



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

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**15 December, 2006  
Luang Prabang, Lao PDR**

# **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

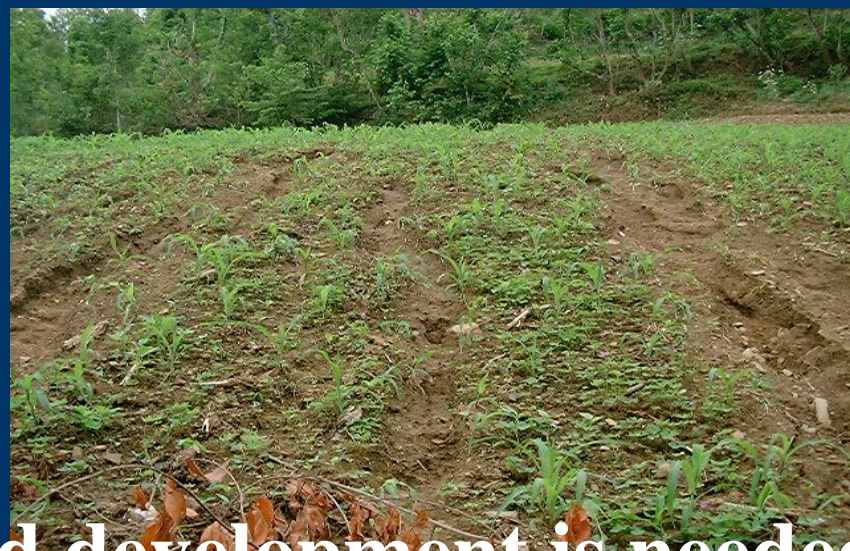
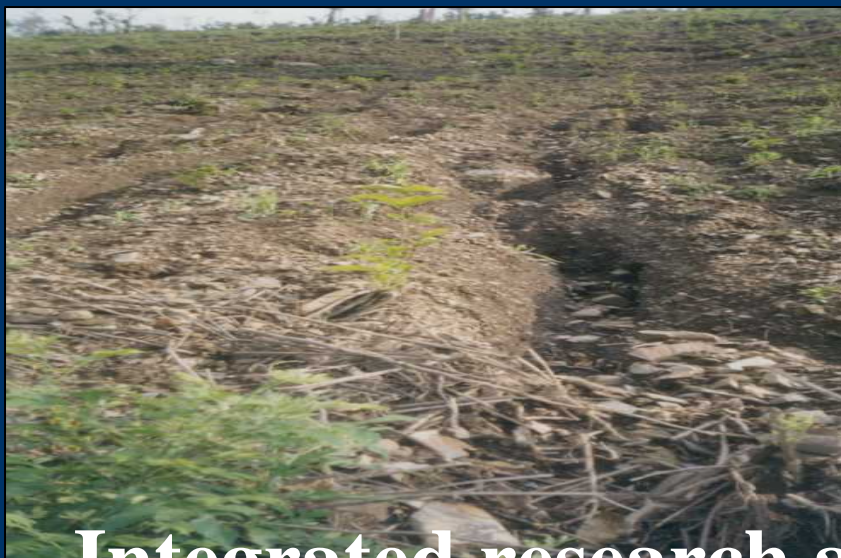


# Common Problems

- **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**

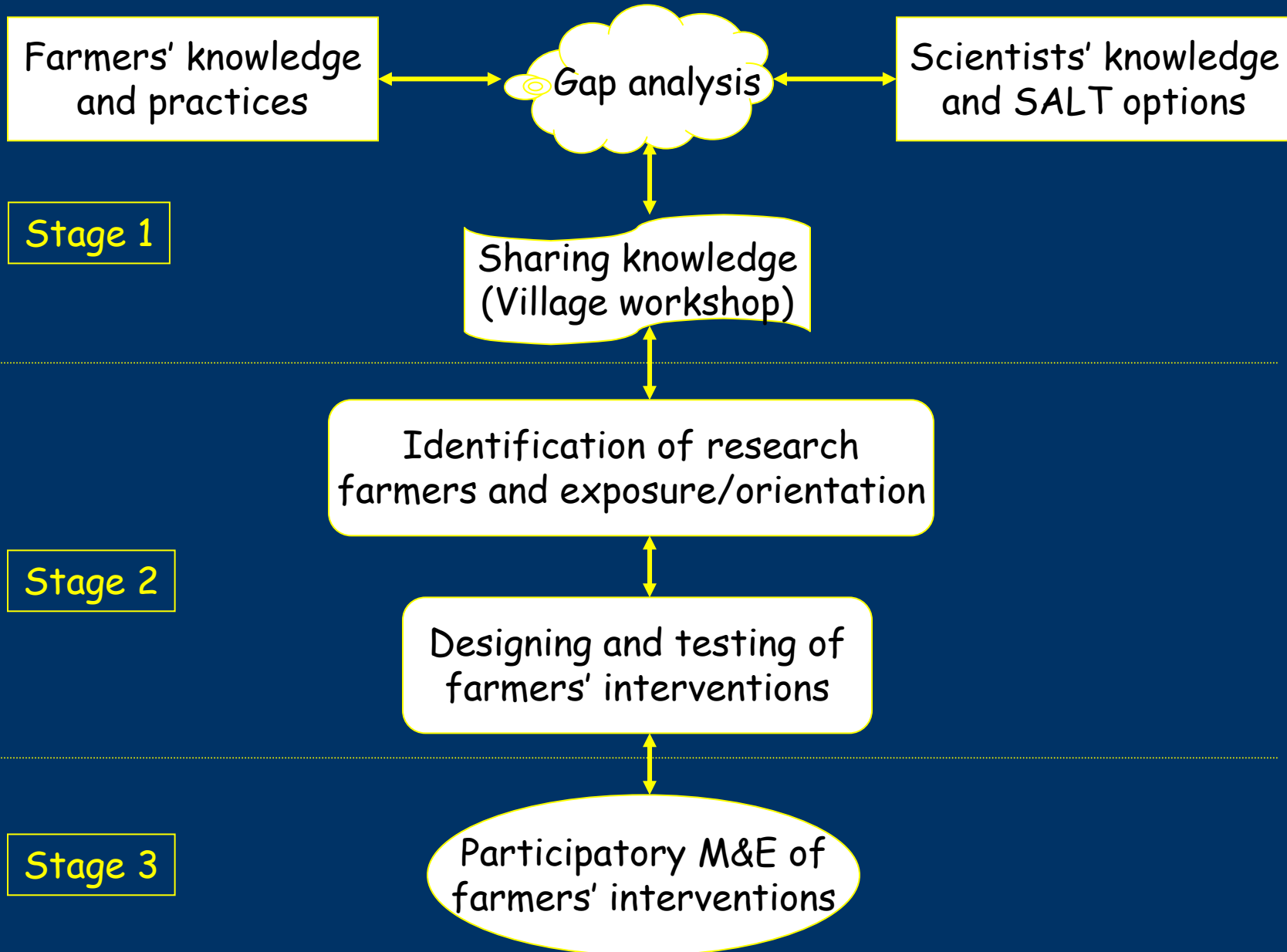


# **Important consideration**

- **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



# Methodology and Approaches

## ➤ Participatory planning, designing and implementation

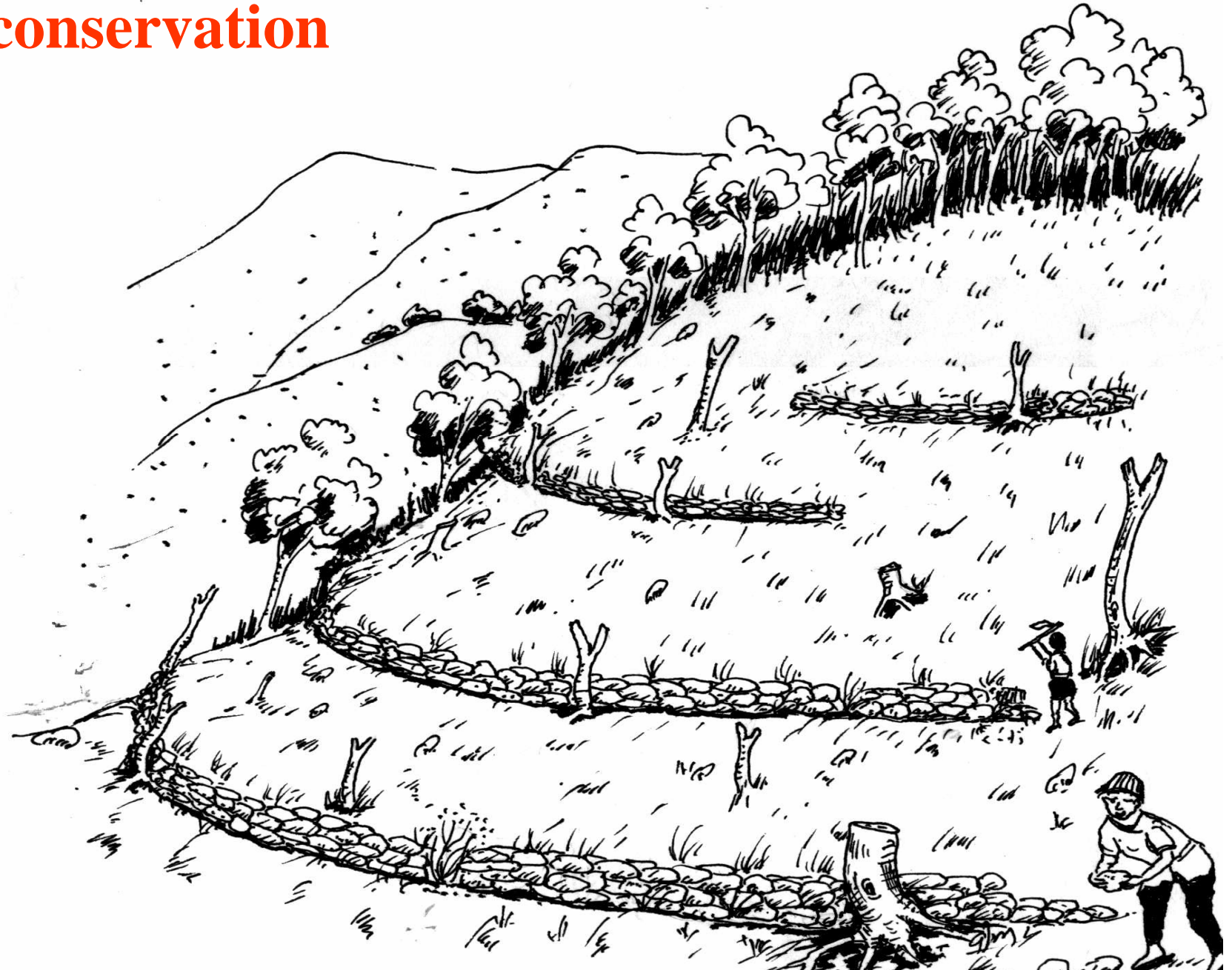


## ➤ Participatory technology development

### • Local Knowledge documentation

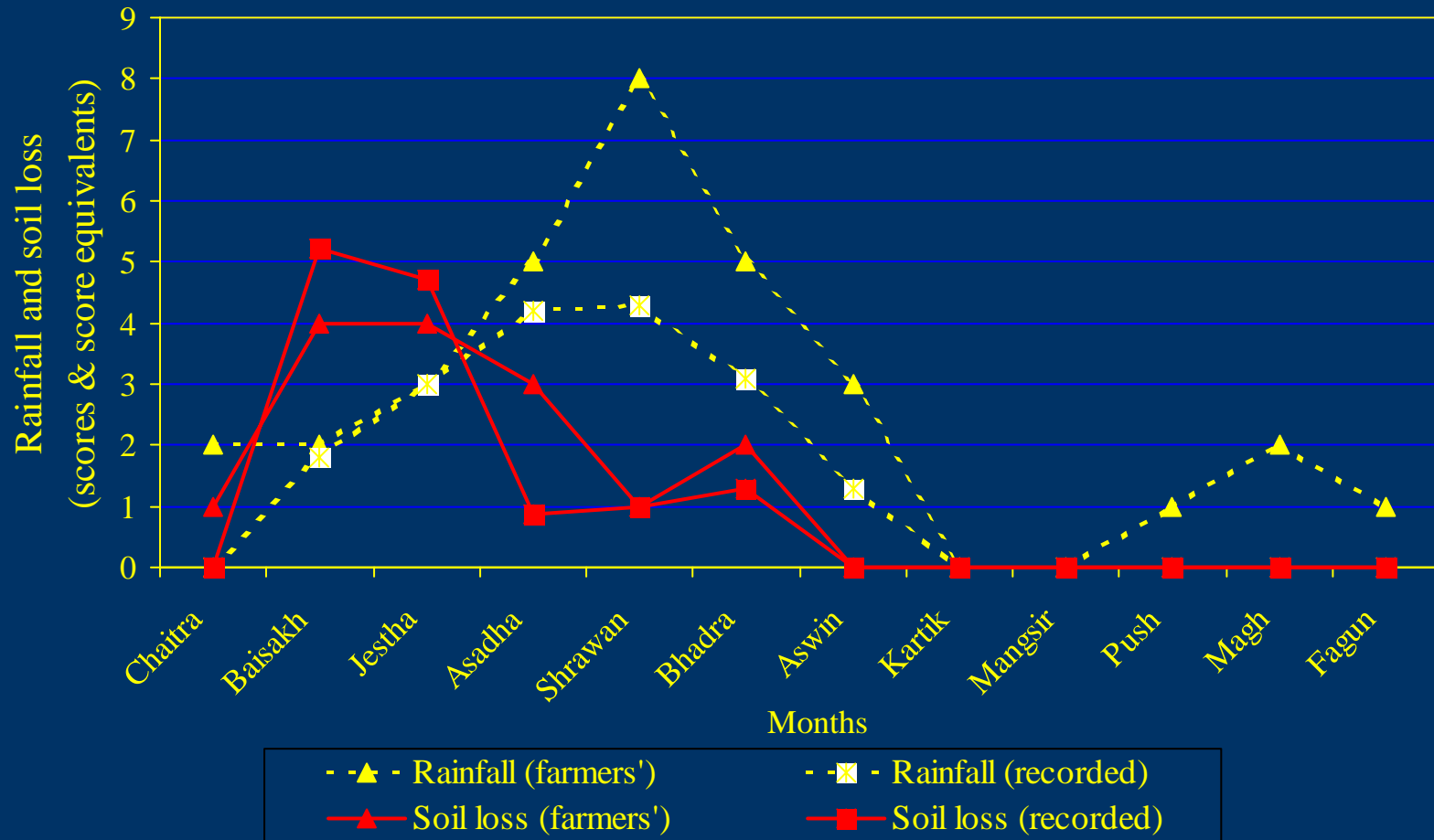


# Traditional practices for soil and water conservation

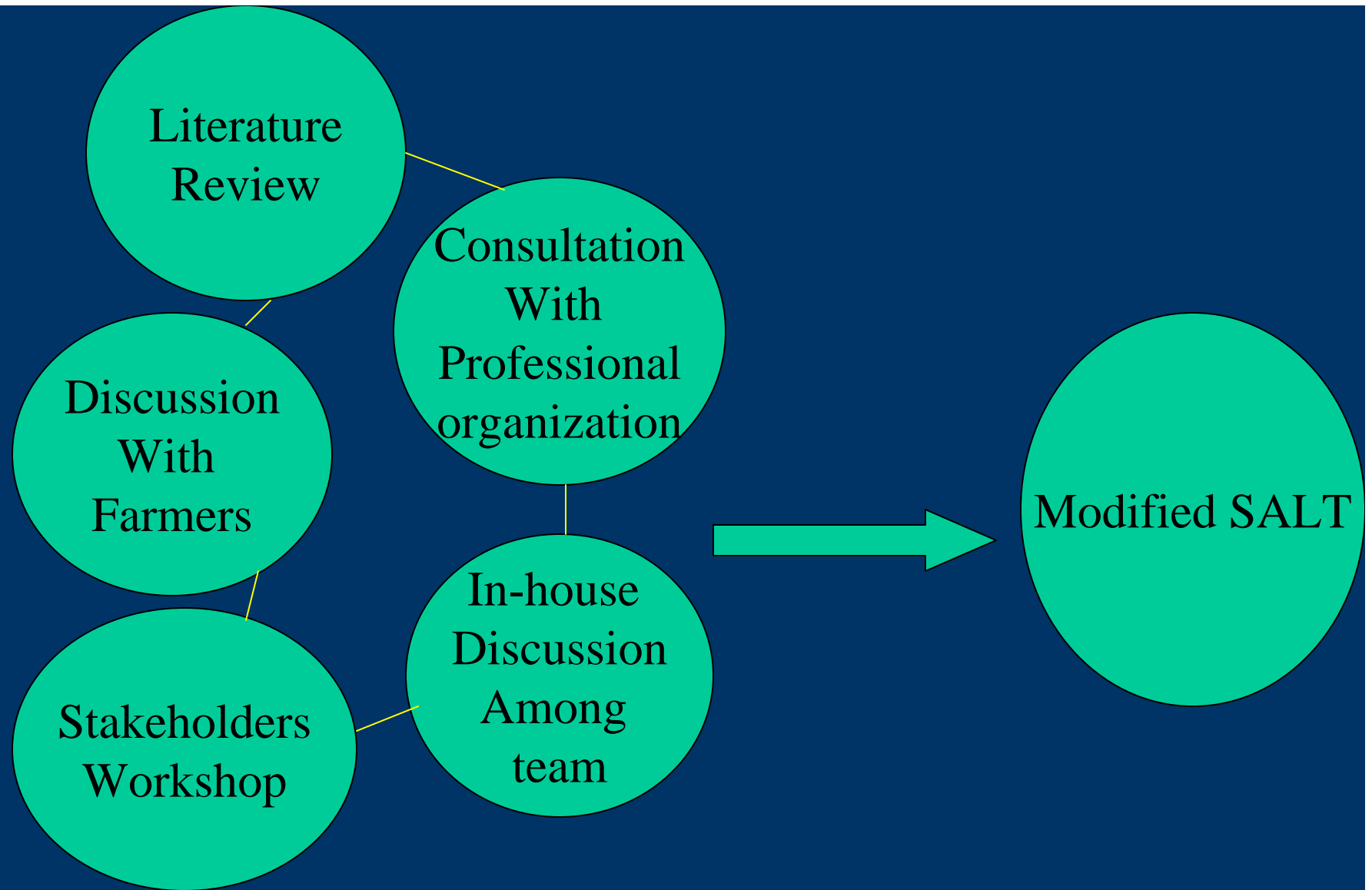


# Farmers Vs Scientific record

**Rainfall and soil loss pattern.**







**Fig. Technology Identification Process**

# Village level workshop



# Farmers participatory learning & sharing



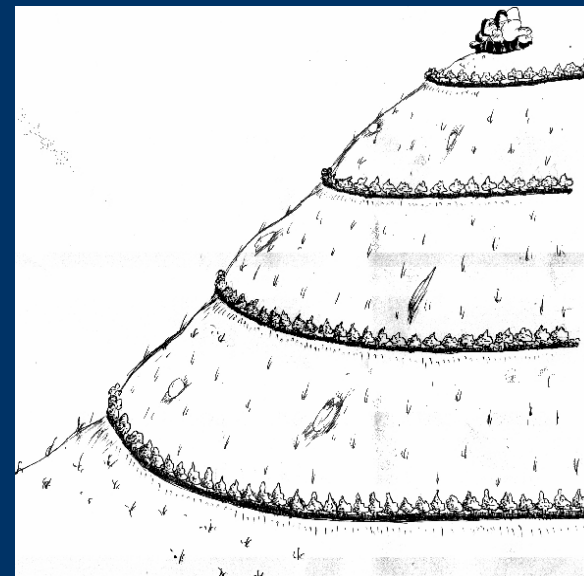


# Participatory designing of intervention trials

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

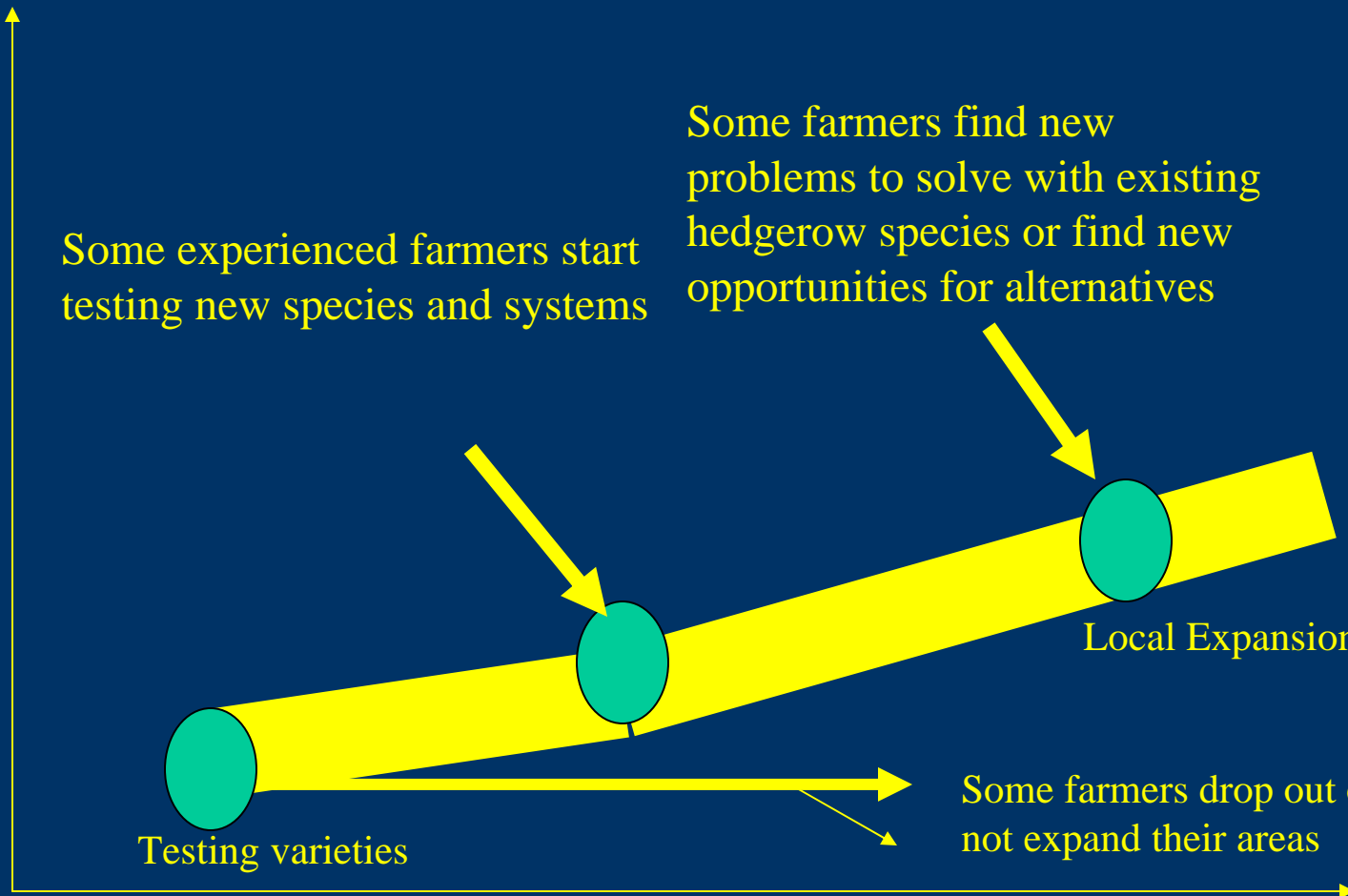
Some farmers find new  
problems to solve with existing  
hedgerow species or find new  
opportunities for alternatives

Testing varieties

Local Expansion

Some farmers drop out or do  
not expand their areas

## Integrated hedgerow Species Selection Process



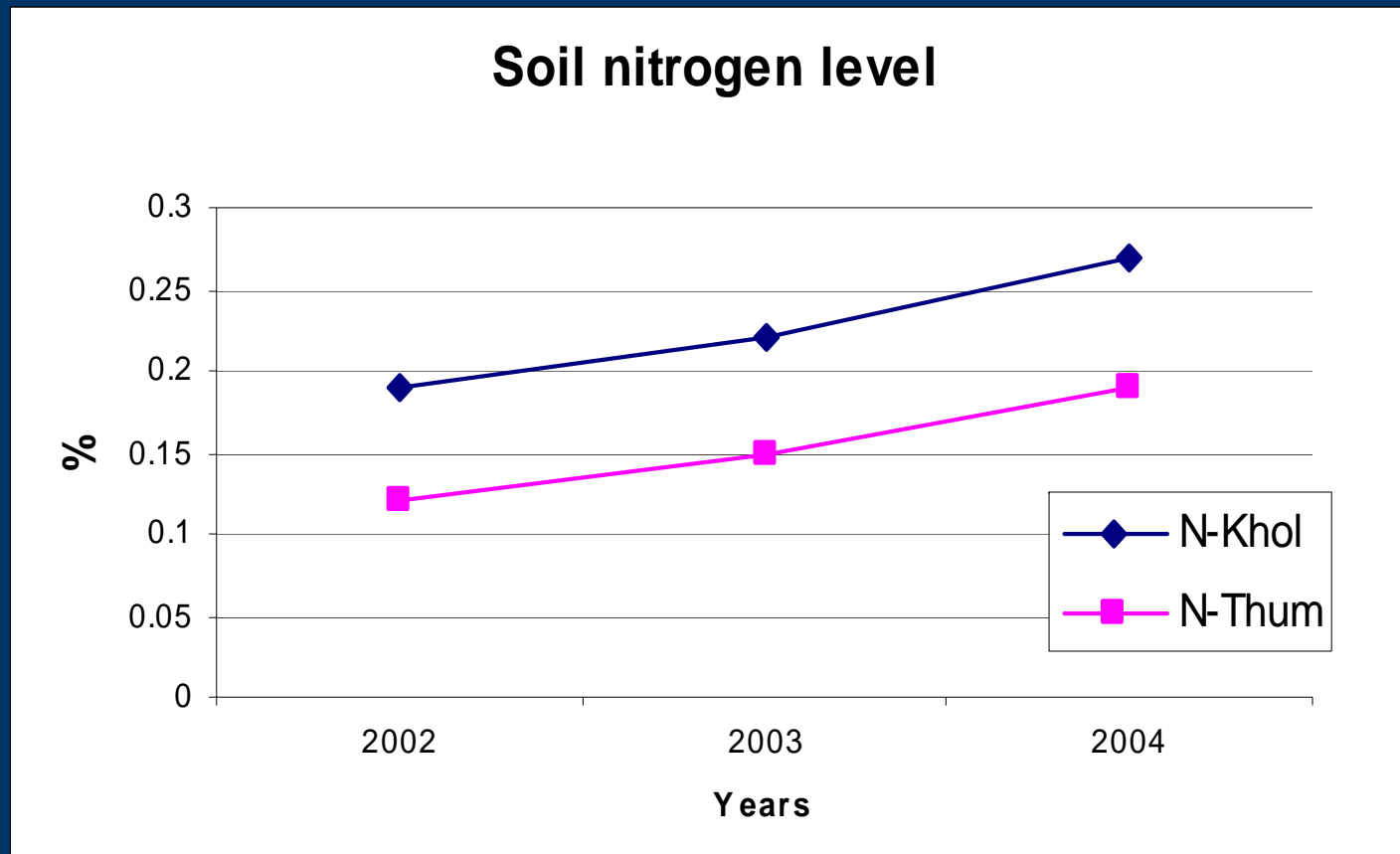


- **Strip cropping (Ginger, Colocasia)**
- **Vegetable production like tomato, onion**
- **Mixed cropping (maize, cowpea, beans)**
- **IG activities (Mushroom production, Bee keeping)**



# 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

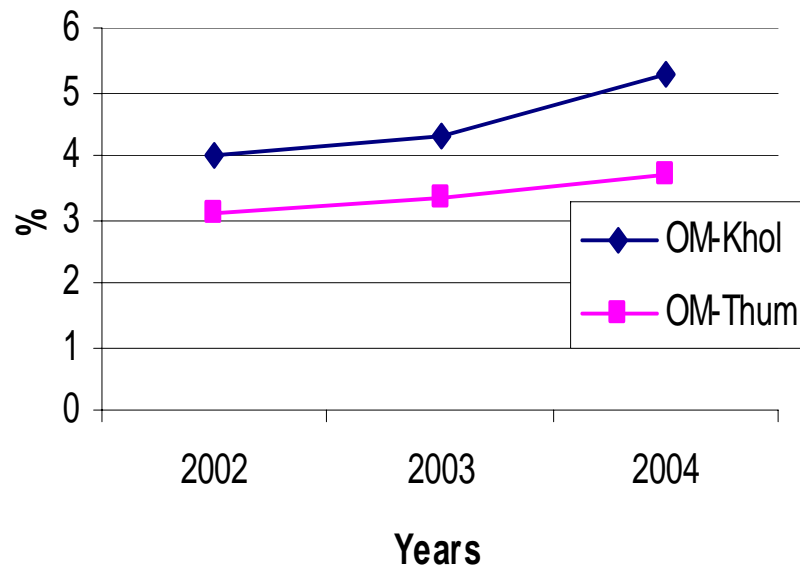




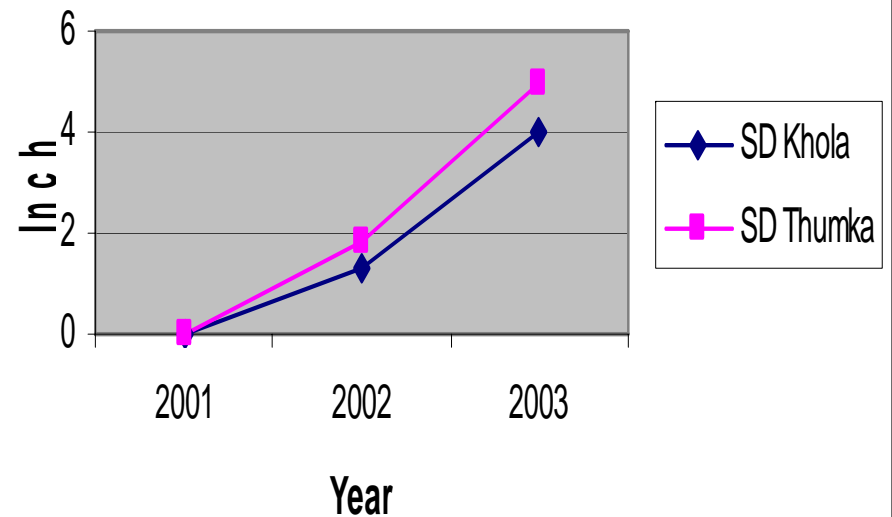
## Effectiveness cont....

- 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**

