Enhancing Profitability of Small Holder Farmers through Conservation Agriculture in Eastern India

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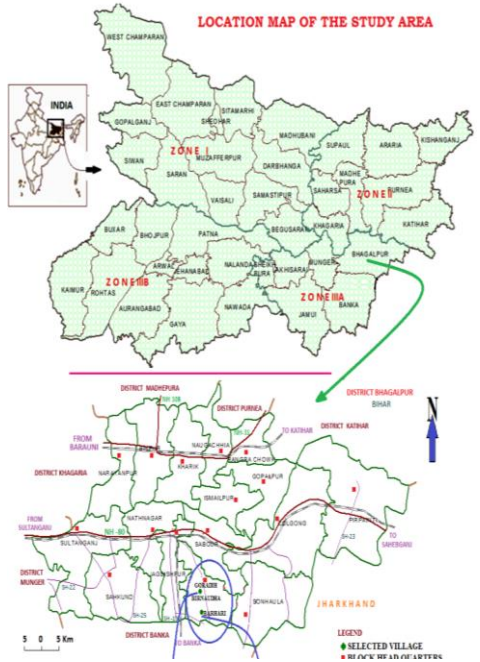
Background

- Eastern India especially Bihar is an Agrarian economy with >80 % farm holding under marginal category
- Productivity of Rice-Wheat system is poor due to short period of wheat season and resultant terminal heat stress
- Profitability of Rice-wheat system is poor due to high cost of cultivation
- Conservation Agriculture (CA) practices viz., Direct seeded rice followed by Zero till wheat was adopted to enhance the profitability of small holders

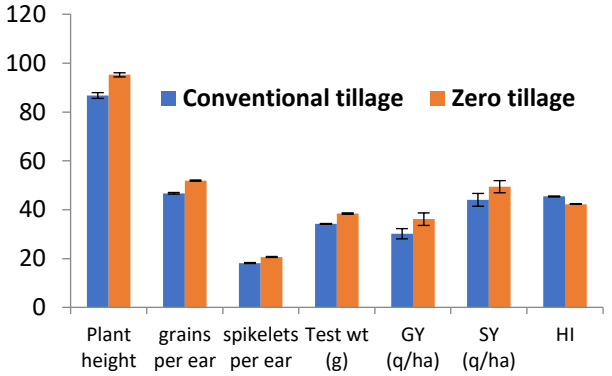
Methodology

- Two villages viz., Birnaudha (25.095N - 86.760E) and Barhari (25.095N -86.760E) were selected for the study
- Upon baseline survey farmers fields were selected for implementation of CA practices
- Direct seeded rice followed by Zero till (ZT) wheat was introduced under farmers participatory experiments and conventional tillage (CT) (Farmers practice was considered as control)
- Experiments were conducted for 5 years (2016-2020)

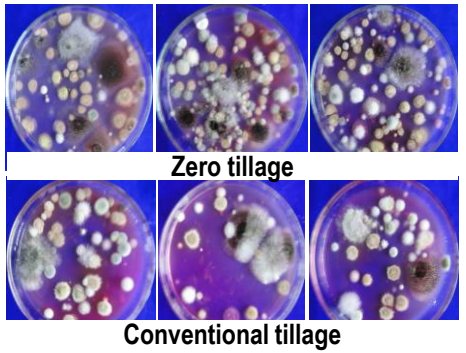


Results

- Yield parameters under ZT wheat was significantly higher compared to CT across all 33 locations in both villages over 5 years
- ZT helped in advancing sowing time (8-10 days) and Reduced cost of cultivation in terms of land preparation (Rs.3850/ha)
- Significant increase in soil fungal population and beneficial rhizobacteria under CA system was recorded



Comparison of wheat yield parameters under ZT and CT system (Average of 40 locations)



Comparison of total fungal population under ZT and CT systems

Conclusions

- Energy Savings : Labours time (6-7 hrs/ha); Fuel (44 l/ha); water saving (33%)
- Soil health analysis indicated considerable improvement in the population of beneficial soil micro biota over 5 years
- Significant increase in profitability of small holders