

Sustainable Rice production in East India Plateau. Beyond transplantation



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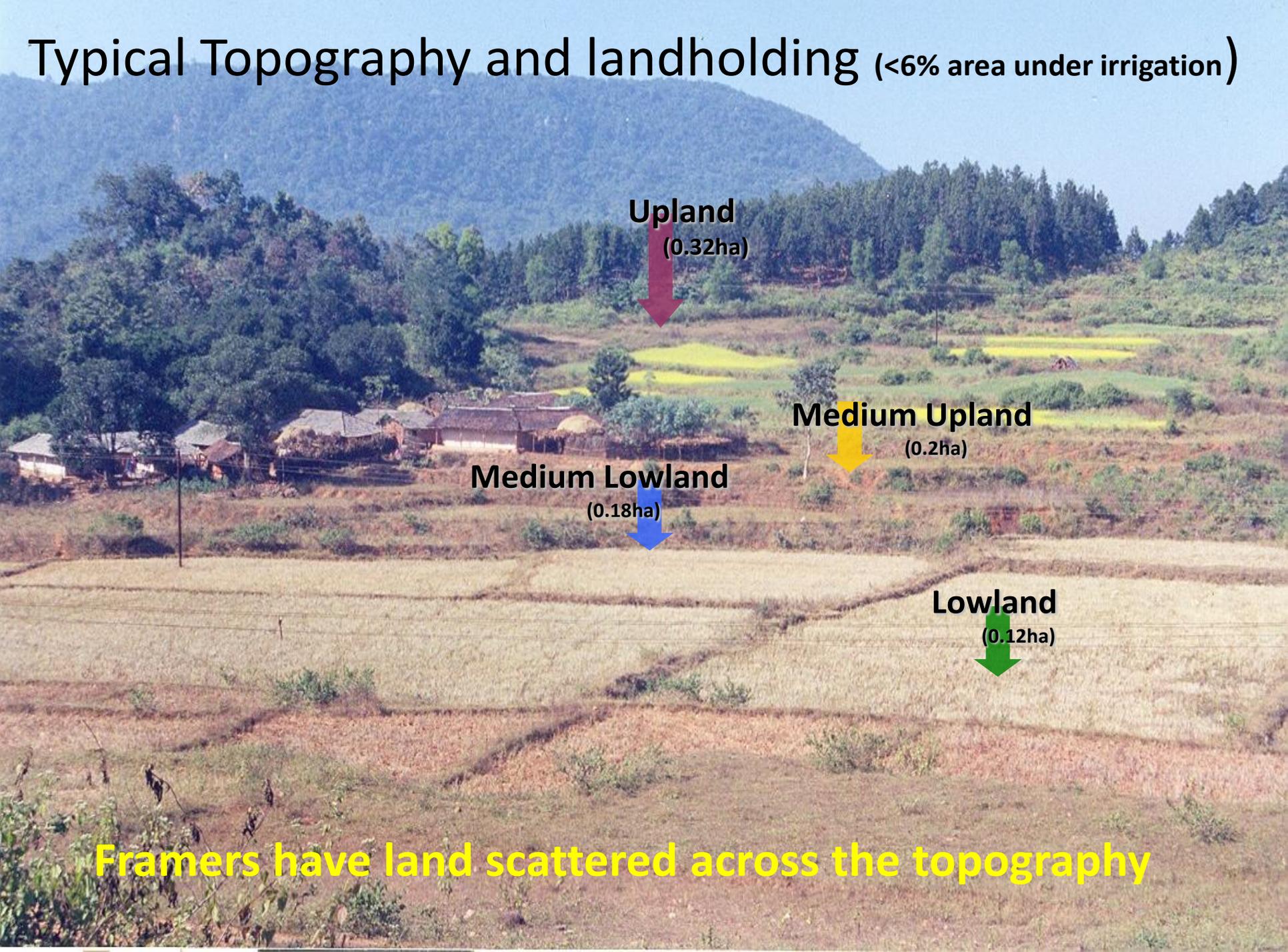
Team Leader, West
Singhbhum, Jharkhand

**Special Thanks to ACIAR,
AVRDC, ACUADAM -----**

Content

- Rainfed rice mono-crop area- Issues and opportunities
- DSR for Food security and climate resilience
- Introduction of tools
- Our experiences so far
- Potential

Typical Topography and landholding (<6% area under irrigation)



Upland
(0.32ha)

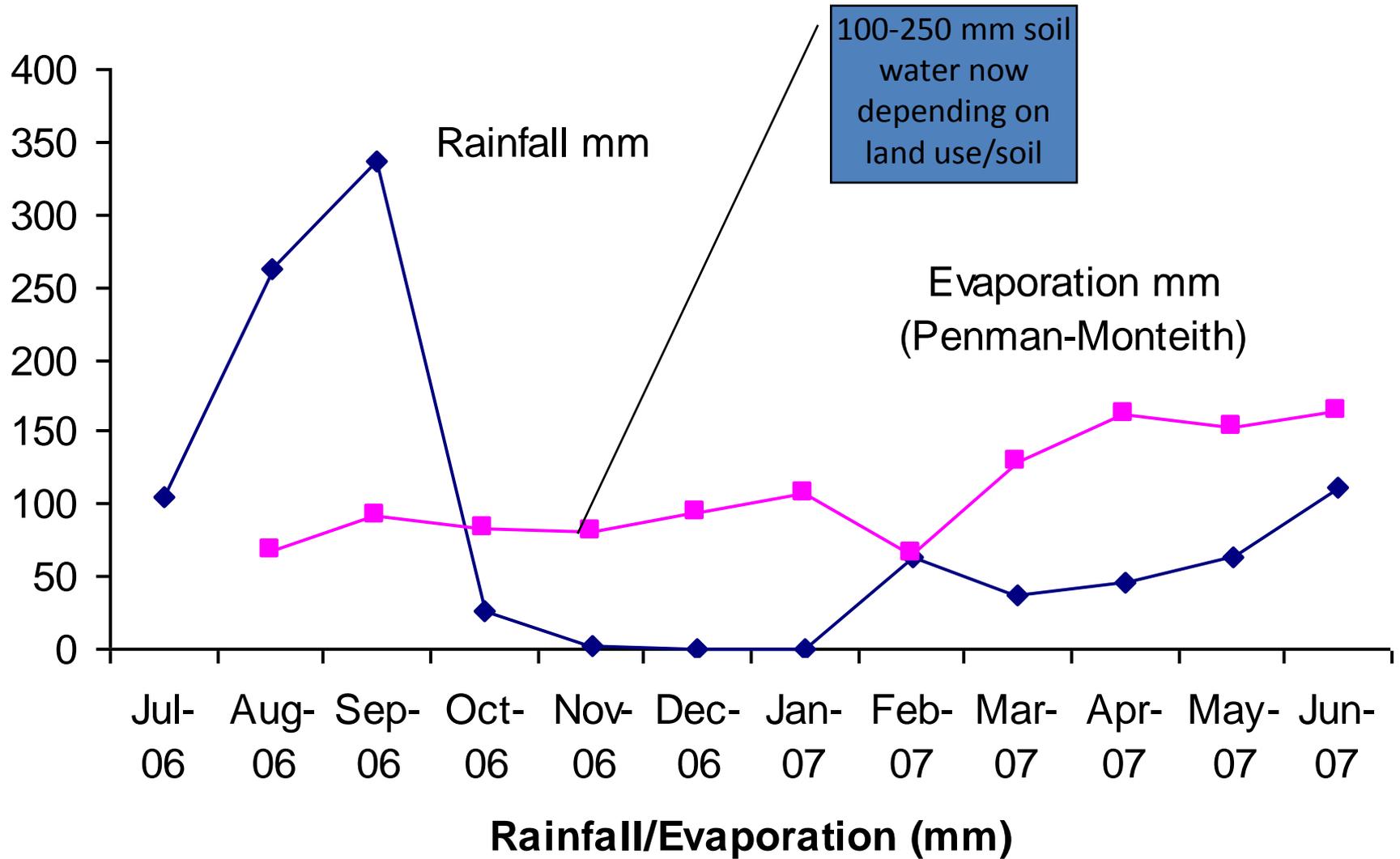
Medium Upland
(0.2ha)

Medium Lowland
(0.18ha)

Lowland
(0.12ha)

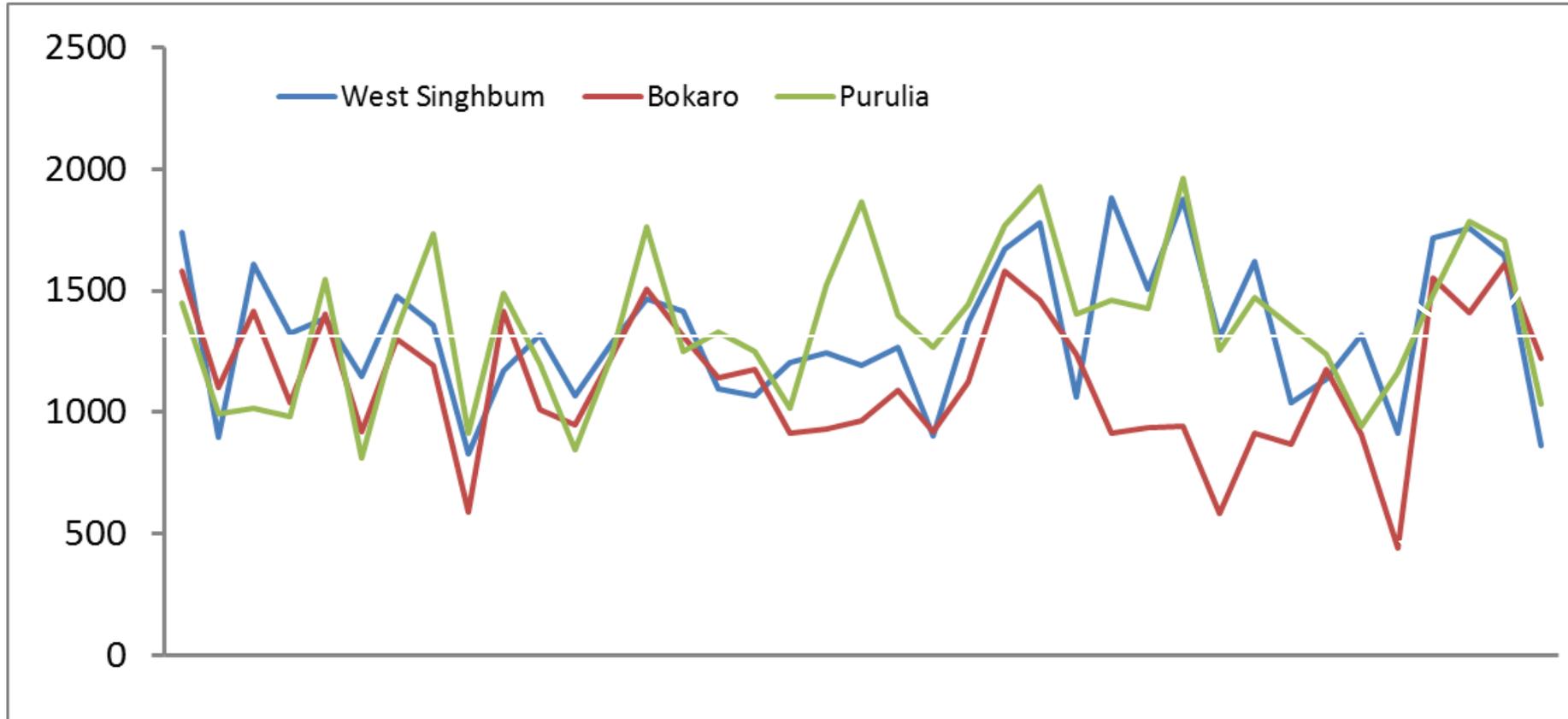
Framers have land scattered across the topography

Rainfall and Evaporation, Pogro



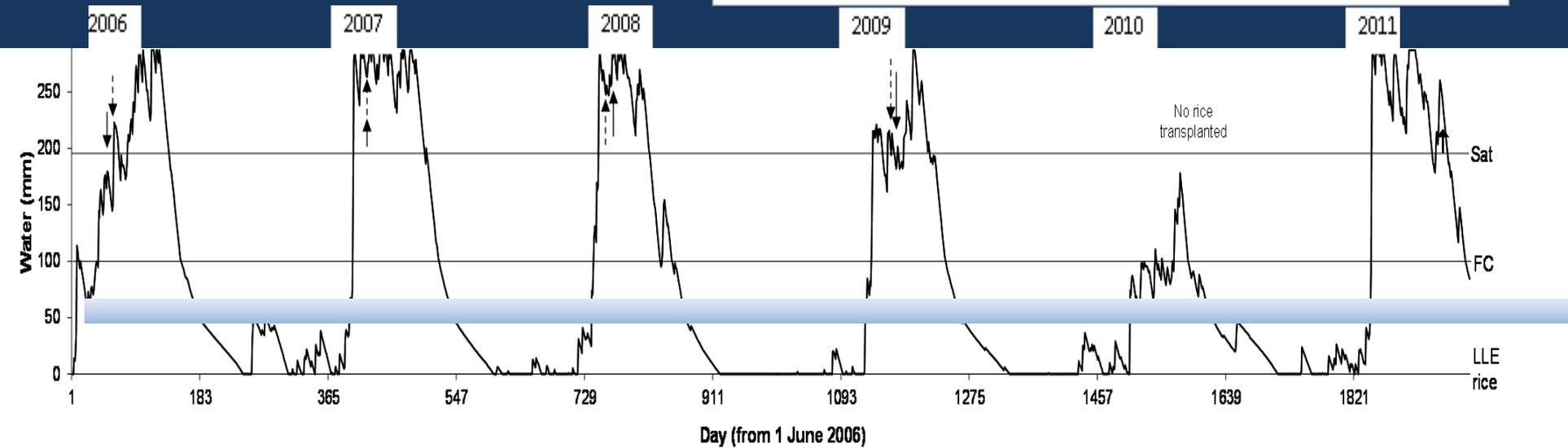
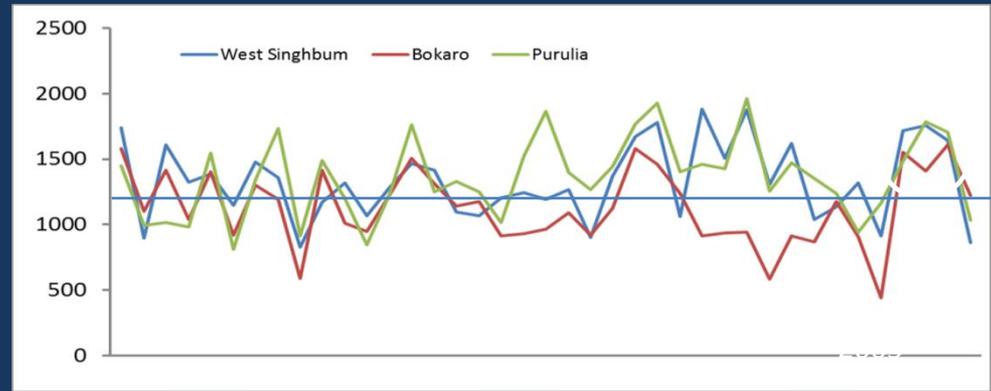
Rainfall on the EIP (1971- 2010)

Risks and Opportunities



There is huge regional variation in rainfall. So one solution may not fit everywhere !

Rainfall varies
from year-to-year
But what about soil
water and ponding?



The duration of ponding in medium uplands & med. Low land is much more variable even than rainfall (0-106 days)

This is why transplanted rice crops fail so often

But note good soil water every year

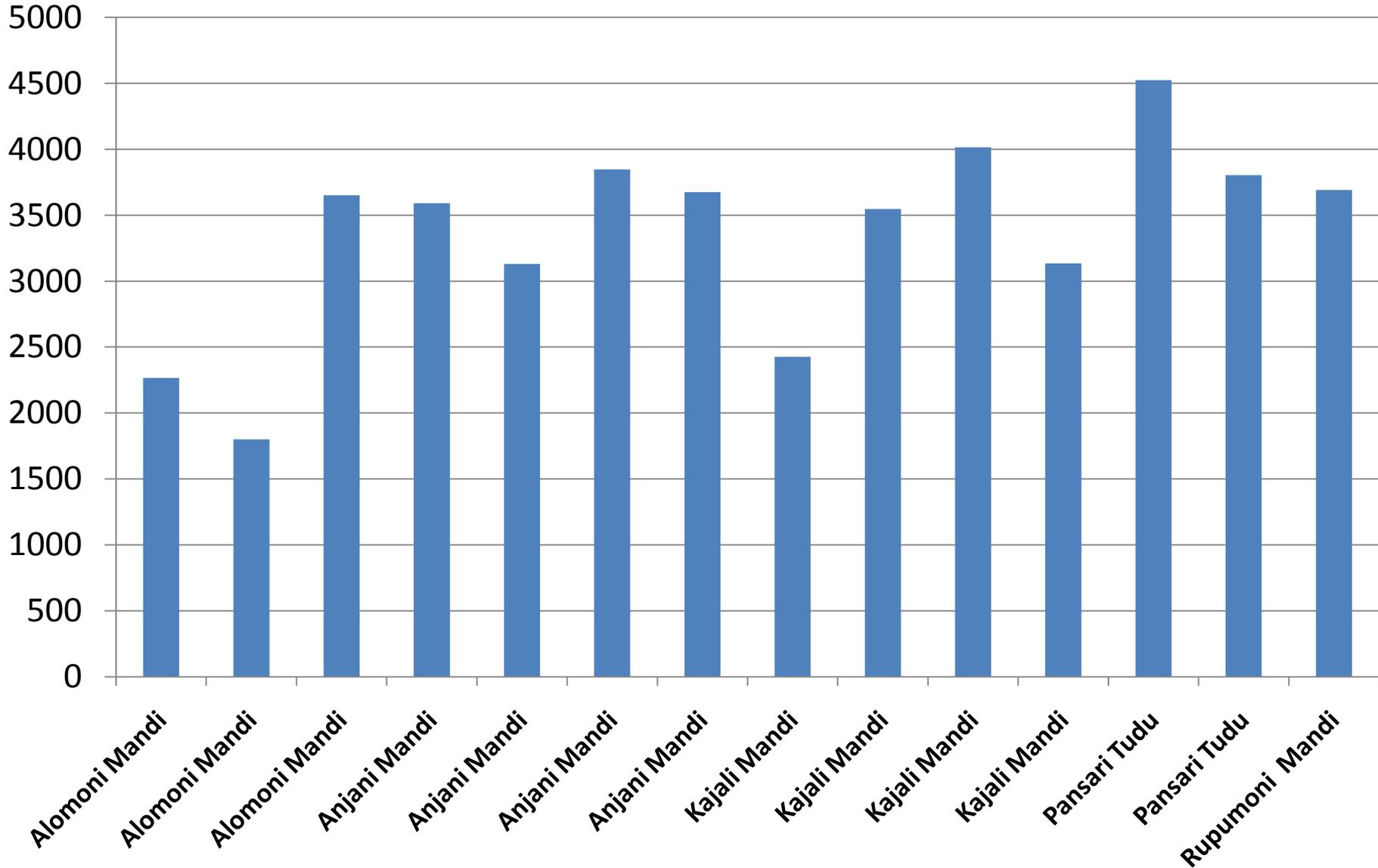
How farmers are coping under this condition ?

- Broadcasting direct seeded crops e.g. Paddy, Millets, maize, pulses in the uplands, homesteads & Medium Uplands
- Levelling and bunding the uplands and medium upland to make it suitable for transplanted rice
- HYV, SRI in low land areas.
- The performance of transplanted rice is quite variable, leading to less investment and practice change.

How to change the picture?

- **Understanding the limitation of current practices**
 - Do away with puddling where it is unpredictable
- **Build on the merits of current practices**
 - Direct seeding for early planting in kharif
 - Line planting, weed & nutrient management,
- **Increase efficiency – tools, implements**
 - Markers for line planting, wheel hoe/cono-weeders for weeding
 - Women are happy, no transplanting, weeding by tools
- **Reduce risks- Include weather resilience**
 - Start early in Kharif, No ponding , harvest early, second crop
- **Ensure sustainable optimum productivity**
 - 4-5 ton/ha arrive at hunger period, Significantly higher than average yield

Grain yield Anjali Variety - 100 days duration (kg/ha) at Ajudhya Purulia Kharif 2013



Direct Seeded Rice yields (Kg/ha), West Singhbhum 2013



All these farmers successfully grew second crop using residual soil moisture and partial irrigation



Seed Sorting and treatment: Farmers need to start with a fresh seed stock. The seeds are dipped in brine water in order to sort out the bold grains that settled down.

DSR-Marker, Furrow opener



Distance between row to row 8-9 inch(25 cm) and seed in sown in line.
Without line planting using this marker it is not advisable to go for DSR



Seed rate: 30-40 kg/ha in Medium low land. Placed in lines with fertilizers and compost. Mix fertilizers in soil with feet





Variety: Anjali(90 days)This plant 10 -12 days





1st weeding and thinning 15-20 Day after sowing through manual, wheel hoe, Dry land weeder/cono weeder.

Weeding by tools





2nd weeding and thinning 25-30 Day after sowing through wheel hoe or Dry land weeder or cono weeder (if standing water in the field.



Flowering and early maturity Stage (Anjali variety – 100 days)



Abhisek variety 120 days (available with Holy Cross and CURRS, Hazaribagh)



Direct Seeded rice- Anjali



Direct Seeded rice- Anjali



Kalpana Hasd a in west
Singhbhum Dist. Paddy variety
–Abhishek(120 day) yield 6.4
t/ha harvested by 1st Nov (DOS
-23 June)





Chickpea after DSR ready for sale early Dec.

Exposure visits- Excited farmers



Ways Forward..

- Linkage with tools fabricator/supplier
- Widespread adoption- Plan for ~5000 farmers in 2014
- SHG, Clusters Federations mobilized for resource mobilization and training.
- We expect it will bring resilience to rice production in Medium upland/low land areas which comprise >50% of cropped area.
- DSR creates opportunities for second crop with residual moisture/supplemental irrigation
- Reduce drudgery of women in Agriculture – no transplantation, no manual weeding.
- Focus on SRI in low lands where puddling is more predictable.



Thank
you...

Questions
Please !