Performance of Nitrogen Enriched Compost Pellets on Growth of *Oryza sativa* L. in Sri Lanka

ID 376

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Background

- Rice (*Oryza sativa* L.) is the **staple food** in Sri Lanka
- Almost 34% of Sri Lankan total cultivated area is occupied by Rice
- Nitrogen loss is one of the main problems faced by paddy farmers in Sri Lanka
- Production of pellets by incorporating inorganic fertilizers with compost increases the nutrient value of fertilizers

Nitrogen enriched compost pellets

Objectives

- **To develop Nitrogen enriched compost pellets for rice cultivation**
- **To provide guidance and information for rice farmers on effect of Nitrogen enriched compost pellets usage**
- **To select the best enrichment media in compost pellet production**

Methodology

Compost Pellet Preparation

Sieved Compost powder

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Nitrogen enriched and Pelletizing process

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Nitrogen enriched Compost pellets

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Field trial using **BG-300 Rice variety** in **Latin Squared Design** (7 Treatments were replicated four times)

Tested Fertilizer Combinations

Code	Treatment
T1	Department of Agriculture, Sri Lanka (DOA) recommended Inorganic Fertilizer
T2	Fish Tonic Based Liquid Fertilizer 30% + Compost 70% + Biochar Pellet
T3	100% Compost Pellet
T4	70% Compost Pellet + 30% $(NH_4)_2SO_4$
T5	70% Compost Pellet +70% Fish Tonic Based Liquid Fertilizer
T6	No Fertilizer
T7	70% Compost + Biochar

Crop Establishment and Data Collection

Nursery practices- BG 300 Rice variety

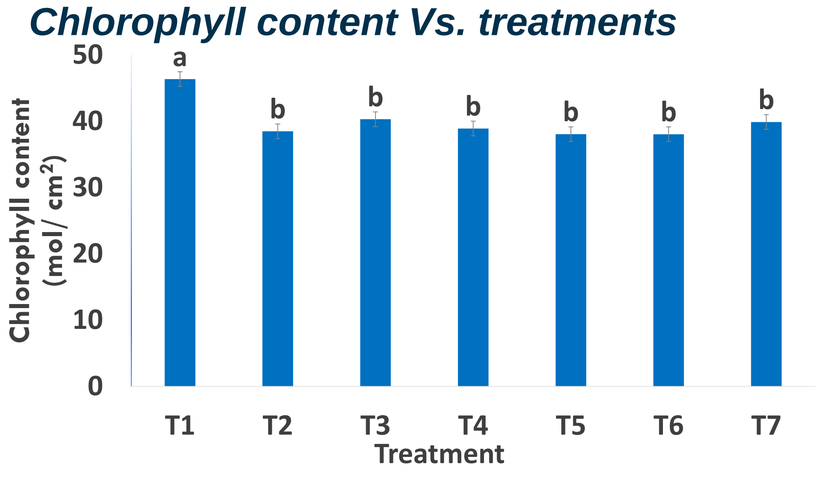
Field planting - 30×30 cm spacing

Measuring leaf color

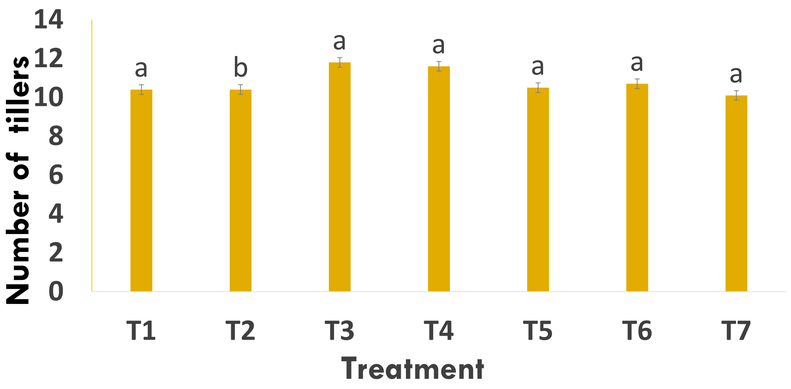
Measuring leaf chlorophyll content

Results and Discussion

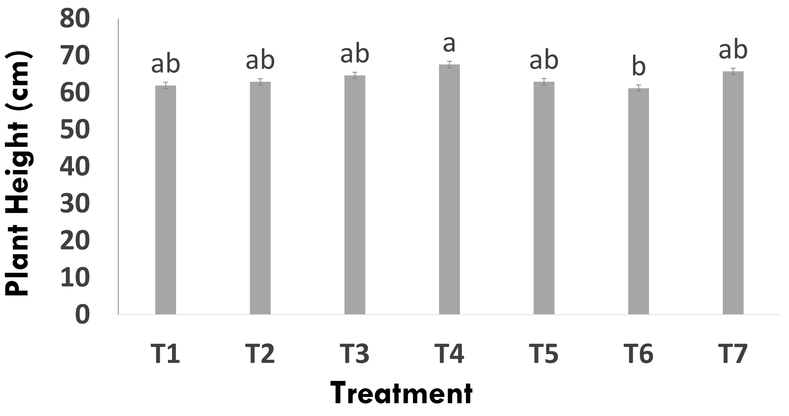
Chlorophyll content Vs. treatments



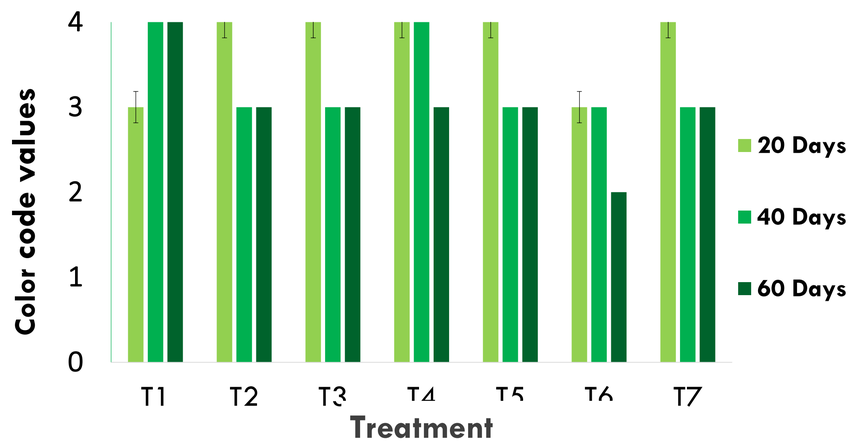
Number of tillers Vs. treatments



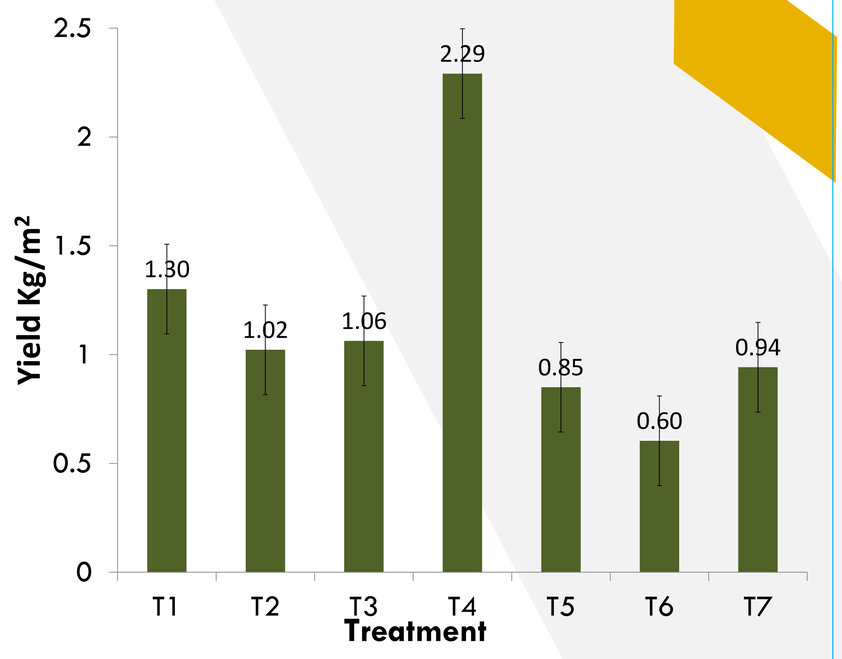
Plant height Vs. treatments



Color code values Vs. treatments



Yield Vs. treatments



- The steady supply of nutrients by **70% Compost + 30% $(NH_4)_2SO_4$ (T4) pellets** at the panicle initiation and grain filling stages had ensured higher yield than in DOA recommendation
- The yields were 1.30 kg/ m^2 and 2.29 kg/ m^2 in T1 and T4 respectively
- The lowest yield of 0.60 kg/ m^2 in T6
- As the fertilizer requirement for all pellet treatments (T2, T3, T4, T5 and T7) were supplied as a single basal dressing, it may have caused a low color cord number for leaves at the end of the growth period

Conclusions

- **70% Compost + 30% $(NH_4)_2SO_4$ pellet treatment produces high yield closer to the Department recommended inorganic fertilizer rate**
- **70% Compost + 30% $(NH_4)_2SO_4$ pellets treatment can be suggested for further studies to develop a recommendation for rice varieties similar to BG 300**

References

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