Shifting intensification: findings from socio-technical research on SRI in India

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This presentation

- Shifting intensification
  - The principle
  - An example: raised seedbeds
  - Implications
    - For understanding SRI
    - For rice research
    - For agricultural policy

Shifting intensification – the principle

- Intensification is to increase input to a process in order to increase its relative output (cf. Netting, Brookfield)
- The introduction of SRI triggers farmers to redirect skills and inputs (cf. Bray, Stone)
- Farming requires task coordination within a man-made environment (cf. Richards, McFeat)
    - Social coordination
    - Dealing with tools, soils, plants etc (technical coordination)
- Farming interacts with wider socio-technical arrangements (institutions and infrastructure)

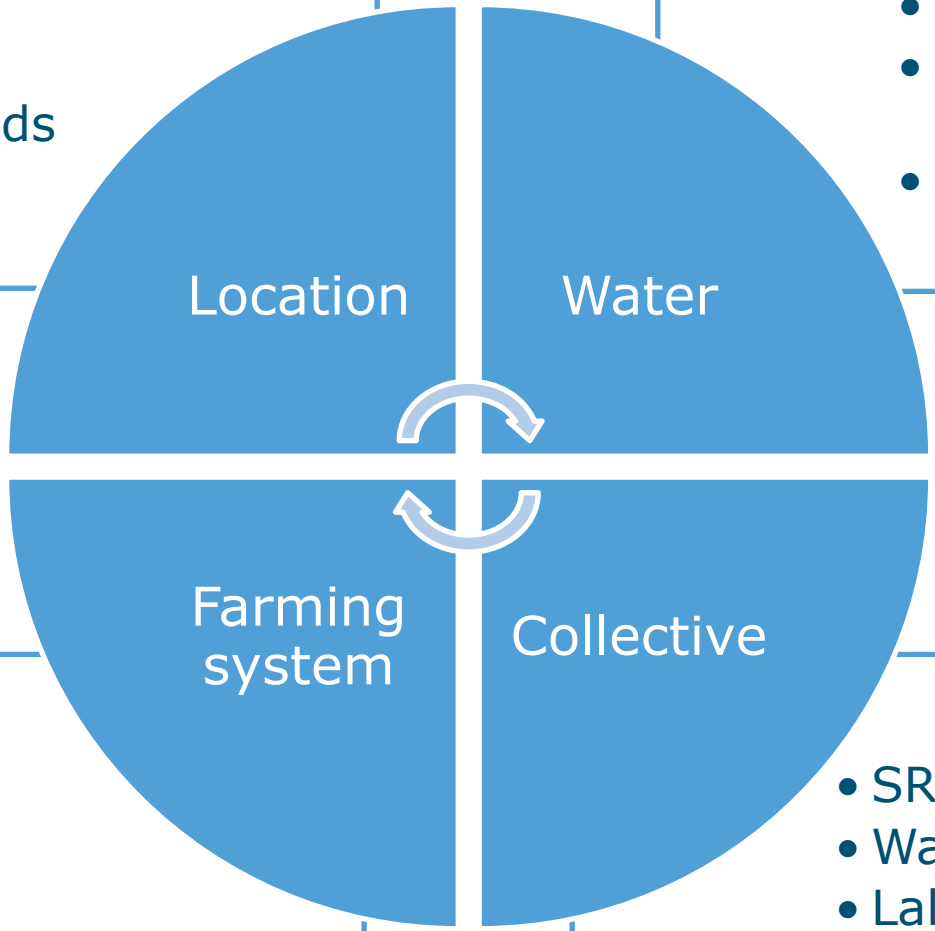
Raised seedbeds

- Recommended for effective use of (young) seedlings
- A familiar technique (used in other crops)
- Collective use
    - Agreement on SRI fields
    - Coordination of labour
- Selection of location matters
- Requires timing in relation to water availability
- Linkages with direct seeding and conventional transplanting

Raised seedbeds

- Soil
- Elevation
- Planned SRI fields

- Irrigation system
- Water distribution
- Drainage/sepage



- Direct seeding
- Conventional transplanting
- Other crops

- SRI groups
- Water distribution
- Labour arrangements

Raised seedbeds

- Crop establishment (from seed to vegetative stage) is a crucial phase with linkages to a range of social and technical factors, across the growing season

Implications for understanding SRI

- Differences between recommended practice (textbook version) and farmers' practice must be better understood
  - In relation to livelihoods (other crops and income sources)
  - In relation to structural features (social collectives, infrastructure)
  - In relation to topography and ecology

Implications for understanding SRI

- Differences between recommended practice and farmers' practice as a starting point for experimentation and adjustment (FFS)
  - Rice has a relative flexible intensification pattern (Bray 1986): various options
  - More or less labour? Task coordination!
  - Farming system choices: the price of rice.

Implications for research

- SRI triggers the research agenda for agronomy
  - Experimenting with non-chemical options for yield increase, weed and pest control (pre-GR type of research
  - Linkages with 'climate-smart' agriculture
  - Linkages with rainfed ('dry') rice research
- SRI triggers the agenda for plant breeding and variety selection
  - Farmers' selections
  - Drought tolerance

Breeding for upland rice

- "several features would raise yield potential of varieties under upland culture: 1) early vegetative vigor and moderately long and slightly droopy leaves to provide ground cover and to facilitate leaf rolling when soil moisture becomes deficient; 2) a vigorous root systems capable of developing deep and thick roots when moisture supply diminishes near the soil surface; 3) a greater ability to tiller so that the plant can use the additional water and nutrient supply if the climatic conditions become more favourable later in the vegetative phase; 4) a high tiller-to-panicle ratio and a high harvest index; 4) satisfactory level of resistance (…)." (Chang 1972: 660)
- Upland rice environments vary greatly in potential productivity. To breed for *high yield* is an ambiguous and useless term unless some measure of environmental potential for yield is available. (Gupta & O'Toole 1986: 108)

Implications for agricultural policy

- Rethinking food security
  - Cheap bulk rice for the urban poor
  - Livelihoods perspective for the rural poor
  - Diversifying markets with local products (varieties, cultivation method)
- Rethinking innovation
  - product-based innovation
  - skill-based innovation
  - 'system' innovation

Thank you

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