AJH
eISSN- 0976-724X

THE ASIAN JOURNAL OF HORTICULTURE
Volume **11** | Issue 2 | December, 2016 | 408-410
Visit us -*www.researchjournal.co.in*

RESEARCH PAPER

DOI : 10.15740/HAS/TAJH/11.2/408-410

Article history :
Received : 02.08.2016
Revised : 19.11.2016
Accepted : 28.11.2016

Effect of organic manures and inorganic fertilizers on fruit yield of tinda (*Praecitrullus fistulosus*)

■ **V.U. NATCHATHRA[1], S. ANUJA AND K. HARIPRIYA[1]**

Members of the Research Forum

Associated Authors:
[1]Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalai Nagar, CHIDAMBARAM (T.N.) INDIA

Author for correspondence :
S. ANUJA
Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalai Nagar, CHIDAMBARAM (T.N.) INDIA

ABSTRACT : The yield of Tinda in respon se to the effect of organic manures and inorganic fertilizers was evaluated at the Department of Horticulture, Faculty of Agriculture, Annamalai University, Tamil Nadu during March-May, 2015. More number of fruits (14.41), highest single fruit weight (50.68g) and highest yield per plant (722.69g) were obtained with treatments comprising 75 per cent recommended dose of fertilizers package coupled with vermicompost @ 2t ha^{-1} along with *Azospirillum* and phosphobacteria @ 2 kg ha^{-1}.

KEY WORDS : Tinda, Vermicompost, *Azospirillum*, Phosphobacteria, NPK, Yield

HOW TO CITE THIS ARTICLE : Natchathra, V.U., Anuja, S. and Haripriya, K. (2016). Effect of organic manures and inorganic fertilizers on fruit yield of tinda (*Praecitrullus fistulosus*). *Asian J. Hort.*, **11**(2) : 408-410, **DOI : 10.15740/HAS/TAJH/11.2/408-410.**

Tinda (*Praecitrullus fistulosus*) belongs to family Cucurbitaceae, and is one of the most important summer vegetable grown. It is one of the excellent plants, gifted by the nature having composition of all the essential constituents that are required for normal and good human health (Kirtikar and Basu, 1998). It is a warm season, annual, monoecious vegetable vine grown in irrigated and arid areas of the sub-continent region, which is rich in minerals and vitamins (Khan *et al*., 2001). Seeds and unripe fruit possess great medicinal value.

The need for renewable forms of energy and reduced cost of fertilizing crops, have revived the use of organic manures worldwide. Improvement in environmental conditions and public health are important reason for advocating increased use of organic materials. Organic manures can sustain cropping systems through better nutrient recycling and improvement of soil physical attributes. The complementary use of organic and inorganic fertilizers has been recommended for sustenance of long term cropping. Nutrients from mineral fertilizers enhance the establishment of crops while those from mineralization of organic manures promotes yield when both fertilizers were combined (Basel and Sami, 2014). With this background in view, the present study was conducted to study the effect of organic manures and inorganic fertilizers on fruit yield of Tinda.

RESEARCH METHODS

The experiment was conducted in the Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalai Nagar, Tamil Nadu during 2015 to study the effect of organic manures and inorganic fertilizers on growth in Tinda. The soil of the experimental field was sandy clay loam with a pH of 7.5. The treatments were selected for sole and combined application of vermicompost, farmyard manure, Neem cake, *Azospirillum* and phosphobacteria along with 100 per cent, 75 per cent and 50 per cent of recommended dose of inorganic fertilizers and thus 13 treatment combinations were laid out in Randomized Block Design (RBD) with three replications. The treatments were T_1-100 per cent recommended dose of inorganic fertilizers alone (50:20:20 kg NPK ha^{-1}); T_2-75 per cent recommended dose of inorganic fertilizers alone; T_3-50

per cent recommended dose of inorganic fertilizers alone; T_4-Vermicompost @ 2.5 t ha^{-1}; T_5-FYM @ 25 t ha^{-1}; T_6-Neem cake @ 1000 kg ha^{-1}; T_7-75 per cent NPK + vermicompost @ 2.5 t ha^{-1} + *Azospirillum* and phosphobacteria @ 2kg ha^{-1}; T_8-75 per cent NPK +FYM @ 25 t ha^{-1} + *Azospirillum* and phosphobacteria @ 2kg ha^{-1}; T_9-75 per cent NPK + Neem cake @ 1000 kg ha^{-1} + *Azospirillum* and phosphobacteria @ 2kg ha^{-1}; T_{10}-50 per cent NPK + vermicompost @ 2.5 t ha^{-1} + *Azospirillum* and phosphobacteria @ 2kg ha^{-1}; T_{11}-50 per cent NPK + FYM @ 25 t/ha + *Azospirillum* and phosphobacteria @ 2kg ha^{-1}; T_{12}-50 per cent NPK + Neem cake @ 1000 kg ha^{-1} + *Azospirillum* and phosphobacteria @ 2kg ha^{-1}; T_{13}-Absolute control. The field was laid out into beds of 3x 1 m size. The seeds of variety Punjab tinda were sown in the centre of the beds by digging small pits. Each plot was applied with the respective dose of organic manures as basal application as per the treatment schedule. The fertilizers N, P and K were supplied by urea, single superphosphate (SSP) and muriate of potash (MOP), respectively. All observations were recorded on six tagged plants in each replication in each treatment.

RESEARCH FINDINGS AND DISCUSSION

The data presented in Table 1 revealed that the number of fruits, single fruit weight and fruit yield per plant was higher in the treatment combination of vermicompost @ 2.5 t ha^{-1} along with *Azospirillum* and phosphobacteria @ 2 kg ha^{-1} combined with 75 per cent of recommended dose of inorganic fertilizers.

Increase in fruit weight may be due to greater accumulation of solid matter in the fruits. It appears from the findings that supply of nutrients from organic and inorganic sources, *i.e.*, vermicompost and chemical fertilizers improves the partitioning of photo- assimilates from leaf to fruit and thereby increases the fruit weight. This finding agrees with the findings of Liasu *et al.* (2008) in okra and Sharma *et al.* (2011) in garden pea. Increased bioavailability of P by the application of organic amendments in the form of vermicompost increases the yield. Organic manure like vermicompost when added to soil, augment yield. Similar findings were reported by Ansari (2008) in onion and potato.

Superiority of vermicompost is due to its nutritional richness, quick mineralization and more availability of N and other plant nutrients (Mujahid and Gupta, 2010). Vermicompost in presence of biofertilizers influence the plant metabolism by enhancing the solubility and availability of applied nutrients and moisture retention capacity (Akbar *et al*., 2009). Similar findings were reported by Londhe (2002) as well as Bahadur *et al*. (2003) in broccoli. Rajaee *et al*. (2007) also reported that free-living nitrogen fixing micro-organism, *Azospirillum* enhanced root-development, increased water and mineral uptake, and produced plant hormones that might be responsible for growth and yield. These findings are in conformity with those of Swain *et al*.

Table 1 : Effect of organic manures and inorganic fertilizers on number of fruits per plant, single fruit weight (g), fruit yield per plant (g) in Tinda

Treatments	Number of fruits per plant	Single fruit weight (g)	Fruit yield per plant (g)
T_1 -100% NPK	13.75	49.02	656.86
T_2 -75% NPK	11.43	43.20	448.41
T_3 - 50% NPK	9.41	38.20	297.19
T_4 - Vermicompost @ 2.5 t ha^{-1}	8.73	36.52	251.98
T_5 - FYM @ 25 t ha^{-1}	8.07	34.86	210.55
T_6 - Neem cake @ 1000 kg ha^{-1}	7.79	34.08	192.89
T_7 - 75% NPK + Vermicompost @ 2.5 t ha^{-1} + *Azospirillum* and phosphobacteria @ 2 kg ha^{-1}	14.41	50.68	722.69
T_8 - 75% NPK + FYM @ 25 t ha^{-1} + *Azospirillum* and phosphobacteria @ 2 kg ha^{-1}	12.77	46.54	564.06
T_9 - 75% NPK + Neemcake 1000 kg ha^{-1} + *Azospirillum* and phosphobacteria @ 2 kg ha^{-1}	13.07	47.34	592.69
T_{10} - 50% NPK + Vermicompost 2.5 t ha^{-1} + *Azospirillum* and phosphobacteria @ 2 kg ha^{-1}	12.09	44.88	505.34
T_{11} - 50% NPK + FYM @ 25 t ha^{-1} + *Azospirillum* and phosphobacteria @ 2 kg ha^{-1}	10.09	39.86	344.39
T_{12} - 50% NPK + Neemcake @ 1000 kg ha^{-1} + *Azospirillum* and phosphobacteria @ 2 kg ha^{-1}	10.75	41.54	395.46
T_{13} - Absolute control	7.11	32.40	154.87
S.E.±	1.83	0.82	25.81
C.D. (P=0.05)	3.66	1.64	51.62

(2003) and Wange and Kale (2003) in okra.

The application of nutrients like vermicompost, *Azospirillum* and phosphobacteria, inorganic fertilizers has significant and vital effect on yield of Tinda. The supply of various plant nutrients at an optimum level sustains the desired crop productivity by optimizing the benefits from all sources in an integrated manner. In light of the results, this study can infer that organics are effective alternatives as a source of macro and micronutrients and have a potential to improve yield. The biofertilizers, such as *Azospirillum* and phosphobacteria also produce growth promoting substances, increase soil fertility in terms of nitrogen, phosphorus and potassium. Thus, it can be concluded from the present study that the application of 75 per cent NPK, vermicompost @ 2t ha^{-1} along with *Azospirillum* and phosphobacteria @ 2 kg ha^{-1} found to have beneficial effect on the yield of Tinda.

REFERENCES

Akbar, P.I., Kumar, V. and Malik, M.F. (2009). Effect of bio organic fertilizers on the performance of cabbage under western UP condition. *Ann. Hort.,* **2**(2): 204-6.

Ansari, A.A. (2008). Effect of vermicompost and vermiwash on the productivity of spinach (*Spinacia oleracea*), onion (*Allium cepa*) and potato (*Solanum tuberosum*).*World J.Agric. Sci.,* **4**(5):554-557.

Bahadur, A., Singh, J.,Upadhyay, A.K. and Singh, K.P. (2003). Effect of organic manures and bio fertilizers on growth, yield and quality attributes of broccoli. *Veg. Sci.,***30**(2): 192-4.

Basel, N. and Sami, M. (2014). Effect of organic and inorganic fertilizers applicationon soil and cucumber (*Cucumis sativa* L.) plant productivity. *Internat. J. Agric. & Forestry,* **4**(3):166-170.

Khan, A.Q., Iqbal, M., Hilani, M.S., Ghafoor, A. and Waseem, K. (2001). Effect of different sowing dates on the yield of tinda gourd (*Citrullus vulgaris*) var. *fistulosus* under the agro climatic conditions of D.I Khan. *Online J. Biol. Sci.*, **1**(4): 235-237.

Kirtikar, K.R. and Basu, B.D. (1998). *A text book of Indian medicinal plant*, 2, 1151.

Liasu, M.O., Ogundare, A.O. and Ologunde, M.O. (2008). Effect of soil supplementation with fortified tithonia mulch and directly applied inorganic fertilizer on growth and development of potted okra plants. *American Eurasim J. Sustainable Agric.*, **2**(3):264-270.

Londhe, S.D. (2002). Studies on intergrated nutrient management in cabbage cv. GOLDEN ACRE. M.Sc., Thesis. Mahatma Phule Krishi Vidyapeeth, Rahuri, Ahmednagar, M.S. (INDIA).

Mujahid, A.M. and Gupta, A.J. (2010).Effect of plant spacing, organic manures and inorganic fertilizers and their combinations on growth, yield and quality of lettuce (*Lactuca sativa*).*Indian J. Agric. Sci.*, **80**(2):177-181.

Rajaee, S., Alikham, H.A. and Rajesi, F. (2007). Effect of plant growth promoting potentials of *Azotobacter chroococcum* native strains on growth, yield and uptake of nutrients in wheat. *J. Sci. & Technol. Agric. & Nat. Resour.*, **11** : 297.

Sharma, Jaipaul S., Dixit, A.K. and Sharma, A.K. (2011). Growth and yield of capsicum (*Capsicum annum*) and garden pea (*Pisum sativum*) as influenced by organic manures and biofertilizers. *Indian J. Agric. Sci.*, **81**(7):637-642.

Swain, A.K., Pattanayak, S.K., Jena, M.K. and Nayak, R.K. (2003). Effects of integrated use of bioinoculant and fertilizer nitrogen on growth, yield and nitrogen economy of okra. *J. Indian Soc. Soil Sci.*, **51**:145-150.

Wange, S.S. and Kale, R.H. (2003). Response of okra and bittergourd to diazotrophs and graded level of nitrogen.*J. Soils & Crops*, **13** : 271-274.

11th Year
★★★★★ of Excellence ★★★★★