Welcome

PREDICTION OF YIELD AND YIELD ATTRIBUTES OF RICE USING CERES- RICE SIMULATION MODEL AT COIMBATORE

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INTRODUCTION

- Rice : Major Food for 90 % of Asian population
- Required Production : 120 million tonnes by 2020.
- Hybrid Rice – 15 to 20 % increased yield- available technology –meet the requirement (Siddiq, 1996)
- Climatology plays major role in Hybrid rice

(Vijakumar, 1996)

- DSSAT- Decision Support System for Agro technology Transfer –contains 12 models
- CERES- Rice: Crop Environment REsource Synthesis- IBSNAT-University of Hawai
- Simulation models – reduce investment in field experiments and saves time.
- To Validate the CERES - rice model for hybrid rice at Coimbatore conditions

Materials & Methods

- Experiment – wetlands- Coimbatore
- Season: *Early Rabi* : Sept- January.
- Design: Factorial concept of RBD
- Plot size:5 X 4 m
- Separate plots for recording MDS-DSSAT v.3.5

Treatment details

Genotype (G)

- CORH 2 (Hybrid) : G_1
- ADT 39 (Variety) : G_2

Dates of planting (D)

- 19th September (3rd week) : D_1
- 26th September (4th week) : D_2
- 3rd October (1st week) : D_3
- 10th October (2nd week) : D_4
- 17th October (3rd week) : D_5



CORH 2



ADT 39

Genetic co-efficient studies

- Crop Component:
  - ♣ Growth & Yield phases
- Weather Component:
  - ♣ Daily maximum temperature
  - ♣ Daily minimum temperature
  - ♣ Daily solar radiation
  - ♣ Daily rainfall
- Soil Component:
  - ♣ Morphological characters
  - ♣ Physico- chemical characters

Arial view of soil profile



Soil profile



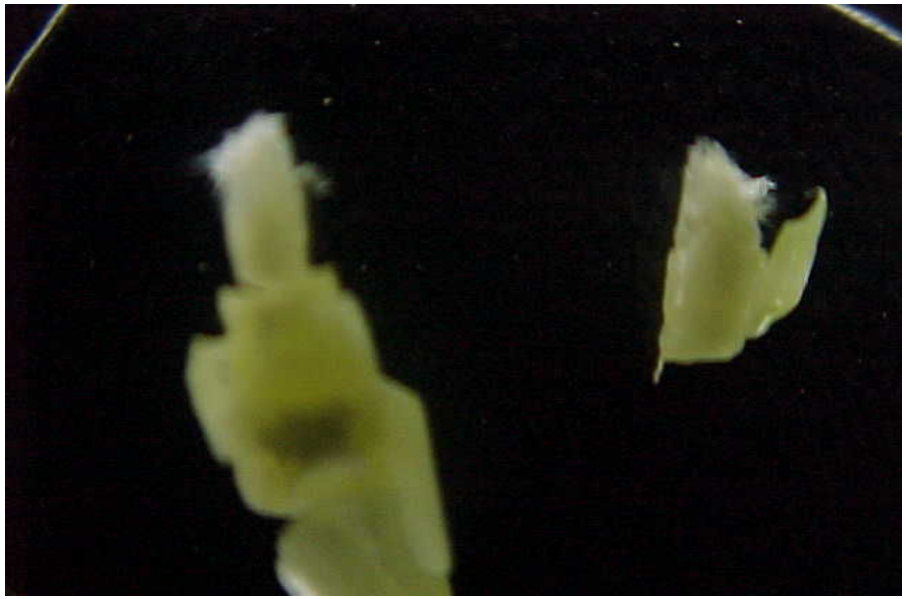
View of differential planting



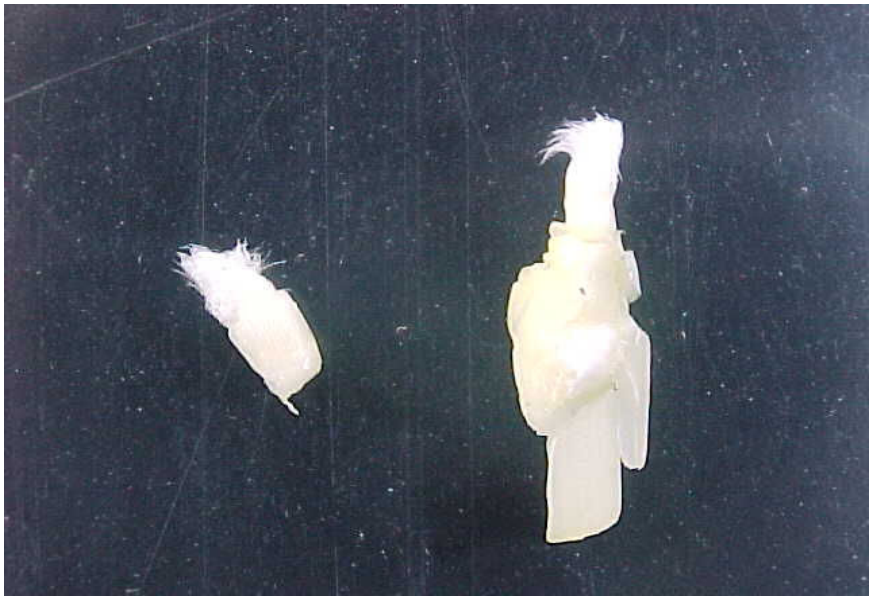


Identification of Panicle initiation

CORH 2

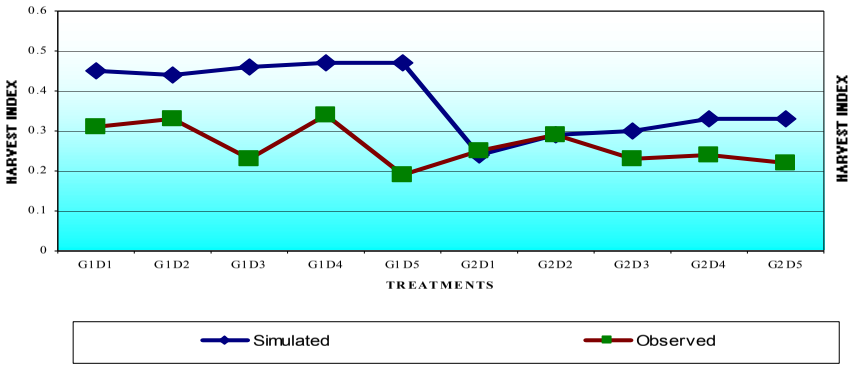


ADT 39

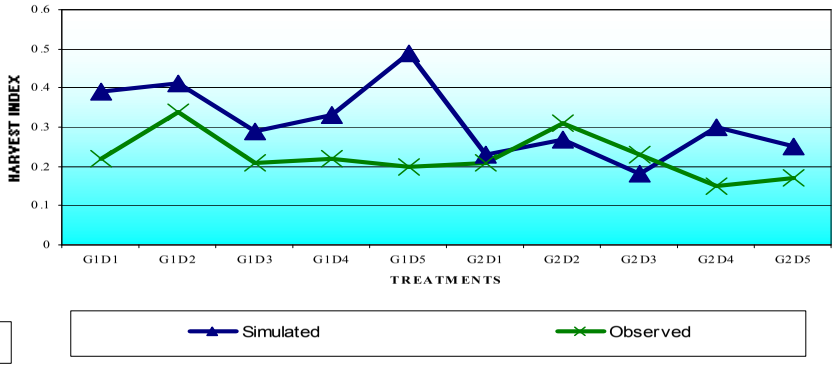


Simulation of Harvest index and single grain weight

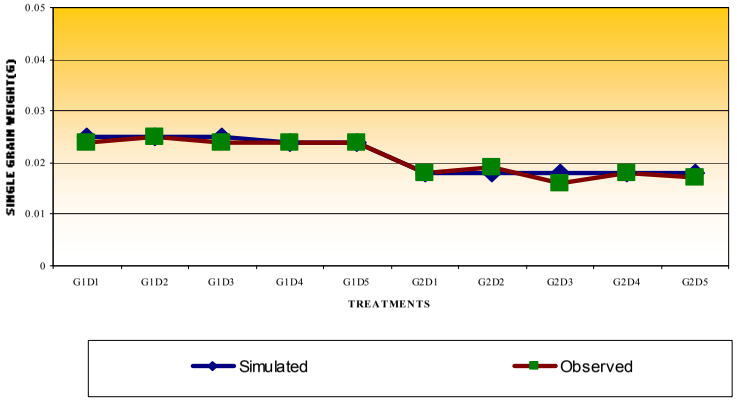
Observed and model simulated Harvest index of rice during *early Rabi* 2002



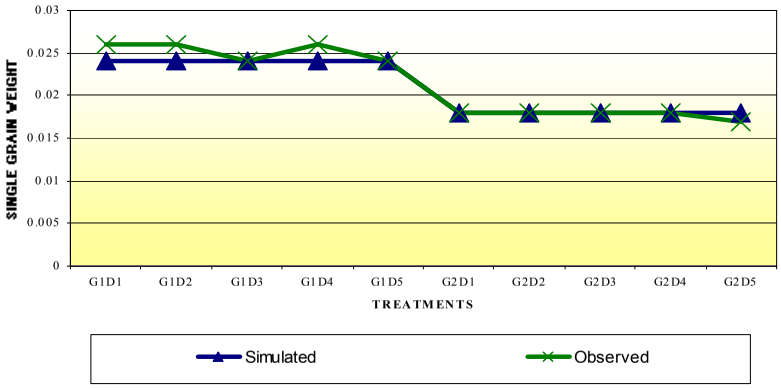
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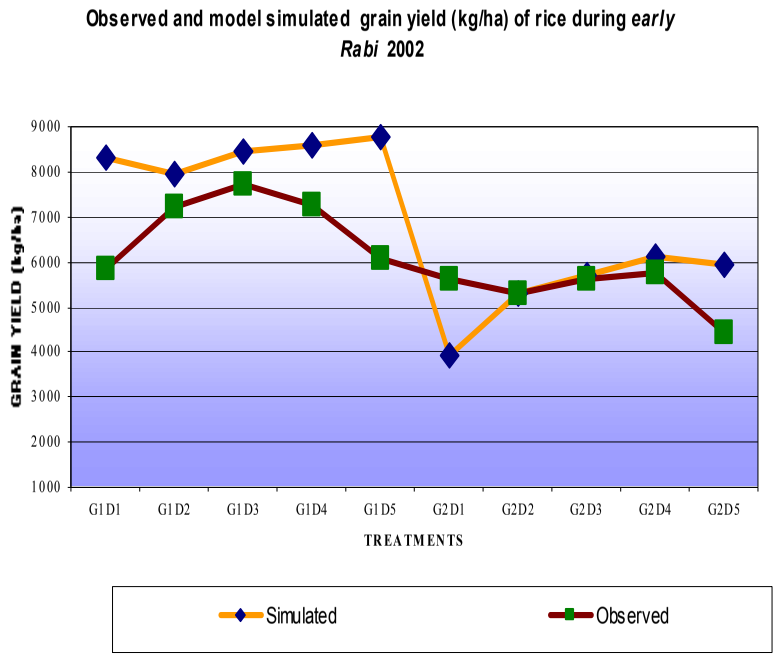
Observed and model simulated Single grain weight (g) of rice during *early Rabi* 2002

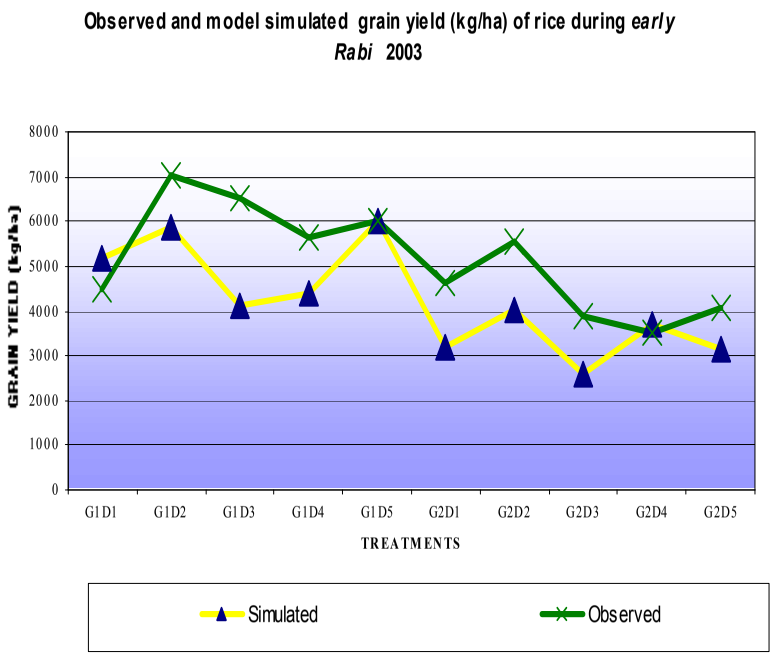


Observed and model simulated single grain weight (g) of rice during *early Rabi* 2003



Simulation of grain yield





Dssat modelling

Closer prediction

- Single grain weight
- Harvest Index
- Anthesis date
- Physiological maturity date
- LAI
- Grain yield

Under /Over estimation

- Panicles m^{-2}
- Grain numbers m^{-2}
- Biomass production ha^{-1}

Conclusion

- CORH 2 : Best planting window: September 26th or 3rd October
- ADT 39: 19th September or 26th September
- Dssat model –User friendly-Agronomic practices
- CERES- Rice model – still requires calibration- for lucid prediction.

Thank you all