Performance of Rice (*Oryza sativa* L.) Plants with Different Traditional Organic Formulations in Sri Lanka

ID 389

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Introduction

- Rice is one of the major food crops in Sri Lanka and most important staple cereals
- Although inorganic fertilizers play a major role in rice cultivation several drawbacks
- Compost is recommended as an organic fertilizer by the Department of Agriculture, Sri Lanka
- Introduce organic traditional formulations as alternative nutrient supplements
  - Indian Traditional Formulations: Jeevamrutham
  - Other Traditional Formulations: Fish tonic
- Two rice varieties were tested
  - Bg 366 (Improved rice variety)
  - Masuran (Traditional rice variety)

Objectives

General objective

- To evaluate different traditional organic formulations on vegetative, reproductive and yield performances of two rice varieties

Specific objectives

- To compare the vegetative, reproductive and yield performance of traditional organic formulations with compost
- To evaluate the yield performance of two rice varieties with Indian Traditional Formulations (Jeevamrutham) and fish tonic

Methodology

- Rice varieties : Traditional variety (Masuran-3.5 months) and Improved variety (Bg 366- White Nadu)
- A pot experiment with four treatments and three replicates
- Randomized Completely Block Design (RCBD)

Tested Treatments

Code	Treatments
T0	No Fertilizers (Control one)
T1	Compost (Control two)
T2	Jeevamrutham
T3	Fish Tonic
T4	Fish Tonic + Fish Powder

Preparation of Jeevamrutham (T3)

- Cow dung 1kg
- Cow urine 1L
- Jaggery 2kg
- Gram flour 1kg
- Water 200L
- A hand full of healthy soil

Mixed them well

Keep 10 days for fermentation and used as a foliar application
40-60 DAT - 1:30
60-90 DAT – 1:15

DAT-Days After Transplanting

Preparation of Fish tonic (T4)

1 kg of fish waste + 1 kg of jaggery

Mixed them well

Keep it for 28 days for fermentation and used as a foliar application;
40-60 DAT - 1:200
60-90 DAT - 1:100

Preparation of Wild Sunflower (*Tithonia diversifolia*) extraction (to stimulate reproductive stage)

5 kg wild sunflower leaves + 10 L water

Wild sunflower leaves were chopped well and soaked for 2 days in a plastic bucket

- *Application: 7 days interval 1:4(v/v) ratio*

Preparation of Neem (*Azadirachta indica)* extraction (use as a pesticide)

50 g of Neem seeds + 1 L water

Neem seeds were chopped and soaked for 2 days in a plastic bucket

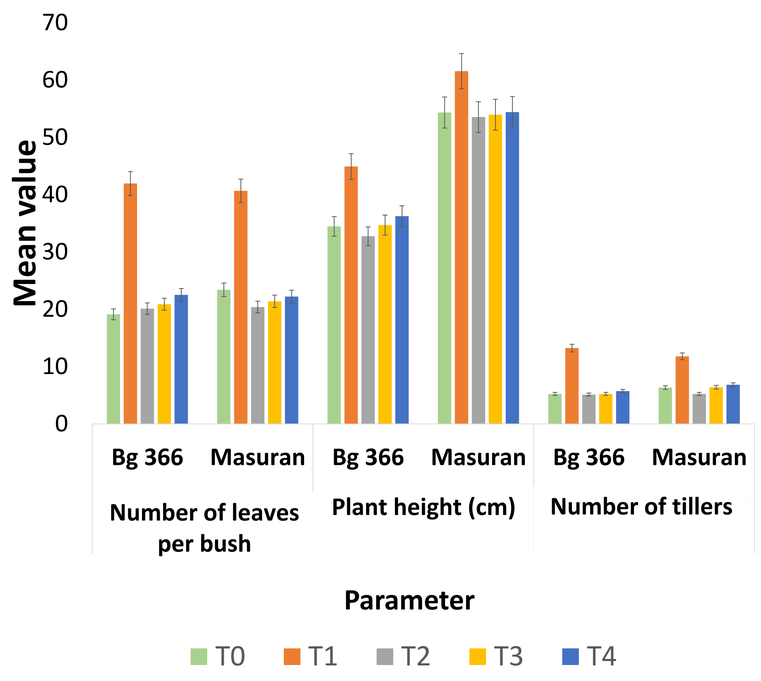
- *Application: 7 days interval 1:4 (v/v) ratio*

Data Recording

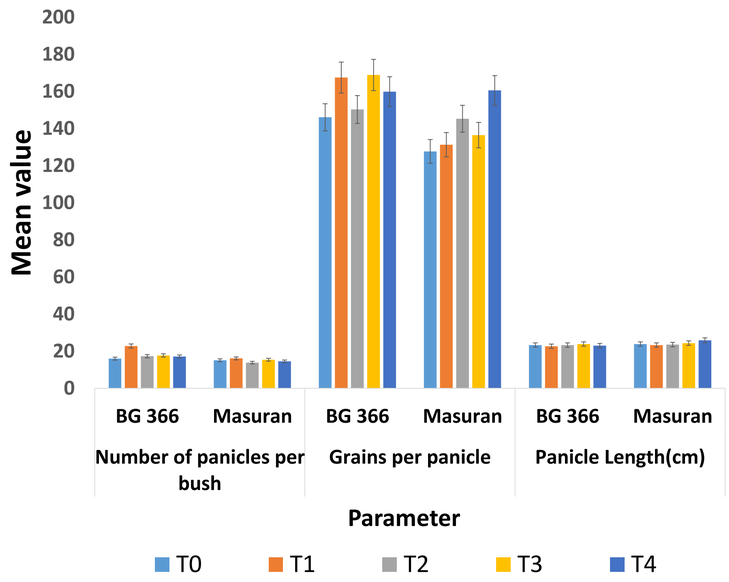
- Vegetative parameters, reproductive parameters and yield parameters were recorded

Results and Dissuasion

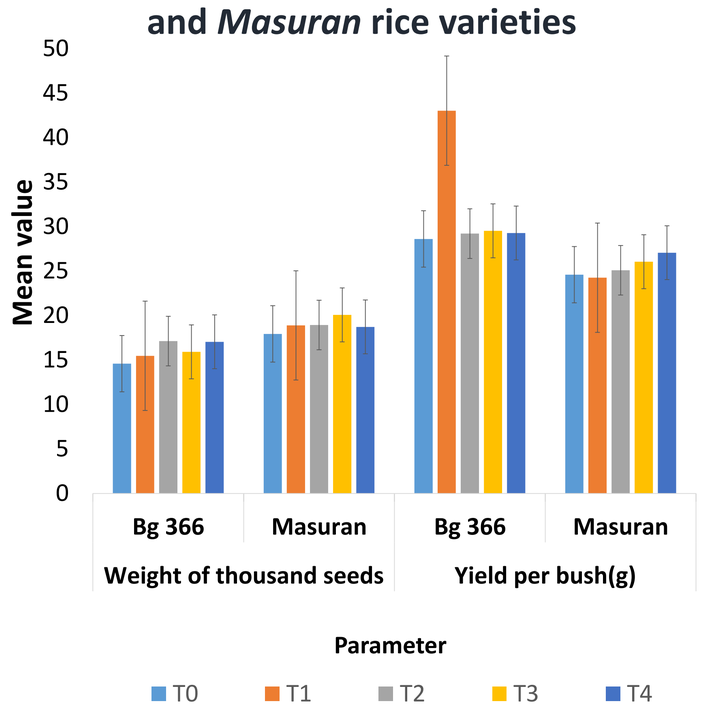
Mean value of Vegetative Parameters of Bg 366 and *Masuran* rice varieties after 42 days



Mean value of reproductive parameters of Bg 366 and *Masuran rice varieties* 112 days after planting



Mean value of yield parameters of Bg 366 and *Masuran* rice varieties



Conclusions

- The highest significant vegetative, reproductive and yield performance was observed with **T1 treatment (Compost)** over the other treatments in improved variety (Bg 366) and traditional variety (*Masuran*)
- **Compost performed better than organic traditional formulations.**
- Suggest a field trial for rice (*Oryza sativa* L.) with organic traditional formulations with compost

References

- Amareswari, P.U. and Sujathamma, P., (2014). Jeevamrutha as an alternative of chemical fertilizers in rice production. *Agricultural Science Digest-A Research Journal*, 34(3), 240-242.
- Chowdary, C. and Kaur, A., (2021), Production of jeevamrutham and its effects on enhancing soil fertility and sustainability, *International Journal of All Research Education and Scientific Methods*, 8(11),21-24.
- Kasbe, S.S., Joshi, M., Bhaskar, S., Gopinath, K.A., Kumar, M.K., (2015). Evaluation of Jeevamruta as a Bio-resource for Nutrient Management in Aerobic Rice. *International Journal of Bio-resource and Stress Management,6,155.*

Acknowledgments

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