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Effect of organic manures and inorganic fertilizers on certain quality parameters of okra [*Abelmoschus esculentus* (L). Moench] cv. ARKA ANAMIKA

■ K. GAYATHRI AND K. KRISHNAVENI¹

AUTHORS' INFO

Associated Co-author :

¹Department of Horticulture, Dr.
Y.S.R. Horticultural University,
WEST GODAVARI (TELANGANA)
INDIA

Author for correspondence:

K. GAYATHRI
DDS Krishi Vigyan Kendra,
Zaheerabad, MEDAK
(TELANGANA) INDIA
Email: gayathrihorti@gmail.com

ABSTRACT : A study was carried out to find the effect of organic manures and inorganic fertilizers on certain quality parameters like ascorbic acid, protein content and fibre in okra (*Abelmoschus esculentus* L.) cv. ARKA ANAMIKA. This experiment consisted of a total 12 treatments. Among the treatments 50 per cent of RDF+ 50 per cent of RDN through FYM and 50 per cent of RDF+50 per cent RDN through poultry manure recorded minimum fibre content (10.17 %) of pods. It was found that with lesser fibre content the quality of okra fruit increased. Among the treatments the maximum protein content (16.37 %) was recorded in 50 per cent of RDF+ 50 per cent of RDN through FYM treatment. Farmyard manure @ 20 t/ha and 50 per cent of RDF+ 50 per cent of RDN through FYM treatments recorded maximum ascorbic acid (19.67 mg/100g). The perusal of the data revealed that with the use of organic manure in combination with inorganic fertilizers the okra quality parameters were enhanced when compared to other treatments. The data obtained from the above study was the protein content has increased significantly by the application of different organic manures with nitrogenous fertilizers compared to the control and complete inorganic fertilizers. It was, therefore, concluded that the use of organic manure in combination with inorganic fertilizers in the production of vegetables like okra should be encouraged as it is beneficial for the physical growth of okra plant while the above said quality parameters of okra fruit are dependent only on combined manure and fertilizer dose.

KEY WORDS : Organic manures, Inorganic fertilizers, Okra

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Okra or bhindi [*Abelmoschus esculentus* (L). Moench] belongs to the family Malvaceae. Okra requires heavy manuring for its potential production and good quality green pods. However, the use of expensive commercial fertilizers as per requirements of the crop is not much affordable to the

average farmers. Nitrogen is a single most important nutrient which contributes to the proper growth of plant and yield. Organic manures improve the quality of green pods. Therefore, the applications of plant nutrients through organic sources like compost, farm yard manure and bio fertilizers remains the alternative choice of the growers

for maintaining its sustainable production.

RESEARCH PROCEDURE

The field experiment with okra, cv. ARKA ANAMIKA was conducted from October-2010 to January-2011 at the Horticultural Research Station (HRS), Venkataramannagudem, West Godavari district. The design followed was Randomized Block Design with 12 treatments and three replications. The treatments included recommended dose of NPK (100:50:50 kg /ha) (T₁), Farmyard manure @ 20 t/ha (T₂), Vermicompost @ 8 t/ha (T₃), Poultry manure @ 7 t/ha (T₄), 50 per cent of RDF+ 50 per cent of RDN through FYM (T₅), 50 per cent of RDF +50 per cent of RDN through vermicompost (T₆), 50 per cent of RDF+50 per cent RDN through poultry manure (T₇), 50 per cent of RDF +25 per cent of RDN through FYM + 25 per cent RDN through vermicompost (T₈), 50 per cent of RDF +25 per cent of RDN through poultry manure +25 per cent of RDN through vermicompost (T₉), 50 per cent of RDF +25 per cent of RDN through poultry manure +25 per cent of RDN through FYM (T₁₀), 33.3 per cent of RDN through poultry manure +33.3 per cent of RDN through FYM +33.3 per cent of RDN through vermicompost (T₁₁), Control (No fertilizers + No organic manures) (T₁₂). The crop was raised with a spacing of 60 cm × 30 cm and plot size of 3.6 m × 2.1m. Standard cultural practices recommended for Okra was followed uniformly for all the experimental plots. The quality parameters were

recorded in the five randomly selected plants in each plot were tagged to arrive mean values. Fibre content of the pod was estimated as per the procedure given by (Ranganna, 1986). For estimating protein content in the fresh fruit, the per cent of nitrogen in the fruit was estimated by following Micro-Kjeldahl method and it was multiplied by 6.25. For estimating ascorbic acid content in pods one gram of sample was blended with 3 per cent meta phosphoric acid and then made up to 100 ml and filtered. From the filtrate, 10 ml sample was pipetted into conical flask and titrated with the standard dye to a pink end point (Ranganna, 1986). The data were subjected to statistical scrutiny.

RESEARCH ANALYSIS AND REASONING

The results obtained from the present investigation are presented in Table 1. Among the treatments, T₈ (50% of RDF +25% of RDN through FYM + 25% RDN through vermicompost) recorded lowest fibre content (10.03 %). Application of organic form of nitrogen in combination with inorganic form reduced the crude fibre content. This might be due to the easy availability of nitrogen leading to balanced C:N ratio, enhancing the vegetative growth resulting in high photosynthetic activity as reported by Patel *et al.* (2009). Maximum protein content (16.37 %) was recorded in T₅, (50% of RDF+ 50% of RDN through FYM) which was at par with T₂ (Farm yard manure @ 20 t/ha), T₆ (50% of RDF +50% of RDN through vermicompost), T₇ (50% of RDF+50%

Table 1 : Effect of organic manures and inorganic fertilizers on quality parameters of okra cv. 'ARKA ANAMIKA'

Treatments	Crude fibre content in pods (%)	Protein content in pods (%)	Ascorbic acid content in pods (mg/100g)
T ₁	11.20	13.77	16.00
T ₂	10.86	14.40	19.67
T ₃	10.83	12.92	17.33
T ₄	13.07	12.49	15.67
T ₅	10.17	16.37	19.67
T ₆	10.70	15.28	19.33
T ₇	10.17	15.37	19.00
T ₈	10.03	14.93	15.67
T ₉	10.77	13.75	17.00
T ₁₀	10.90	12.57	18.67
T ₁₁	11.86	13.67	14.00
T ₁₂	12.07	10.67	12.67
C.D. (P=0.05)	1.512	2.121	2.598
S.E.±	0.512	0.718	0.880
CV%	8.029	8.98	8.94

RDN through poultry manure) and T₈ (50% of RDF +25% of RDN through FYM + 25% RDN through vermicompost). While minimum value (10.67 %) was recorded with the control (T₁₂). The increase in protein content was pronounced with the higher level of organic form applied in combination of inorganic form, favored by intense protein synthesis and its efficient storage in the presence of abundant supply of available nitrogen. Protein content was increased significantly by the application of different organic manures with nitrogenous fertilizers. compared to the control (Prabu *et al.*, 2002). Among the treatments studied farmyard manure @ 20 t/ha followed by 50 per cent of RDF+ 50 per cent of RDN through FYM treatment recorded maximum ascorbic acid content (19.67 mg/100g) but was at par with vermicompost @ 8t/ha, 50 per cent of RDF +50 per cent of RDN through vermicompost, 50 per cent of RDF+50 per cent RDN through poultry manure and 50 per cent of RDF +25 per cent of RDN through poultry manure +25 per cent of RDN through FYM. Minimum ascorbic acid content (12.67 mg/100g) was recorded with control. This might be due to the availability of nitrogen leading to balanced C:N ratio enhancing the vegetative growth resulting in high photosynthetic activity (Yawalkar, 1985). The reduction in ascorbic acid content by the application of inorganic fertilizer was reported by (Karitonas *et al.*, 2001). Organic sources of nutrients gave better quality parameters than inorganic sources. These results are supported by (Mahendran and Kumar, 1997).

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