. Hence, for study the "Effect of different organic sources on quality of watermelon (*Citrullus lanatus* Thunb.)" It is evident that the use of (RDF 100% through FYM + Biofertilizer (*Azotobacter*)) as a best for increasing yield of watermelon. The results are on the basis of one season trial therefore need to conduct two or more trials so that conclude proper conclusion.

References

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