

An aerial photograph of a mountainous region. The terrain is characterized by steep slopes with patches of green forest and large areas of exposed, reddish-brown soil, indicating significant soil erosion. The text is overlaid on this image.

**How can research and development
help upland farmers to improve their
farming system?: Experiences in PTD**

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Presentation outline

- **Background and Introduction**
- **PTD process**
- **Methodology and approaches**
- **Intervened technologies**
- **Results**
- **Lessons learned and recommendations**
- **Conclusion**



➤ The sloping land above 30 degree slope is 66.3 percent

➤ Shifting cultivation known as “*Khoria Kheti*”



Study Sites





Shifting cultivation cycle



Common Problems

- **Bad reputation of shifting cultivators in government eyes**
- **Insecure land tenure**
- **Shortening or ceasing fallows**
- **Soil erosion and land degradation**
- **Declining soil fertility and decreasing yields**
- **Lack of options, alternatives and opportunities**

Field Realities



Integrated research and development is needed



Important consideration

- **Integration of socio-economic, cultural and agro ecological dimensions in the design of programmes and policies**
- **Understanding about indigenous knowledge of shifting cultivators and blending it with scientific findings**

Participatory Technology Development Process

Farmers' knowledge
and practices

Gap analysis

Scientists' knowledge
and SALT options

Stage 1

Sharing knowledge
(Village workshop)

Stage 2

Identification of research
farmers and exposure/orientation

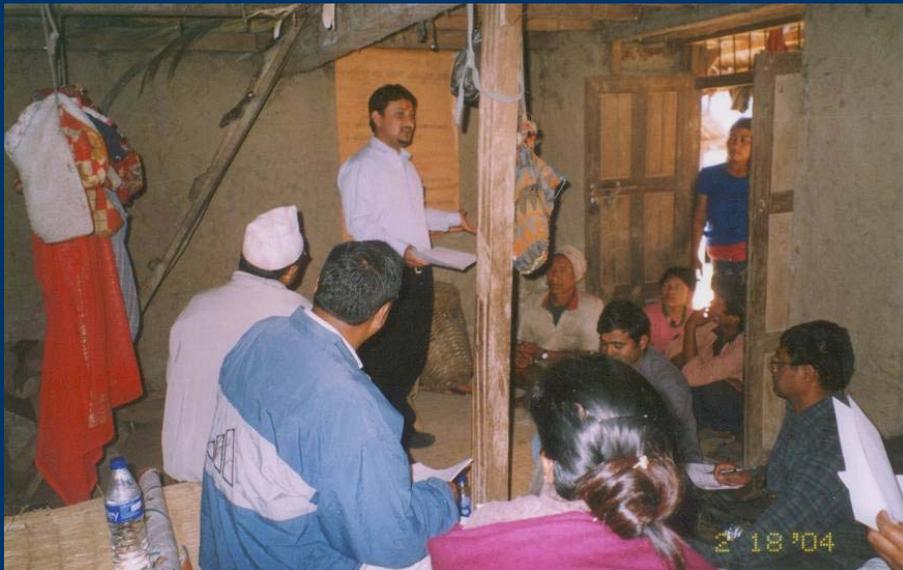
Designing and testing of
farmers' interventions

Stage 3

Participatory M&E of
farmers' interventions

Methodology and Approaches

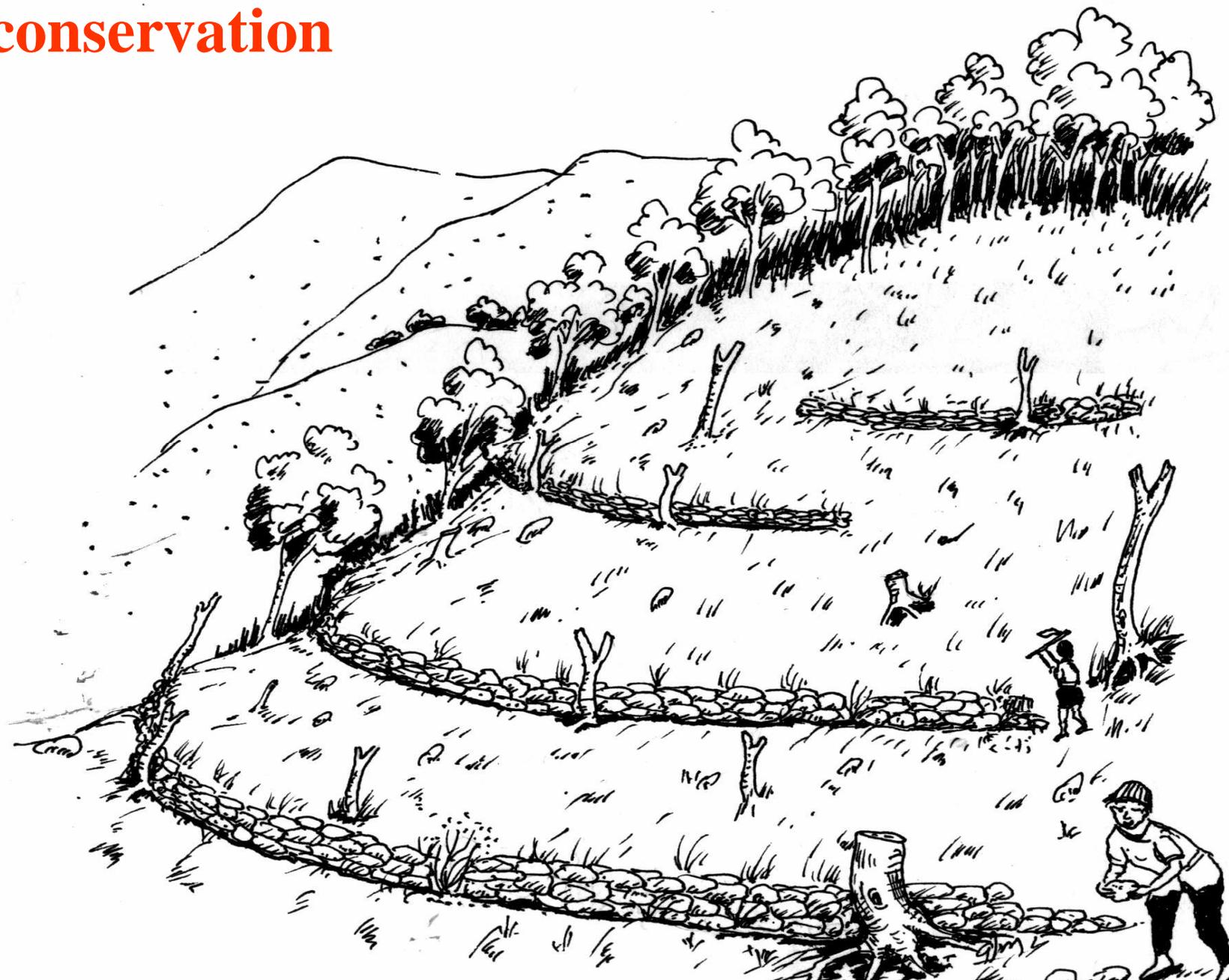
- Participatory planning, designing and implementation



- Participatory technology development

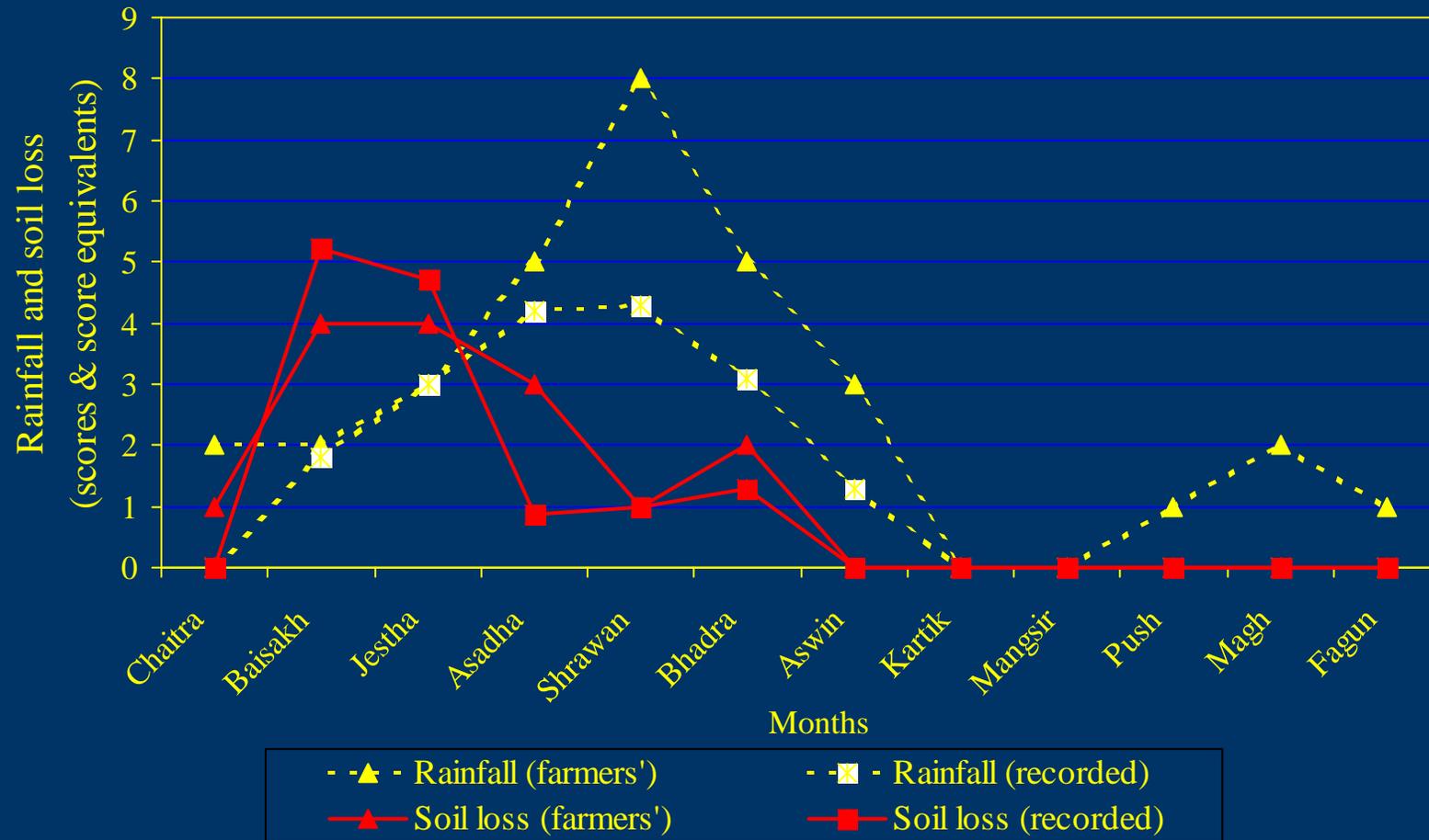
- Local Knowledge documentation

Traditional practices for soil and water conservation



Farmers Vs Scientific record

Rainfall and soil loss pattern.



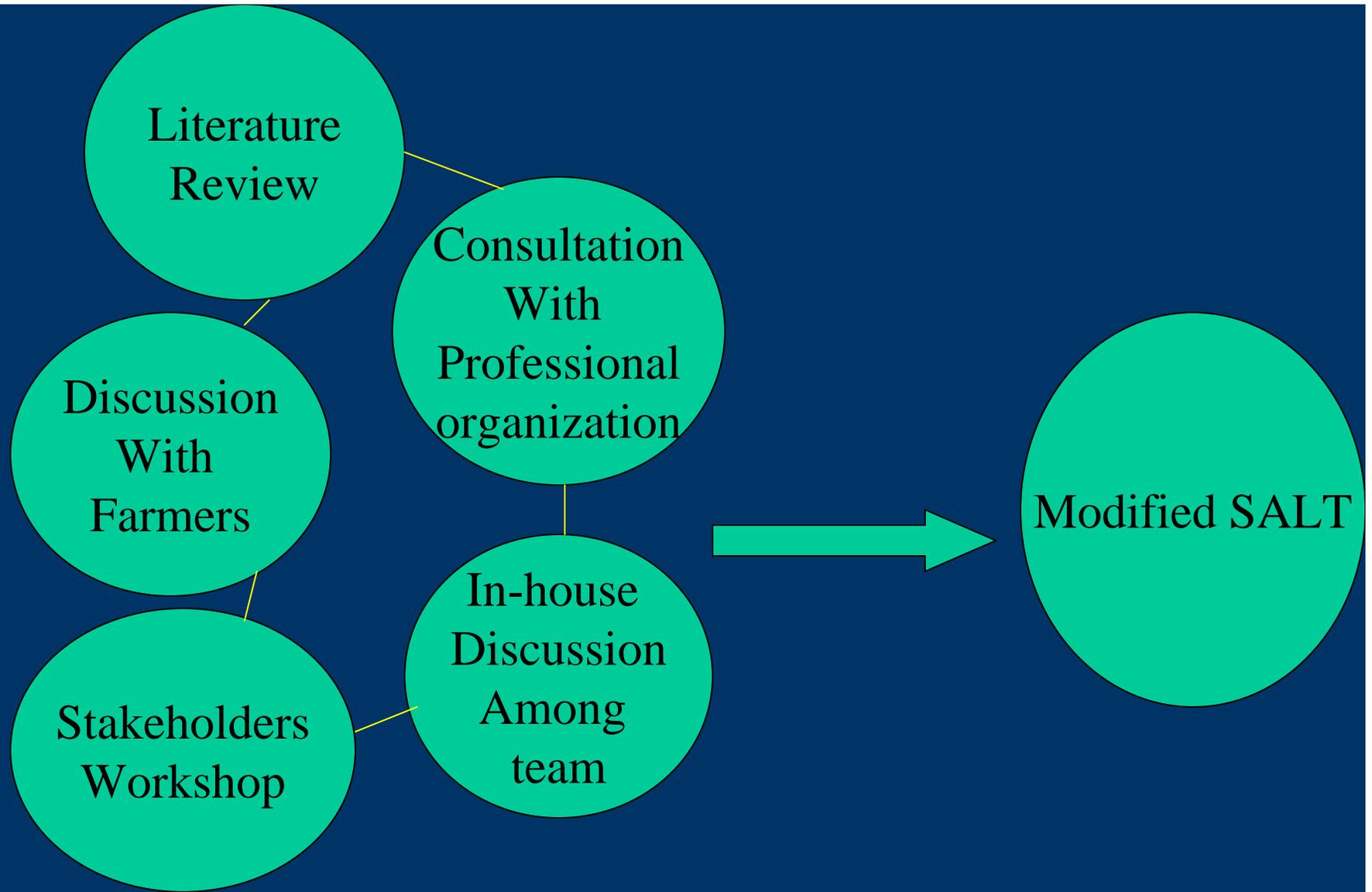


Fig. Technology Identification Process

Village level workshop



Farmers participatory learning & sharing

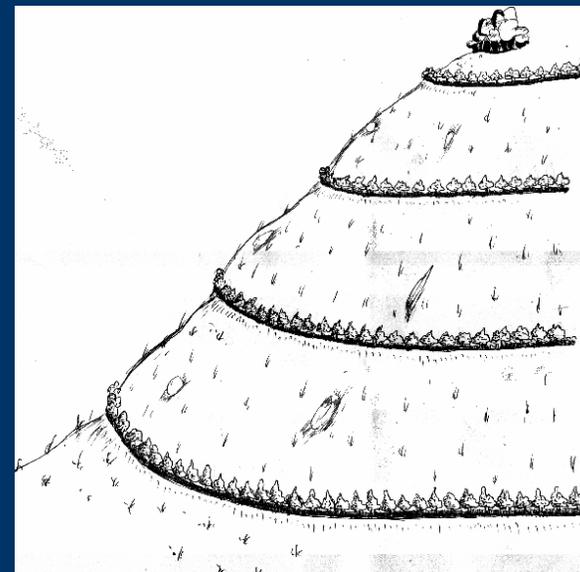


Participatory designing of intervention trials

Design 1



Design 2



Bhatmase+Coffee+Ipil-Ipil+Banana

Bhatmase+Kimbu+Tejpat

Trial establishment by farmers



Participatory monitoring and evaluation



Intervened technologies

➤ Integrated Hedgerow Technology

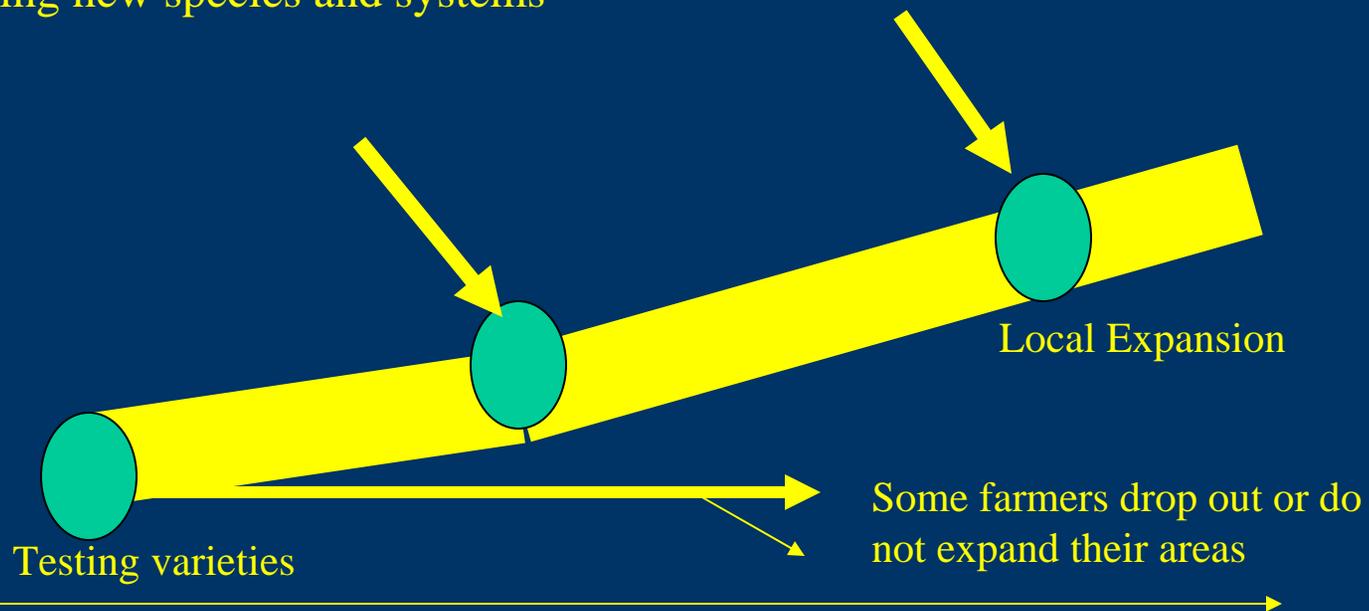
❖ Participatory selection of species suitable for hedgerow technology (PSHS)



Farmers experience with
hedgerow species

Some experienced farmers start
testing new species and systems

Some farmers find new
problems to solve with existing
hedgerow species or find new
opportunities for alternatives



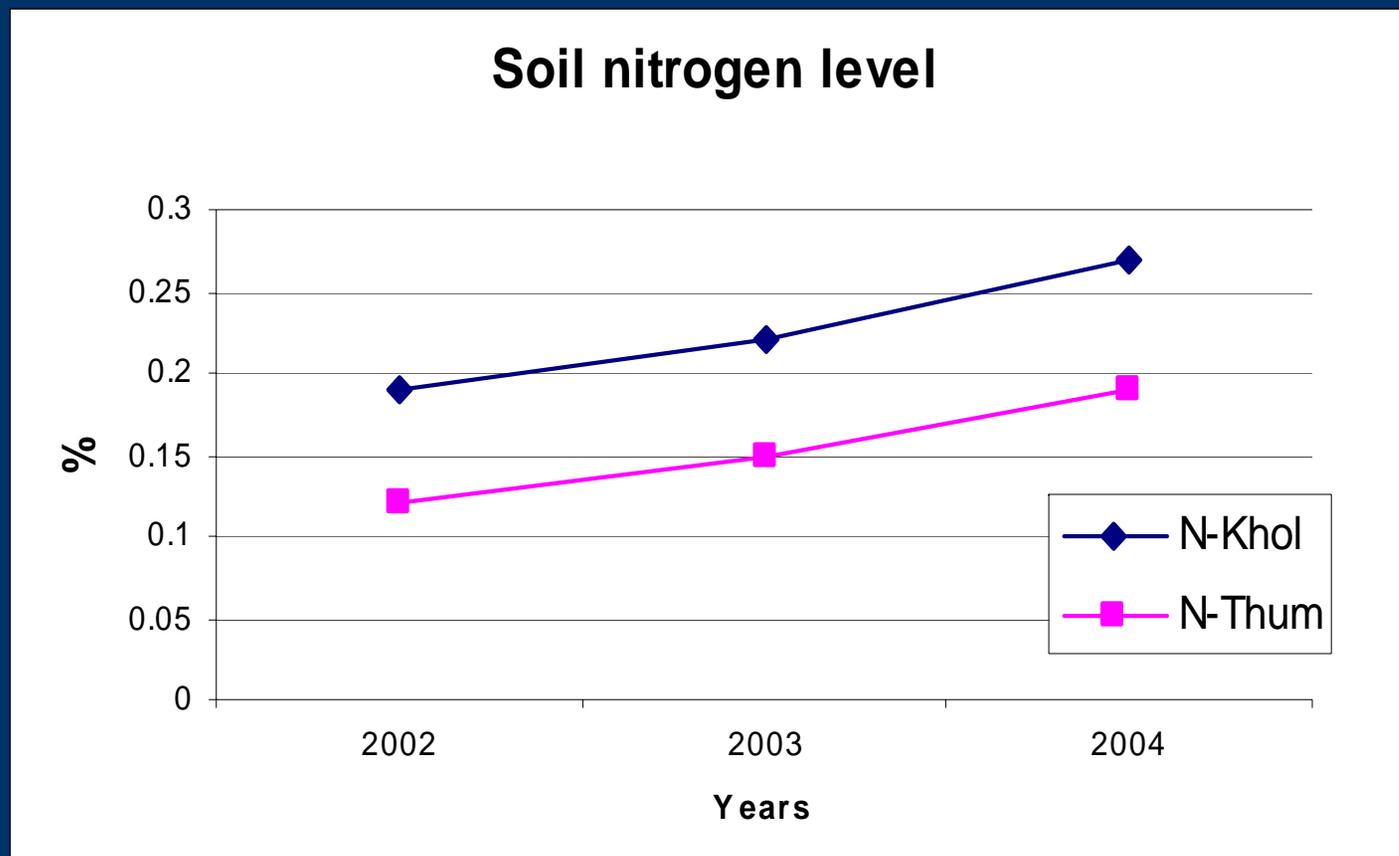
Integrated hedgerow Species Selection Process

- **Strip cropping (Ginger, Colocasia)**
- **Vegetable production like tomato, onion**
- **Mixed cropping (maize, cowpea, beans)**
- **IG activities (Mushroom production, Bee keeping)**



Result

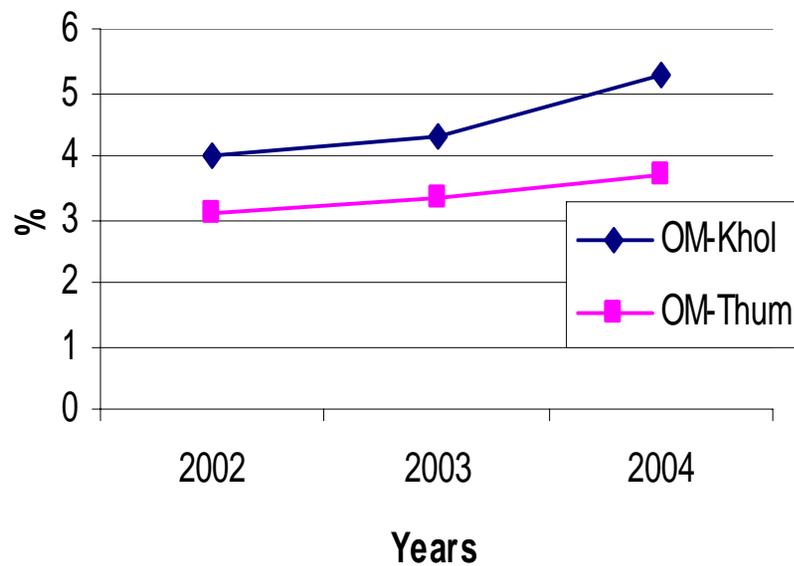
1. PTD offers a way forward, through active, decision-making involvement of farmers in every stage of technology development.
2. Effectiveness of hedge row technology



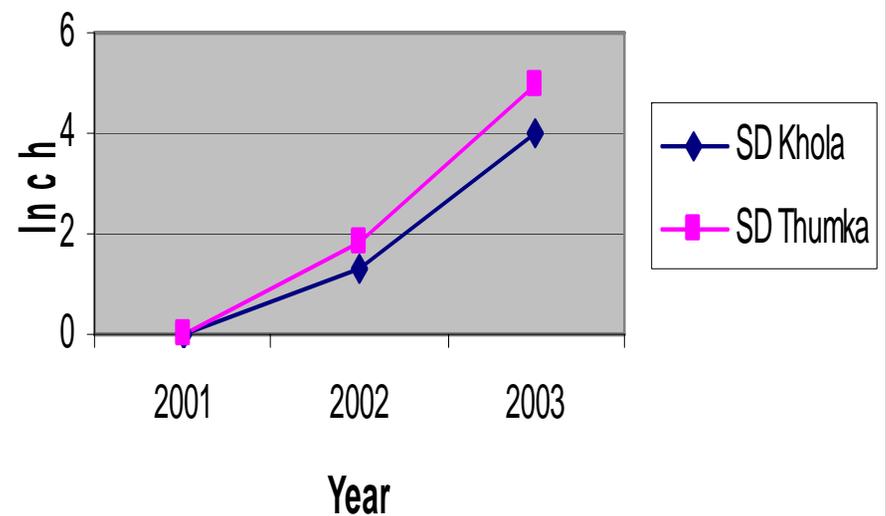
Effectiveness cont....

- Increase in organic matter
- Increase in soil deposition

Comparison of OM level



Soil Deposition Trend



Effectiveness cont...

- **Increase in biomass production**
- **Diversities in crops and other fodder and forages species**

3. Other visible changes

- **Changes in land use pattern**
- **Improvement in income generation**
- **Diversify options and opportunities**

Sustainability mechanism

- **Institutional capacity building of farmers organization.**
- **Strengthening the nursery**
- **Project tie up initiatives**
- **Multi stakeholders coordination and linkages**
- **Scaling up the intervention**

Scaling up modality

MODALITY 1: Mainstreaming: *Scaling-up through the Local Development Planning Process*

MODALITY 2: Integration: *Scaling-up through “integration” within the conventional extension programmes of local government line agency*

MODALITY 3: Contextualization: *Scaling-up through networking and collaboration*

Lessons learned

- **PTD builds trust among stakeholders. It helps to build the farmers' confidence.**
- **Planning and working with farmers needs to happen rapidly and with commitment.**
- **Exposure visits encourage farmers to design trials (Seeing is believing)**
- **Farmers are reluctant to adopt the practice since they have a fear that their land could be claimed by government as they do not have land registration certificate.**

Recommendations

- **PTD should be the focus of intervention.**
- **Good practices identified in the projects have potential to be scaled up.**
- **Strong network and linkages among stakeholders is necessary**
- **Documentation and sharing of technologies will be the basis for influencing policy makers.**
- **Lessons learned will provide forward thinking while implementing the activities**

Conclusion

Four months of trial establishment





Thank you for your kind attention

