

Effect of Different Organic Inputs on Growth and Yield of Rice

Objective: Confirm the best Organic Input to enhance the growth & yield of rice crop.



Introduction:

Rice (*Oryza sativa* L.) stands as one of the most vital cereal crops globally, serving as a staple food for over half of the world's population. With increasing concerns about sustainability and environmental impacts, there's a growing emphasis on organic farming practices to meet the demands of a burgeoning population while minimizing ecological footprints.

Organic inputs, such as Farmyard Manure (FYM), Vermicompost, Vermiwash, Seaweed Extract, Bioloam Supreme, and Seaweed Granules, have gained attention as sustainable alternatives to chemical fertilizers. These inputs not only provide essential nutrients but also enhance soil structure, microbial activity, and overall plant health.

In this study, we delve into the effects of various organic inputs on the growth and yield of rice. Through meticulous experimentation and analysis, we aim to uncover the nuanced impacts of FYM, Vermicompost, Vermiwash, Seaweed Extract, Bioloam Supreme, and Seaweed Granules on key agronomic parameters such as plant height, tiller count, leaf area, root development, flowering, grain yield, and quality attributes. Through a holistic understanding of the role of organic inputs in rice cultivation, we pave the way for a more resilient and environmentally conscious approach to meeting the global demand for this essential staple crop.

Experimental Details:

Crop	: Rice
Variety	: GR-11
Experiment Layout	: RBD
No. of Replications	: Three
Spacing	: 20 cm x 15 cm
Plot size	: 3.30 m X 3 m
Date of TP	: 12/07/2023

Treatment Details:

Treat. No.	Treatment Details
T1	Control
T2	FYM @ 10 t/ha
T3	Vermicompost @ 6.5 t/ha
T4	Vermiwash @ 50 lit./ha
T5	Seaweed Extract @ 1.5 lit./ha
T6	Bioloam supreme @ 25 kg/ha
T7	Seaweed granules @ 25 kg/ha

Methodology:

In the kharif season of 2023, an experimental study was conducted at the ASPEE Agricultural Research and Development Foundation Farm, located in Village Nare, Tauka Wada, district Palghar. The study employed a Randomized Block Design (RBD) with three replications ($r=3$). Seven distinct treatments were administered, each representing different organic inputs: T1 - Control, T2 - FYM, T3 - Vermicompost, T4 - Vermiwash, T5 - Seaweed extract, T6 - Bioloam Supreme and T7 - Seaweed granules. These treatments were applied twice during the crop cycle through spraying/drenching, with the first application at 40 days after transplanting and the second at 75 days after transplanting.

Rice variety 'GR-11' was sown in the first fortnight of June 2023, following seed treatment with the fungicide thiram at a rate of 3 g kg⁻¹ seeds. Transplantation of twenty-five-day-old seedlings was conducted at a spacing of 20 cm x 15 cm, with bed dimensions set at 3.30 m x 3.0 m. Biometric observations were recorded regularly from 30 days after transplanting until harvest, with five plants ($n=5$) randomly selected from each plot.

The collected data were subjected to rigorous statistical analysis to evaluate the impact of different organic inputs on the growth and yield of rice. The study was meticulously designed with the primary objective of assessing the efficacy of various organic inputs in enhancing rice growth and yield under field conditions.

Vermicompost, vermiwash, and farmyard manure (FYM) are invaluable assets in organic farming and sustainable agriculture. Vermicompost, produced through the digestion of organic matter by earthworms, enriches soil fertility by enhancing its structure, moisture retention, and nutrient content. It promotes healthier plant growth, improves soil aeration, and fosters beneficial microbial activity. Vermiwash, a liquid fertilizer derived from vermicompost, is a potent organic tonic that boosts plant immunity, stimulates seed germination, and enhances nutrient uptake. On the other hand, FYM, composed of animal waste and plant residues, serves as a natural soil conditioner, replenishing essential nutrients and improving soil texture. Together, these organic amendments promote eco-friendly farming practices, reduce dependence on synthetic inputs, and contribute to

sustainable agriculture while ensuring bountiful harvests and environmental stewardship.

Seaweeds are marine resources easily available at negligible cost and also rich in bioactive compounds. The seaweeds (macroalgae) were classified into three categories: brown algae, red algae, and green algae based on their pigmentation. They are abundantly grown along the coastal reserves in many parts of India, viz., Tamil Nadu, Gujarat, Goa, Maharashtra, West Bengal & Orissa. Seaweeds are rich in organic compounds viz., proteins, amino acids, fat, cellulose, hemicellulose, lignin, vitamin.

Bio Loam Supreme is an unique water soluble mixture of silicon mineral with humic, fulvic and amino acids. It provides trace amount macro and micro elements to the plant as well recharges soil with organic matter. It is important for development of plant roots as well improving soil health for better uptake of nutrients. It increases resistance of plant against adverse climatic conditions as well diseases. It is completely water-soluble powder which can be applied through drenching or in the basal application along with other fertilizer dose.

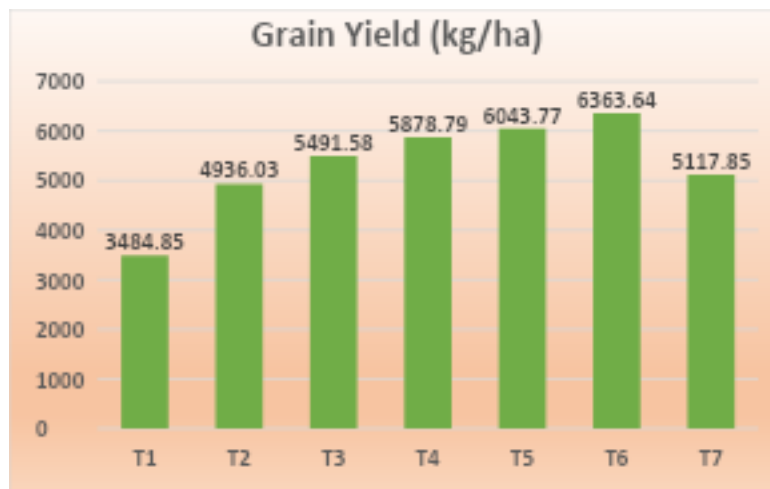
Layout:



Results:

The higher number of tillers per plant (25.4), number of panicles per plant (14.13), length of panicle (21.98 cm), seeds per panicle (226.4), test weight (18.17g), grain (6363 kg/ha) and straw (9003 kg/ha) yield were recorded in treatment T₆ i.e. application of bioloam supreme.

Graph:



Conclusion:

The data clearly revealed that, the yield obtained with treatment T₆ i.e. application of biofoam supreme was significantly higher than all other treatments and also for growth parameters.