

Original Research Article

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Effect of Organic Manures on Benefit Cost Ratio of Beet Root Cv. Crimson Globe

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ABSTRACT

Keywords

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Beetroot (*Beta vulgaris* L.), also called as garden beet or table beet, is one of the major root vegetable. It is grown in almost all states of India but in small scale only. It produces green tops and a swollen root used both as vegetable and salad. It is highly productive and usually free from pests and diseases (Ado, 1999). A field experiment was conducted during *rabi*, 2014 in alkali soils. The experiment was laid out in a randomized block design with three replicated 11 treatments *viz.*, T₁: FYM (100%), T₂: Vermicompost (100%), T₃: Neem cake (100%), T₄: Poultry manure (100%), T₅: Green manure (100%), T₆: FYM (50%) + Vermicompost (50%), T₇: FYM (50%) + Neem cake (50%), T₈: FYM (50%) + Poultry manure (50%), T₉: FYM (50%) + Green manure (50%), T₁₀: RDF, T₁₁: Control. The data were recorded on benefit-cost ratio of the crop. The highest benefit-cost ratio was recorded from T₄ (4.1) with poultry manure (100%), which was at par with T₈ (4.1) with FYM (50%) + poultry manure (50%), These two treatments were recorded significantly high benefit-cost ratio than all other treatments. Control treatment showed (2.1) lowest benefit cost ratio.

Introduction

Beetroot (*Beta vulgaris* L.), also called as garden beet or table beet, is one of the major root vegetable belongs to the family Chenopodiaceae along with spinach, palak, swiss chard, parsley, celery and it has chromosome number of 2n=18. Beet originated in Western Europe and North Africa where they were grown to feed both humans and livestock. This crop is a biennial grown as a cool season annual. It is grown in

northern and southern parts of India. It is grown in almost all states of India but in small scale only. It produces green tops and a swollen root used both as vegetable and salad. It is highly productive and usually free from pests and diseases (Ado, 1999). It is a rich source of protein, carbohydrate, calcium, phosphorous and vitamin C, hence it is an ideal vegetable for health conscious people (Deuter and Grundy, 2004). Red color of roots is due to presence of betanine pigment.

Organic farming is not mere non-chemical agriculture but it is a system integrating relationships between soil, plant, water, soil micro flora and fauna. Organic farming aims in creating a healthy soil, helps in proper energy flows in soil, crop, water, environment while the plant systems keeps biological life cycle alive and helps in sustaining considerable levels in yield (Lampkin, 1990).

For a sustainable crop production system, chemical nutrients removed by the crop must be replenished and physical conditions of the soil are to be maintained. Organic nutrient management provides excellent opportunities to overcome all the imbalances besides sustaining soil health and enhancing crop production. This optimizes the benefit from all possible sources of plant nutrients in an organic manner (Greenland, 1975). Organic manuring aims in creating a healthy soil, helps in proper energy flows in soil, crop, water, environment while the plant system keeps biological life cycle alive and helps in sustaining considerable levels in yield (Lampkin, 1990).

In view of increased awareness about organic manuring, increased availability of organic inputs and sustainability in the farm, investigation on these aspects have thus become imperative to study and assess their effect on benefit cost ratio of the crop beet root. Hence, this investigation is planned to identify benefit cost ratio of beet root by using different combination of organic manures in alkali soils.

Materials and Methods

A field experiment was conducted during *rabi*, 2014 in alkali soils, at college farm, College of Horticulture, Dr. Y.S.R. Horticultural University, Mojerla, Mahabubnagar(Dt). The experiment was laid out in a randomized block design with three replicated 11 treatments *viz.*,

T₁: FYM (100%), T₂: Vermicompost (100%), T₃: Neem cake (100%), T₄: Poultry manure (100%), T₅: Green manure (100%), T₆: FYM (50%) + Vermicompost (50%), T₇: FYM (50%) + Neem cake (50%), T₈: FYM (50%) + Poultry manure (50%), T₉: FYM (50%) + Green manure (50%), T₁₀: RDF, T₁₁: Control. The data were recorded on Table 1

Economics of treatments

The economics of different treatments were worked out in terms of net returns ha⁻¹ and cost of the treatment.

The benefit : cost (B:C) ratio was also calculated treatment wise to ascertain economic viability of the treatment. Cost of production and net profit were calculated on the basis of prevailing prices of product and inputs.

Results and Discussion

The benefit cost ratio of Beet root crop by using different organic manures *viz.*, FYM, vermicompost, poultry manure, neem cake and green manure is studied. The results of the present investigation on the above aspect are presented here under.

Benefit-cost ratio

The Benefit cost ratio shows the actual economic viability of any cultivation process. Benefit cost ratio of various treatments on beet root has been calculated and represented in table 1, The data reveals that application of organic manures has shown positive impact on economics of Beet root.

Among all the treatments it was beneficial to get maximum benefit cost ratio *i.e.* 4.1. It gave maximum gross income of Rs. 1,86,806 as well as maximum net income of Rs.1,50,216 from T₄ with poultry manure (100%).

Table.1 Details of cost of cultivation in different treatments (rs. ha⁻¹)

S.	Operations	T1	T2	T3	T4	T5	T6	T7	T8	T9		
1.	Ploughing with Tractor Harrowing	4,000 800										
2.	Cost of Seeds	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
b.	thinning	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
3.	Cost of Fertilizers/manures Application charges	8,844	28,000	32,200	17,790	29,000	18,422	20,522	13,317	18,922	2,744	000
4.	Hand Weeding	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
5.	Harvesting, Cutting and Cleaning	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
	TOTAL	27,644	46,800	51,000	36,590	47,800	37,222	39,322	32,117	37,722	21,544	18,800

The highest benefit-cost ratio was recorded from T₄ (4.1) with poultry manure (100%), which was at par with T₈ (4.1) with FYM (50%) + poultry manure (50%), These two treatments were recorded significantly high benefit-cost ratio than all other treatments. Control treatment showed (2.1) lowest benefit cost ratio.

In conclusion, the highest gross returns (Rs. 1,87,384 ha⁻¹) were recorded with vermicompost (100%). However, the net returns (Rs. 1,50,216 ha⁻¹) and benefit cost ratio (4.1) were higher with poultry manure (100%). Though RDF recorded maximum benefit cost ratio compared to these treatments, it is not advisable considering its possible effects on soil health and environment besides sustainability. Cultivation of beet root with organic manures, for obtaining maximum net returns and benefit cost ratio may be used as organic source of nutrient.

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