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Full Length Research Paper

A Comparative Assessment of Organic manures and In-organic Fertilizers on Okra (*Abelmoschus esculentus*)

Anilkumar D. Talageri*, J.Narayana* and Y.P. Shilpshree
**Department of Environmental Science, Kuvempu University,Shankaraghatta -577451*

****Corresponding Author: Anilkumar D. Talageri***

Abstract
A study conducted on a farmer's field at kardiga, shimoga district in Rainy season 2011-2012 with a view to study the effect of organic manures and In-organic fertilizers on the growth and yield of okra. Among the different combinations, application The maximum pod weight was recorded under organic manure in T5 (25kg) supplied with vermicompost + Farm yard manure (FYM) and the minimum pod weight was recorded in T1 (2.5 kg) and under inorganic sources in T5 (23kg) supplied with FYM + of RDF (Recommended Dose of Fertilizers) Nitrogen, phosphorus and potassium and the minimum pod weight was recorded in T1 (3kg) when supplied with only FYM.

Key words: *Abelmoschus esculentus, NPK fertilizer, Vermicompost*

Introduction

Organic farming or natural farming has no doubt emerged from asian countries like India and china where agriculture was the mainstay and farmers have nurtured and groomed this art overall several centuries. Organic farming is not a new concept. However, it was marginalized against the large scale chemical based farming practices that have steadily dominated food to production over the last forty five years. The difference between organic farming and chemical fertilizers accounts for most of the controversy with claims and counter claims surrounding organic agriculture and organic food.

Organic farming is an eco-friendly system of farming which can maintain the soil health. The favorable effect of various components of organic farming over inorganic fertilizer management practice is to be considered holistically rather than looking for short term benefits. The adverse effects due to excess use of chemical fertilizers also impacted on deterioration of soil quality. Bhindi*Abelmoschusesculentus* belongs to family Malvaceaean important commercial vegetable crop. It is grown for its tender fruits in tropics, subtropics and warmer parts of temperate regionIt is a potential export earner accounting for thirteen per cent among fresh vegetables (Bose andRanjan, 1988).Green fruits are also rich source of protein, vitamin A and vitaminB, C and medicinal uses.

Materials and Methods

Crop selected for the study:

The present experiment was carried out in the field a Kardiga village at near 35 kms from Shivamogga district during the year 2011-12 under rainy season. Randomized Complete Block Design (RCBD) method was followed with Four replications and five treatments and observations were recorded on plant height, Number of branches per plant, number of leaves per plant and number of pods per plants at the time of harvest, Number of pods length (cm) per plants at harvest, pods weight (kg) per hectare Treatments were imposed timely and chemical fertilizers were applied in the form of urea, single super phosphate and murate of potash also Farm yard manure (FYM) and vermicompost were applied at the time of sowing. Under each treatment the number of pods from five randomly selected plants was counted and their mean value was taken out. The average pod length of randomly selected 5 plants was worked out by measuring for all the pods and dividing the total pod length by number of pods and expressed in centimeter at different intervals. Treatments details are as follows.

Experimental Details:

In order to compare the organic and inorganic treatment for growth and yield of bhindi the following experimental set up was followed.

Design = Randomized Block Design, Replications = Four (4), Treatments =Five (5), Total number of plots = Twenty (20), Plot size = 26sqmt, Spacing = 2x1 ft.

***Treatments Details*:**

Plot-I (Organic manure treatment)

T1=Control, T2=Vermicompost100% (5 kg), T3=FYM 50%(2kg) + 50% (2kg) Vermicompost, T4= FYM 75 % (1,600kg) + 25 % (½ kg) Vermicompost, T5=Vermicompost 75 % (3kg) + 25 % (800gms) FYM (Farm Yard Manure).

Plot-II (Chemical fertilizers treatment)

T1=Control, T2 = 100% of RDF (Nitrogen, Phosphorus and Potassium 484 gms), T3 = 75% of RDF (Nitrogen, Phosphorus and Potassium 340gms) ,T4 = 50% of RDF (Nitrogen, Phosphorus and Potassium 242 gms) , T5 = 125% of RDF (Nitrogen, Phosphorus and Potassium 604gms).

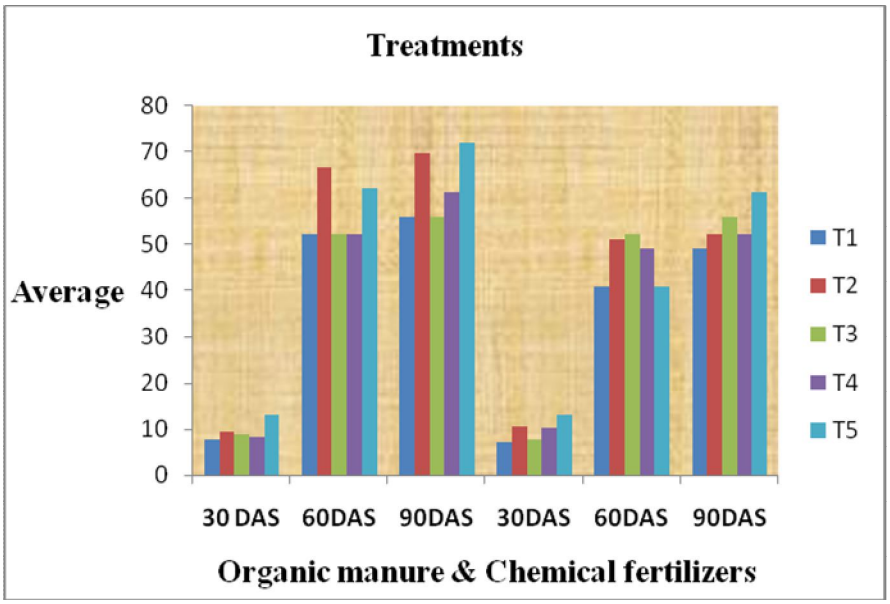
Results and Discussion

The data presented in **Table1** indicated that among the treatments of organic manure and chemical fertilizers levels, T5 showed a maximum plant height (cm) 71.97 under (Organic manure)and it was 61.47 in case of (chemical fertilizer) at 90DAS and minimum plant height in organic manures is 56.05 and chemical fertilizers levels was49.22.

Table: 1 Influence of organic and chemical fertilizers on plant height (cm) of bhindi at different intervals.

Treatments	Organic manure (VC+FYM)			Chemical fertilizers (NPK)		
	30 DAS	60DAS	90DAS	30DAS	60DAS	90DAS
T1	7.70	52.32	56.05	7.36	40.73	49.22
T2	9.31	66.54	69.76	10.51	51.17	52.32
T3	8.80	52.32	56.05	7.70	52.32	56.05
T4	8.32	52.32	61.47	10.33	49.22	52.32
T5	13.04	62.14	71.97	13.04	40.73	61.47

1. VCVermicompost 2. FYM- Farm yard manure 3. NPK- Nitrogen, Phosphorous, Potassium.



The number of branches is presented in **Table2** Among the treatments, T5 recorded maximum number of branches (13.73) and the minimum with organic manure, number of branches was recorded in T1(2.73). In chemical fertilizer T5 recorded maximum number of branches (7.06).

Table: 2 Influence of organic and chemical fertilizers on plant branches of bhindi at different intervals.

Treatments	Organic manure (VC+FYM)			Chemical fertilizers (NPK)		
	30 DAS	60DAS	90DAS	30DAS	60DAS	90DAS
T1	2.73	3.26	3.46	2.42	2.73	3.26
T2	5.73	11.6	12.6	3.3	5.73	7.46
T3	3.26	4.24	7.06	2.53	4.24	6.53
T4	3.43	5.82	6.53	2.33	3.26	5.82
T5	7.06	12.13	13.73	3.2	5.73	7.06

1. VC-Vermicompost 2. FYM- Farm yard manure 3. NPK- Nitrogen, Phosphorous, Potassium.

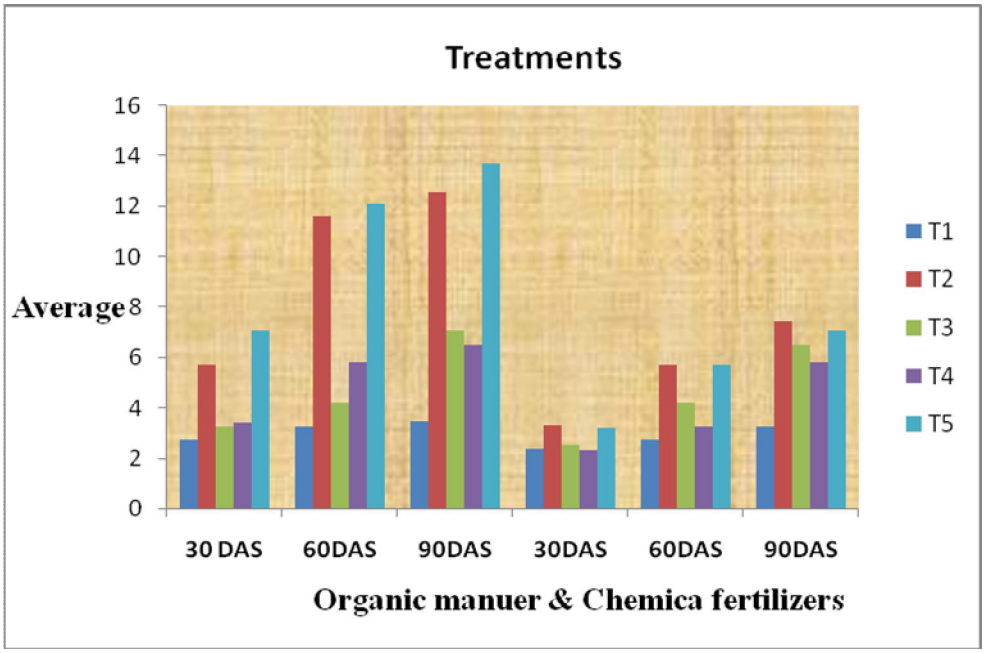
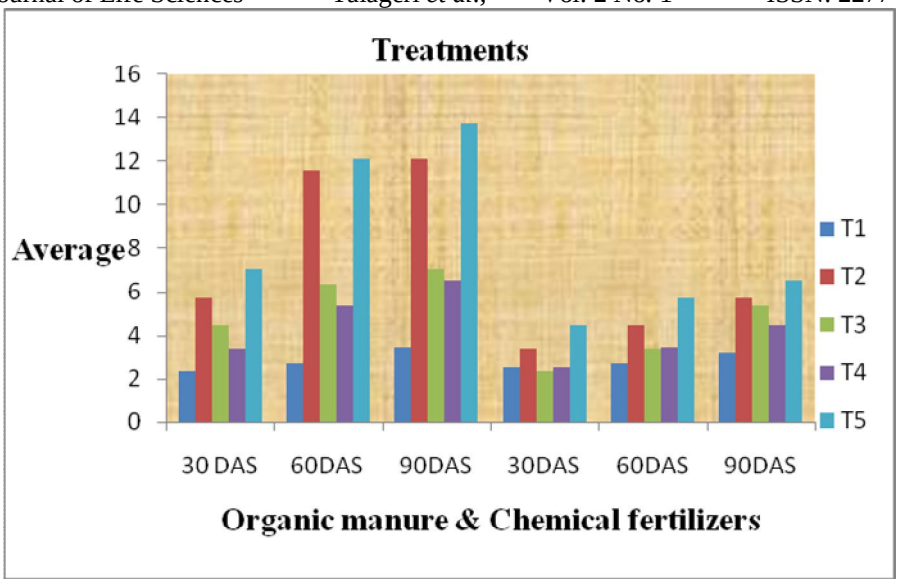


Table 3 indicated that among the treatments of organic manure T5 recorded maximum number of leaves (13.73) and minimum of 2.33 at 90 days after sowing, whereas in case of chemical fertilizer levels again T5 recorded maximum number of leaves (6.53) and minimum number of leaves (2.53) was recorded in T1.

Table: 3 Influenceof organic and chemical fertilizers on plant leaves of bhindi at different intervals.

Treatments	Organic manure (VC+FYM)			Chemical fertilizers (NPK)		
	30 DAS	60DAS	90DAS	30DAS	60DAS	90DAS
T1	2.33	2.73	3.46	2.53	2.73	3.26
T2	5.73	11.6	12.13	3.43	4.46	5.73
T3	4.46	6.33	7.06	2.33	3.43	5.33
T4	3.43	5.33	6.53	2.53	3.46	4.46
T5	7.06	12.13	13.73	4.46	5.73	6.53

1. VCVermicompost 2. FYM- Farm yard manure 3. NPK- Nitrogen, Phosphorous, Potassium.



The number of pods presented in **Table 4** organic manure treatments, T5 recorded maximum number of pods (12.73) and minimum of 1.73 pods in T1.In chemical fertilizer levels again T5 recorded maximum number of pods (8.42) and minimum of 1.6 pods in T1.

Table:4 Influence of organic and chemical fertilizers on pod yield of bhindi at different intervals.

Treatments	Organic manure (VC+FYM)		Chemical fertilizers (NPK)	
	60DAS	90DAS	60DAS	90DAS
T1	1.73	3.23	1.66	1.73
T2	3.23	5.53	2.61	3.86
T3	3.23	4.66	1.73	3.40
T4	3.40	4.53	3.23	3.40
T5	4.53	12.73	3.40	8.42

1.

1. VC-Vermicompost 2. FYM- Farm yard manure 3. NPK- Nitrogen, Phosphorous, Potassium.

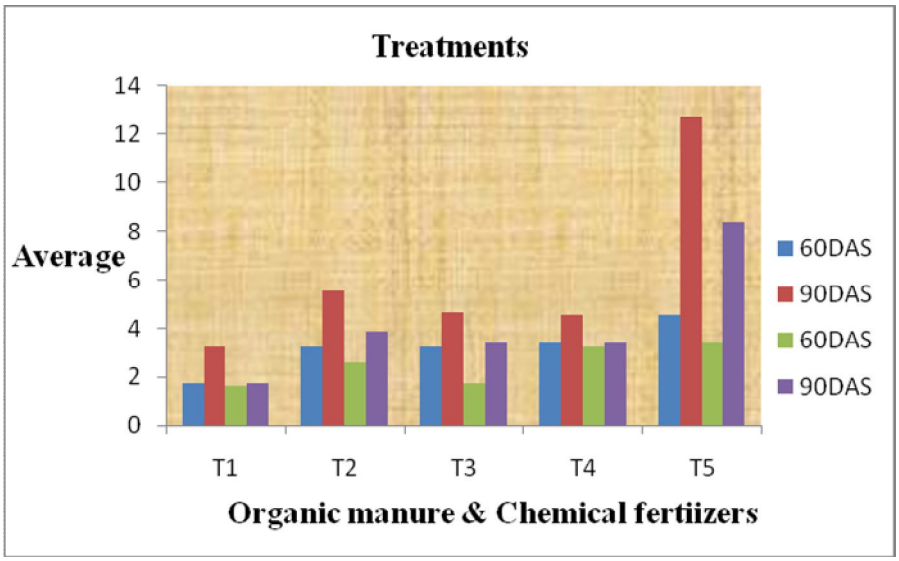
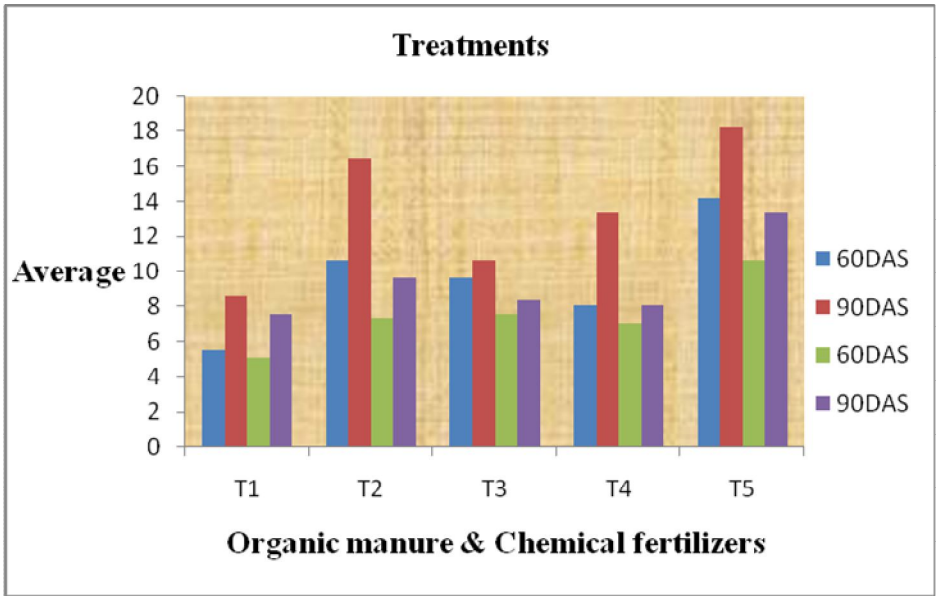


Table5 indicated that it increased from 45 days to till harvest. Among the organic manure treatments,T5 recorded maximum number of pod lengths (18.28) and minimum of 5.58 pods length in T1.In chemical fertilizer levels again T5 recorded maximum number of pod lengths (13.46) and minimum of 5.08 pods length in T1.

Table: 5 Influenceof organic and chemical fertilizers on pods length (cm) of bhindi at different intervals.

Treatments	Organic manure (VC+FYM)		Chemical fertilizers (NPK)	
	60DAS	90DAS	60DAS	90DAS
T1	5.58	8.63	5.08	7.62
T2	10.66	16.51	7.36	9.65
T3	9.65	10.66	7.62	8.38
T4	8.12	13.46	7.11	8.12
T5	14.22	18.28	10.66	13.46

1. VC- Vermicompost 2. FYM- Farm yard manure 3. NPK- Nitrogen, Phosphorous, Potassium.



The combined use of organic and chemical fertilizers treatment yielded higher than chemical fertilizers in all the crops. Beneficial effect of combined use of organic and chemical fertilizers increased crop yield as well as maintained soil health on long term basis. The similar type of work was reported by Mishra *et al*. (1990)

Table-1.1 Soil samples analysis of organic manure treatments.

Parameters	pH		Electro conductivity EC (µmhos/cm)		Nitrogen (kg/ha)		Phosphorus (kg/ha)		Potassium (kg/ha)	
Treatments	1	2	1	2	1	2	1	2	1	2
T1	7.9	7.8	0.12	0.16	360	366	12	14	166	173
T2	7.9	7.4	0.12	0.19	360	400	12	19	166	235
T3	7.9	7.5	0.12	0.18	360	387	12	18	166	195
T4	7.9	7.6	0.12	0.17	360	350	12	17	166	185
T5	7.9	7.3	0.12	0.20	360	410	12	20	166	210

1. Before applying organic manure 2. After Harvesting Crop

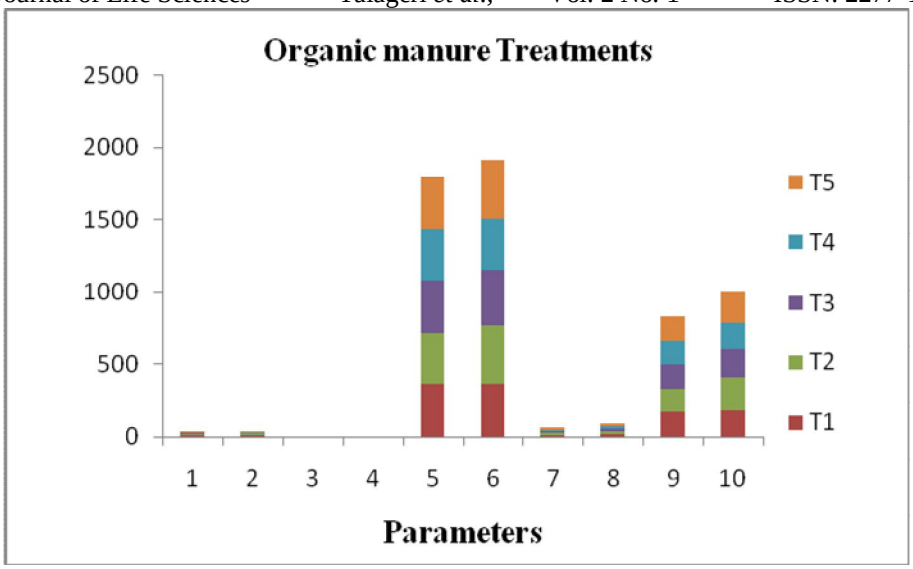
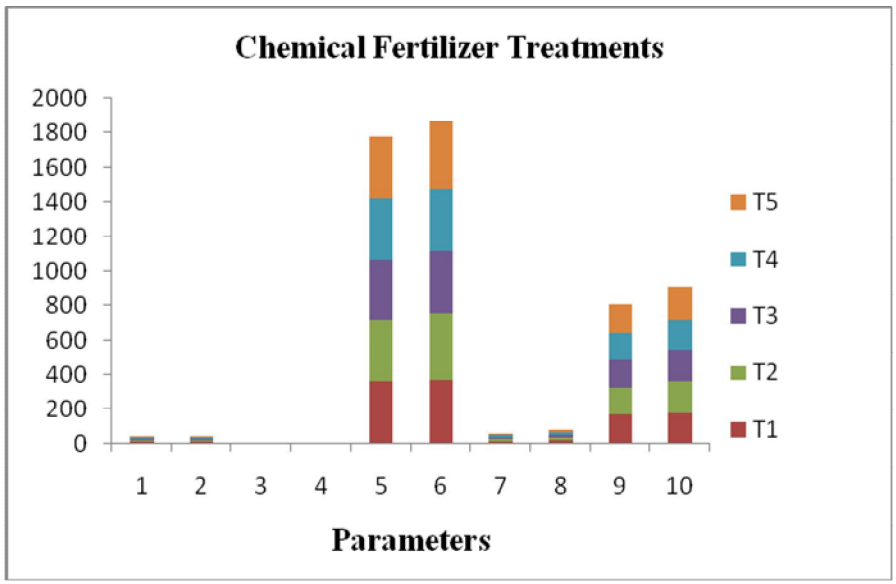


Table-1.2 Soil samples analysis of chemical fertilizer treatments.

Parameters	pH		Electro conductivity EC (µmhos/cm)		Nitrogen (kg/ha)		Phosphorus (kg/ha)		Potassium (kg/ha)	
Treatments	1	2	1	2	1	2	1	2	1	2
T1	7.8	7.7	0.11	0.14	355	360	11	13	160	167
T2	7.8	7.3	0.11	0.17	355	387	11	16	160	190
T3	7.8	7.7	0.11	0.16	355	365	11	14	160	185
T4	7.8	7.6	0.11	0.15	355	360	11	13	160	172
T5	7.8	7.5	0.11	0.18	355	390	11	17	160	195

1. Before applying chemical fertilizers 2. After Harvesting Crop.



Average number of pods/plant was lower in the chemical fertilizer plot and vermicompost compared to other treatments. Similar results also reported by Sudhkar*et al.* (2000). Thus combination of organic manure and chemical fertilizer treatment alone supports the maximum yield. Comparatively even treated with less dosage of organic manures influencing a good yield of bhindi. Therefore, the present investigation claims that vermicompost is a rightly considered to be one of the important organic manure to maintain the quality as well as yield of bhindi.

Conclusion

The present study indicated that the organic amendments influenced on organic manure crop in this way, organic farming has proved to be environment friendly, sustainable and cost effective (Reganold*et al*., 2001). Organic farming is a holistic production management system based on basic principles of minimizing the use of external inputs and avoiding the use of chemical fertilizers and pesticides to ensure sustainability of agriculture. Organic manure is cheaper than that of chemical fertilizers and to lesser the negative effect aroused from applying chemical fertilizers to soil. Therefore it was concluded that organic treated fields influenced high growth and yield. Hence the results of the study witnessed that organic farming proved as an ecofriendly and economically viable.

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