



# Impact of Co-Compost Pellets on Growth and Yield of *Ipomoea batatas* and *Eleusine coracana*

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Abstract ID: 394

Tropentag, September 9 - 11, 2020, virtual conference - "Food and nutrition security and its resilience to global crises"

## Introduction

Three studies had been conducted to explore the importance of formulation and placement depth of these pellets

### Trial 01:

One field study was carried out with biochar derived from empty fruit bunches of oil palm as additive to co-compost pellets to amend sandy loam soil and to evaluate its performance on the plant growth and yield using *Ipomoea batatas*

### Trial 02:

The second study was carried out to identify the effect of Municipal Solid Waste Co-Compost added at different Soil depths on growth and yield of *Eleusine coracana* under poly-house conditions

### Trial 03:

The third study was carried out to assess the dosage response of Dewatered Fecal Sludge and Municipal Solid Waste Co-compost Pellets in *Eleusine coracana* under poly-house conditions

## MAIN OBJECTIVES

To evaluate the effect of co-compost on plant growth, quality and quantity of the yield of tuber plant in comparison with Department of Agriculture recommendation for inorganic fertilizer usage

To identify the Effect of FS-MSW co-compost pellets with different soil depth of application on the growth performances of finger millet

To identify the effect of DFS-MSW co-compost pellets on the growth and yield performance of finger millet

To study the response of finger millet for different dosages of co-compost pellets

## METHODOLOGY

### Co-compost Pellets Production

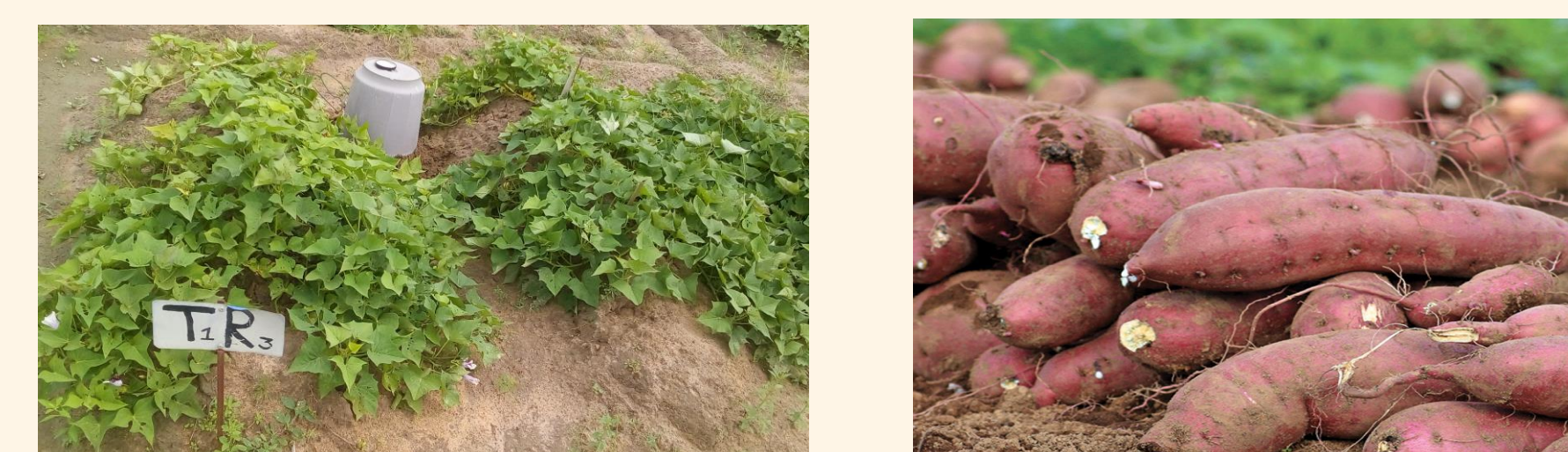


### Trial 01:

Seven treatments were tested.

MSW-DFS 30% available nitrogen  
MSW-DFS 100% available nitrogen  
MSW-DFS-Biochar 30% available nitrogen  
MSW-DFS-Biochar 100% available nitrogen  
MSW-DFS-Mineral enriched  
MSW-FS-Biochar-Mineral  
Mineral fertilizer (Control)

Variety "Wariyapola-red" was planted  
Vegetative and yield data were collected



## METHODOLOGY (Cont'd)

### Trial 02:

Second study was carried out to identify the effect of Municipal Solid Waste Co-Compost added at different soil depths on growth and yield of finger millet, *Eleusine coracana* under poly-house conditions.

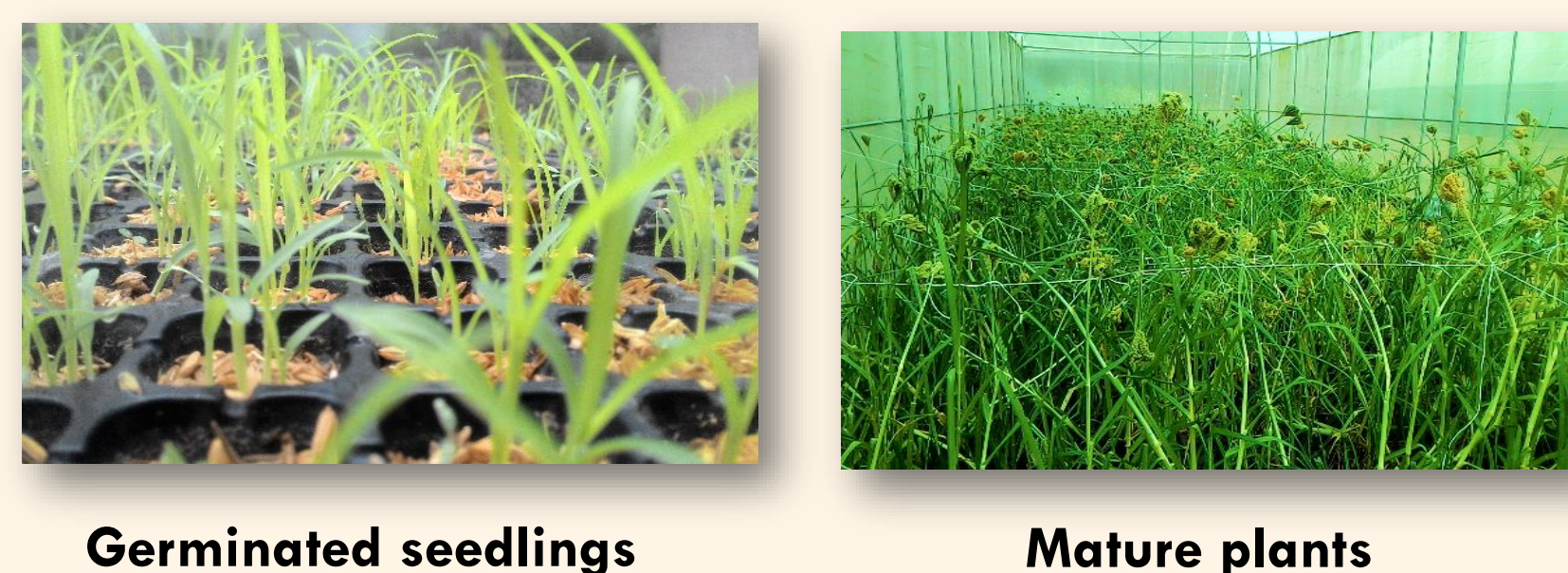
co-compost powder and pellets were applied at four different soil depths



### Trial 03:

Eight different dosages of co-compost pellets based on available Nitrogen (10%, 30%, 50%, 70%, 90%, 110%, 130% and 150%) were applied as treatments

Mineral fertilizer recommended for Finger Millets by the Department of Agriculture (DOA), Sri Lanka was used as the control



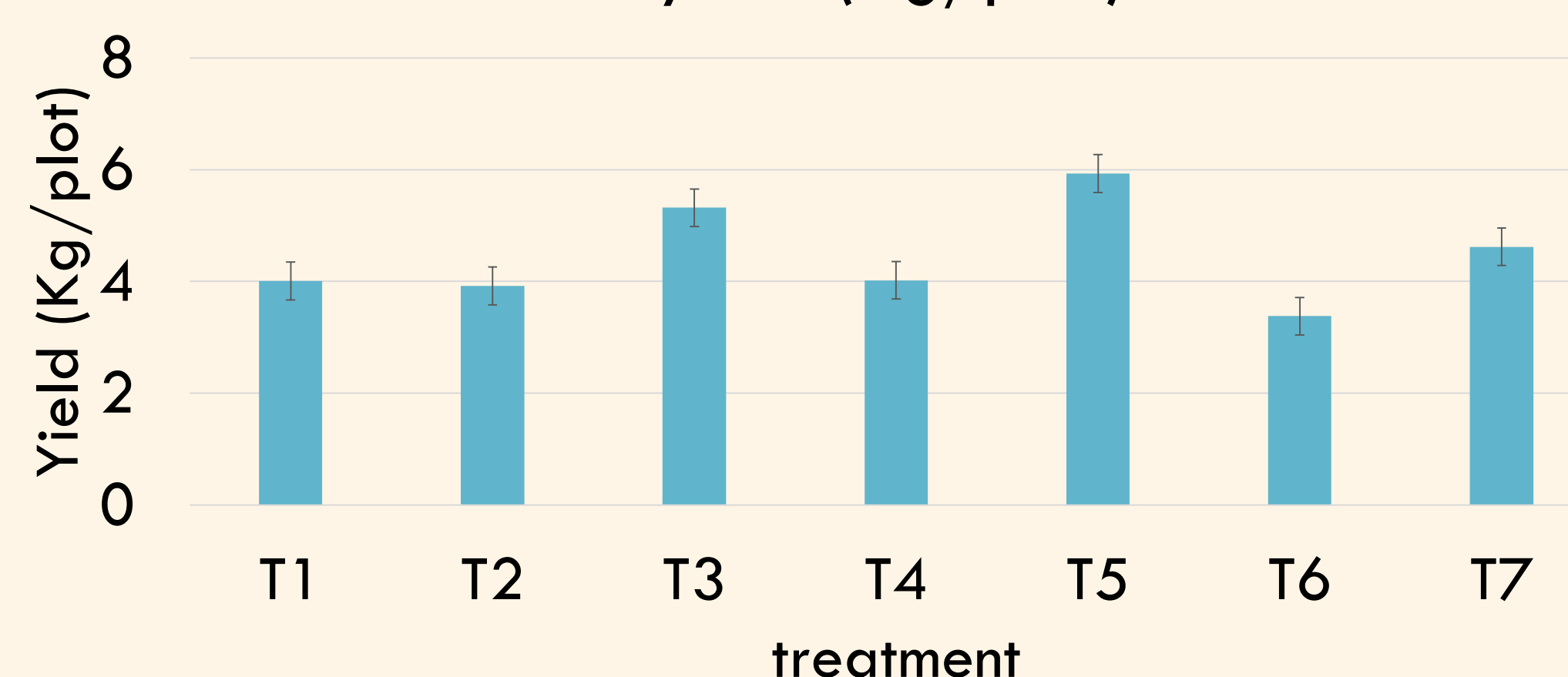
Germinated seedlings

Mature plants

## RESULTS

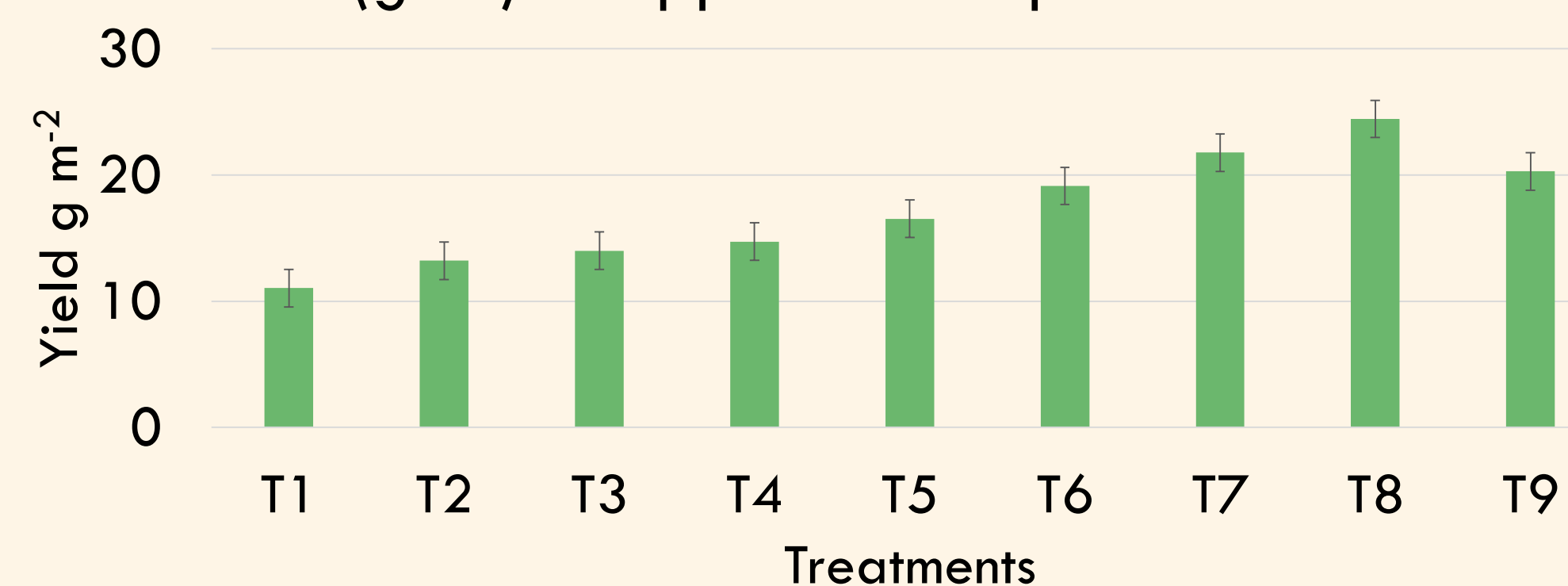
### *Ipomoea batatas*

Total yield (Kg/plot)

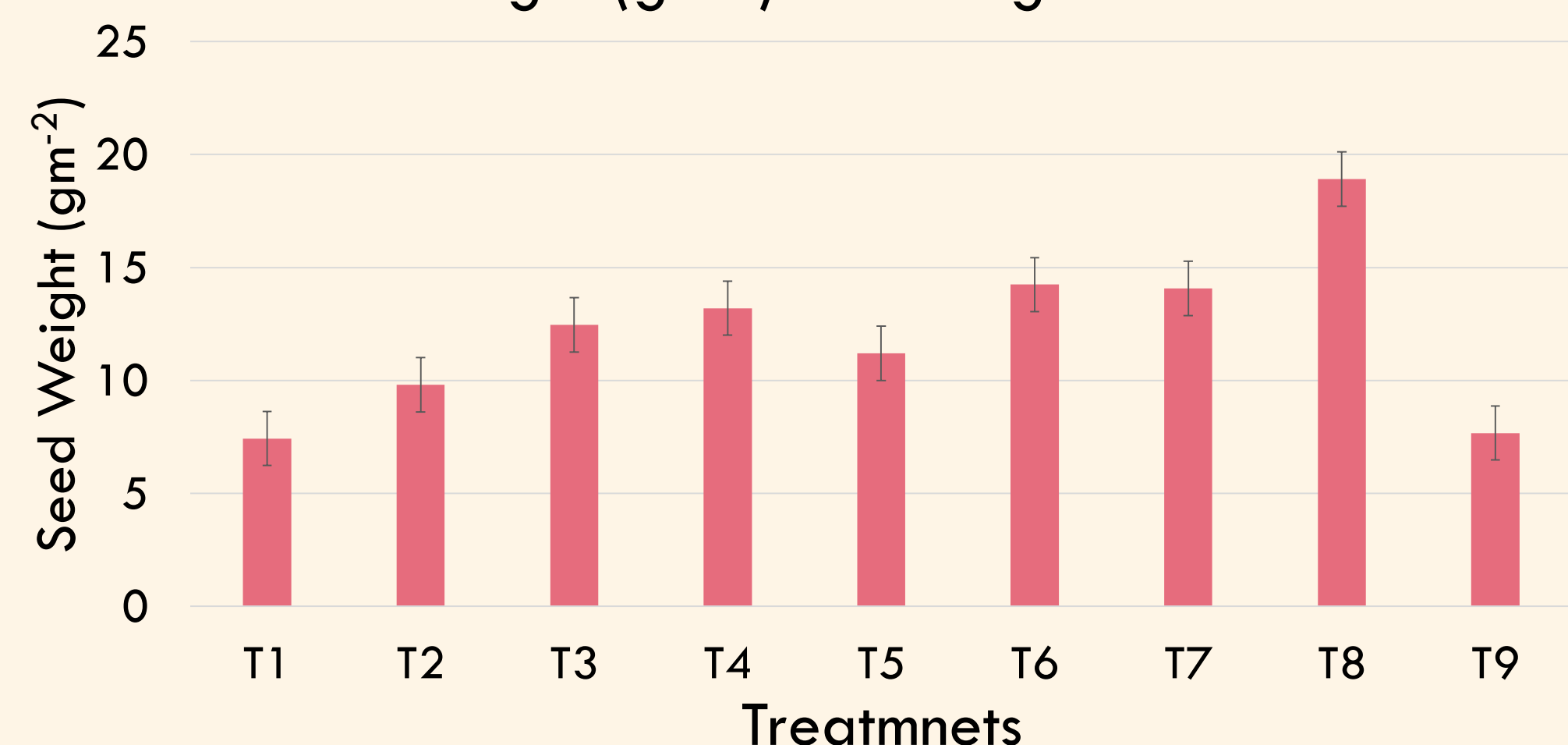


### *Eleusine coracana*

Yield (gm<sup>-2</sup>) vs Application depth and form



Seed Weight (gm<sup>-2</sup>) vs Dosage Levels



## KEY FINDINGS

### *Ipomoea batatas*

- The results revealed a significantly higher yield with MSW-DFS pellets (30% available nitrogen) and MSW-DFS-biochar pellets (30% available nitrogen) treatments against the recommended mineral fertilizer. It could be concluded that, harvest of 15 to 19.5 tons/ha could be achieved by amending soil with 16.8 tons/ha of MSW-DFS-Biochar pellets with 30% available Nitrogen.

### *Eleusine coracana*

- Depth of application did not have any effect on growth and yield of *Eleusine coracana*.
- Application of DFS-MSW co-compost recorded significantly higher growth and yield performance (63% higher) compared to inorganic fertilizer.
- With dosage increments of DFS-MSW co-compost pellets, growth and yield performances of millet were increased
- Highest results were obtained from N-150% of DFS-MSW co-compost treatment
- DFS-MSW co-compost pellets could increase the total average yield by 65% over current mineral fertilizer recommendation of DOA
- These results concluded that increased yield can be achieved with surface application of co-compost pellets with volumes that just cover 30% of the mineral nitrogen demand.

## FUTURE PERSPECTIVES

- An understanding on the behavior of co-compost pellets and biochar can be obtained by conducting continuous crop rotation in the same trial under normal rain fed conditions.
- Further studies are suggested to identify the effects of DFS-MSW co-compost under field conditions in different climatic zones.

## REFERENCES

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## PROJECT PARTNERS

