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Social Forestry Training Network

Handbook of Participatory Technology Development (PTD)



September, 2002

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Introduction

This Participatory Technology Development (PTD) handbook is produced based on the synthesis of successes, experiences as well as challenges of PTD application of SFSP in various cultural and ecological areas of Viet Nam in the past three years. It is developed as a specific guideline for PTD application within SFSP as well as contributing to effective PTD application of relevant actors.

PTD is an innovative approach which bases on local people to find out new things including technical novelties, new ways of organization or new system of management, which households, farmers and communities wish to try out. It creates opportunities for the communities to participate in and improve their management capacity, and opens the way to closely link research, extension and farming practices of farmers.

The purpose of this document is to provide a systematic way of participatory technology development - an approach, in which farmers are the core in the development of technologies in farming practices and natural resource management, which creates a close collaboration between researchers and extensionists in the extension system. The document is written as a handbook form with details in each step considering practical aspect so that readers can understand and apply easily.

Target users of this handbook are, first of all, members of the Social Forestry Support Programme including five Agricultural and Forestry Universities, Hoa Binh Extension Centre and National Institute for Soils and Fertilizer who apply PTD in their activities such as research and curriculum development, technology development. In addition, the handbook is also a good reference for other forestry researchers as well as extensionists and project officers of development projects in Viet Nam and students.

The handbook is compiled based on a series of documents and materials developed in the Social Forestry Support Programme such as documents of PTD training workshop, reports on PTD initiation, annual PTD review reports, documents on PTD approach from international and Swiss extension organizations; the results from national and international PTD workshops; and PTD forum. Further, it is also based on the experiences of SFSP WPIs staff involved in PTD initiation and implementation; the support and advice of technical advisors: Pierre-Yves Suter, Ruedi Felber, Christina Giesch and Ruedi Luethi. In particular it is based on documents and training in PTD initiation in Viet Nam provided by Ueli Scheuermeier & Elisabeth Katz (LBL). This handbook is produced with the direct and indirect support of above mentioned members. The edition team would like to pay special thanks to these precious contributions.

The supports of SFSP (SDC, Helvetas) in terms of finance and consultancy have lead to initiation of a new approach in Vietnam and to the publication of this document. The handbook marks an initiative PTD application in Viet Nam that help to a better PTD application in order to contribute to sustainable development of social forestry and community-based resource management. This is one of the contributions of SFSP in Vietnam in the last 3 years.

We would like to receive all comments and feedback from users and readers in order to improve the handbook and approach to make it widely accepted in development research and extension in Viet Nam.

September, 2002

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Abbreviations

NISF: National Institute for Soil and Fertilisers

SFSP: Social Forestry Support Programme

PTD: Participatory Technology Development.

PRA: Participatory Rapid Appraisal

PLA: Participatory Learning & Action

SFSP: Social Forestry Support Programme

SWOT: Strengths – Weaknesses – Opportunities – Threats

SDC: Swiss Development Cooperation Agency

1. Concept of Participatory Technology Development (PTD) and its application in Viet Nam

1.1 Concept of PTD

What is PTD ?

PTD is "participatory technology development" which can be defined as *an approach, that links participatory research with extension, that bases on the promotion of internal capacity of rural communities to find out innovations in agriculture and natural resources management which meet the desires of farmers and suit strengths and weaknesses of households and communities**.

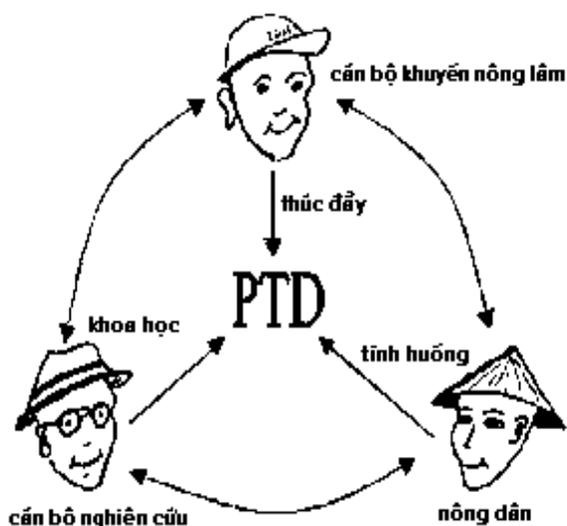


Diagram 1: Relationship between the three actors in PTD

PTD can be understood as a participatory approach in which farmers, researchers and extensionists cooperate to experiment innovative technologies that suit farmers' conditions. Farmers play a vital role in PTD, while the researchers support technically to the farmers' experiments. The extensionists role is to facilitate the experiment process and the interaction between farmers and researchers.

In PTD we try to find out "new things" which suit farmers and communities' conditions. The new things include technical novelties, new ways of organization or new system of management or new in application conditions.

PTD process consists of participatory activities to together with farmers to identify and select ideas, and try them out in the field and forests. Researchers and extensionists collaborate in steps including PTD initiation, implementation, monitoring and evaluation of experiments as well as dissemination of experiments results and dissemination of the approach to other extensionists.

What is special in PTD?

PTD bases on needs and conditions of farmers. It meets expectation of farmers while considering feasibility, practicality and conditions of farmers to select appropriate solutions. Therefore, they are either not technical solutions that are over capacity of villages nor technologies transferred from outside that do not meet needs of farmers.

In PTD, knowledge of farmers, researchers and extensionists is equally considered. Farmers are an equal partner in development and application of new technologies which are appropriate for agricultural and forestry production.

Regarding the collaboration and learning process of different actors, PTD can be understood as a cooperative process of combining local knowledge and scientific knowledge, in which local

* PTD workshop 11/2001 - Hue

knowledge is considered as important as any of scientific knowledge. PTD stimulates this creative combination to mobilize internal resources of farmers in order improve production and natural resources management in rural areas.

When to apply PTD?

There are cases where PTD needs to be applied:

- When farmers have a problem but do not have any available solutions to solve. This fact occurs quite often in production and natural resources management. Farmers or communities can face difficulties and themselves they have not found out yet solutions to overcome. In this case PTD is an opportunity for researchers, extensionists and farmers together to find appropriate ways through experimenting different solutions.
- When farmers have an idea on something new but it need to be experimented. During the production process, farmers often have new ideas to improve their cultivation and natural resources management activities. However, how to make idea become real is still not very clear to them. This is also a space for PTD in which researchers and extensionists help farmers design and organize new experiments.

PTD can be applied not only at household level but also at village level. Usually, experiments are managed at household level who are involved in on volunteer basis or who are selected by the village as the representative to conduct experiments. In additions, there some cases where experiments focus to solve problems of the whole village. For these cases, experiments managed by villages become a part of community development program.



Picture 1: Researchers and farmers are discussing the mutual interested issues

1.2 PTD related concepts

In the fields of research and extension there have been many activities of which the concepts are "PTD related". To clarify these concepts would help have a clearer concept and roles of PTD.

Farmer participatory research: this is a PTD close related concept in which farmers participate in the research process with scientists. Research questions are found out together with selected farmers or the whole village and villagers will do and monitor experiments with scientists. This is a promising research approach for applied research. However, it is still different with PTD in limitation of dissemination and lack of extension system.

Farmer led research: When "academic" research originated from scientists are difficult to be applied and transferred into reality, attention must be paid to do research which meet the real needs of farmers or solve problems farmer households face.

Participatory action research: This concept is quite close with farmer led research. Here, research is done based on the needs of farmers and research results must be able to be applied by farmers.

Participatory on-farm research: research which is difficult to do in labs or experimental stations suggest scientists to move to farmers and their farms. Scientists carry out their research on farms to find out appropriate solutions for cultivation with the hope that the research results will be applied and disseminated to other farms nearby which have similar conditions.

Farmer field school (FFS): This is an extension approach based on experiences and knowledge of local farmers on agriculture and forestry ecological principles. A farmer field school lasts along with the growth cycle of a crop. FFS include comparison of traditional production with recommendations drawn from experiments. The experiences gained from the first experiment in the school will guide farmers to develop other experiments in the future.

There are different types of research such as applied research, adapted research and farm-based research. All of which aim at finding out new things. However, experiments to be adapted to specific conditions of a farming system need to have the participation of farmers as well as scientists. Especially they must acknowledge local knowledge as a vital element for the development of useful innovations. The role of extensionists is to ensure the experiments to be implemented. We call this process of “ finding out new ways” in which there is a cooperation between farmers, researchers and extensionists be PTD (Laurens Van Veldhuizen, 1997 [**Error! Reference source not found.**]*).

As PTD concept mentioned above, PTD links participatory research with extension, especially PTD has a position in extension.

Therefore, all the related concepts, activities regarded previously lack of the collaboration with extension to facilitate experimenting process and disseminate research results of farmers. The figure of "extension butterfly" below shows roles and place of PTD in extension system.

In this image PTD contributes to the development of a complete extension system for participatory rural development.

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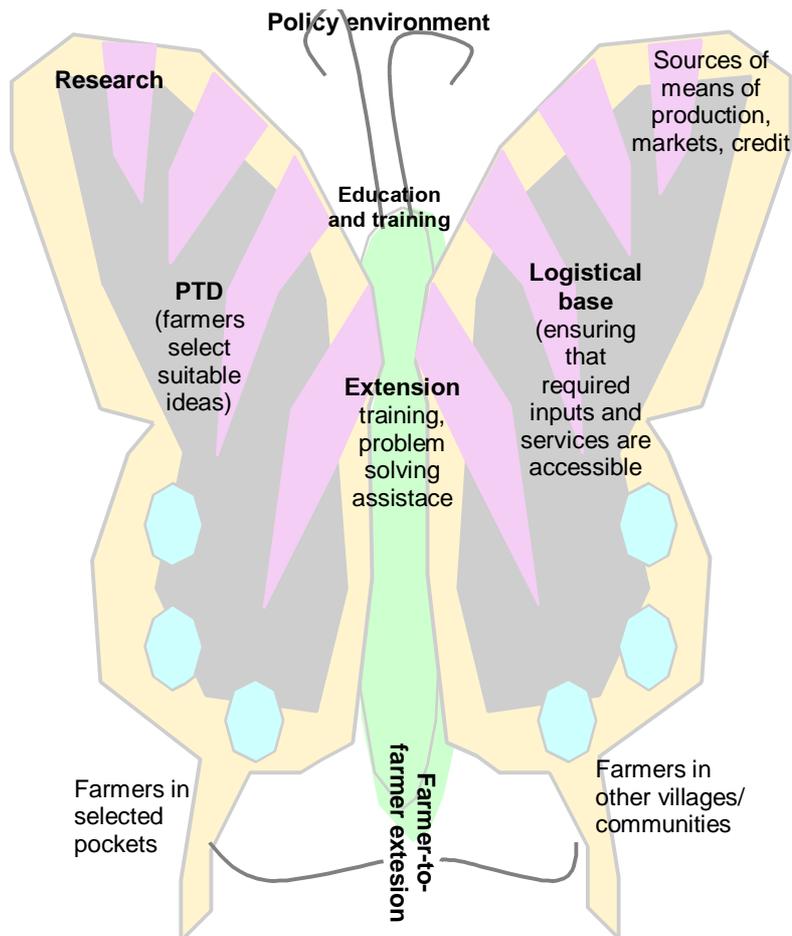


Diagram 2: Extension butterfly and PTD functions

The butterfly shows:

- PTD creates linkages between farmers-researchers and extension to support farmers to conduct appropriate experiments selected by them.
- In PTD extension links farmers with farmers in experiment process, creates chances for farmers to share their experiences and opportunities to disseminate successful results.
- In PTD process, extension provides input services, training, information on policies, market, credits etc for farmers to facilitate the process of new technology development.

1.3 How was PTD introduced to Viet Nam?

PTD activities in SFSP aim at strengthening research capacity and improving social forestry teaching curricula and reflecting reality into teaching. In 1999, LBL (Swiss Center for Agricultural and Extension) organized two training workshops engaged three main actors in PTD: farmers, extensionists and researchers (from five agricultural and forestry universities and one soil research institute)

After that, involved members have established experiments in research and training sites of different agro-ecological areas of Vietnam: in mangrove forest of the Delta region, the natural forest of Central Highlands, in the buffer zone of Bach Ma national park and mountainous areas in the northern of Viet Nam.

When first experiences in linking communities and extension system were acquired, PTD implementers recognized that PTD played an important role in directing the extension system in Viet Nam towards a farmer-centered extension system. Initial results of PTD activities reveal:

- the participatory approach to develop rural communities has created a dynamic research and developed the co-operation between farmers, extensionists and researchers.
- farmers of different ethnic groups in the same village together have developed appropriate technologies adapted to their own organisational capacity and conditions.
- the experiments have been somehow successful and attracted the participation of farmers.

These experiments have mainly focused on new technologies in forest land management and agroforestry, which respond to the objective of diversification of current farming system. Almost all the topics of the experiments have been related to non-timber forest products such as rattan, bamboo, mushrooms etc. Other experiments have been highly prioritised by villages including forest enrichment in allocated forests and plantation of fruit trees. These new technologies have been of interest to neighbouring villagers. In this process, a series of tools have been developed and experimented such as searching for ideas and selecting experiments – these are the key steps in PTD initiation. By experimenting in the field and sharing experiences, the WPIs of SFSP have step by step adapted PTD approach in their specific conditions.

1.4 Needs and potentials for PTD application in rural development in Viet Nam

Vietnam needs PTD because there are limitations in the extension system and research approach:

- Extension in Vietnam shows the orientation of "demonstration model" and "technology transferring". Most of extensionists practice these approaches to do extension based on plans from higher level and outsiders. Farmers have to apply technologies which they probably do not expect or are not appropriate with their conditions. In certain cases, these approaches are effective provided that farm households have supportive conditions.
- Traditional research is often done in research stations then transferred to farmers through extension activities. These research are usually difficult to apply in diversified conditions of social economy and agricultural ecology of small and poor households who manage a complicated and risky cultivation system.
- From these disadvantages, on farm research have been developed. Difficulties of farmers are analyzed and tested on their farms. The design of experiments is appropriate with ecological conditions of small households. However, these experiments are designed and managed by scientists while farmers only contribute labor, capacity of farmers is not improved. This explains why on farm research, in many cases, is not able to find out new ways for rural development.

What PTD brings in and what potentials of PTD are?

To develop rural areas, what happens in Viet Nam shows that improvement needs to be done in the field of extension and research to innovate approaches in community based technology development and natural resources management. PTD will support this innovative process:

- PTD helps to develop agriculture and forestry appropriate technologies for villages, poor farmers, forest dependent farmers who are living in various, complicated and unstable agriculture systems. In each village, households have many issues which need research

and experiments to be done on. The first step of selection of research issues, technologies to be developed is important, which require the participation of farmers and consultancy of researchers and extensionists. PTD actively support this process.

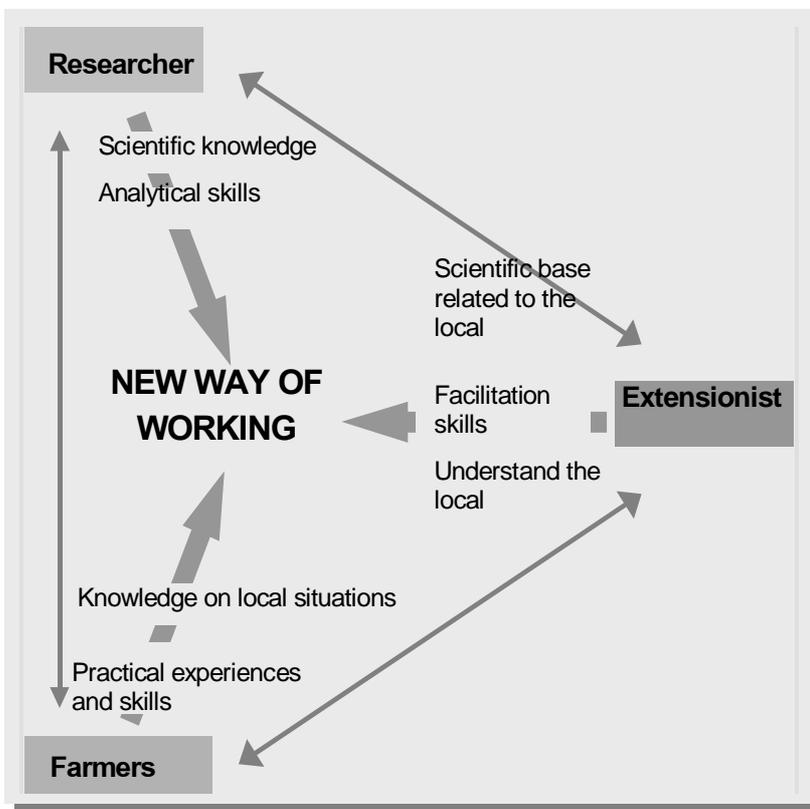
- PTD helps researchers, extensionists understand and know real needs of villages. In extension development, needs do not come from researchers or extensionists but end users of results of research and technology development. Difficulties in technologies or policies that farmers face and that they have to solve can be starting points of PTD.

Participatory approach help to improve extension and technology development and PTD is one of the methodologies which meet this need both now and in the future.

2 Relevant actors, their roles and benefits in PTD

2.1 Relevant actors and their roles in PTD

There are three important actors in PTD including Farmers, Extensionists and Researchers. The



triangle of three actors in PTD are presented in the diagram 3. The diagram shows the roles of farmers, researchers, and extensionists in PTD process. Note that the “PTD triangle” is the left wing of “extension butterfly” in the diagram 2.

Roles of farmers:

Farmers move from passive and accepted to initiative situation and practice their own ideas. Knowledge, skills and experiences of local farmers are used in experiments.

Diagram 3: PTD triangle

Roles of

Source: Laurens Van Veldhuizen[Error!
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to

process and share experiences with villages. Extensionists contribute their knowledge that is practical knowledge of local conditions and create good linkages between farmers and researchers in experiment implementation. Therefore extensionists need to have practical experiences and facilitation skills.

extensionists:

Extensionists, instead of transferring farmers (one way), facilitate the

Roles of researchers who before managed all the research process are now to analyze, select and solve research questions with farmers, to provide knowledge and technology information on community need basis.

An important question in the first stage of PTD is: "Which farmers should participate in PTD". Not all farmers participate in the process. In villages there are some advanced farmers who want to learn new things and actively contribute to development of their villages. These are core farmers and we need to have a certain number of core farmers to participate in the whole process. Their roles are to inform other villagers about activities taking place, to organize cross visits, to guide researchers and extensionists, to provide information on village history and work as interpreters for local languages. It is needed to make sure that selection of core farmers is not oriented to dominant farmers. Therefore, there need to be their commitment and their motivation to participate should be good. Ideally, core farmers participating in PTD process are selected by villages. In addition, local leaders (formal or informal) who have good relationship with villages usually have important roles in village meetings. With their roles and positions, they influence the results of technology development and dissemination. Therefore consideration should be given to attract them to participate in some certain appropriate steps. Some other criteria to select farmers are: indigenous ethnic groups, representative of different wealth groups and genders. In communities of ethnic groups, core farmers need to know Kinh language to communicate with outsiders.

2.2 Responsibilities and benefits of PTD for relevant actors

The three actors involved in PTD including farmers/villages, extensionists and researchers have specific tasks/responsibilities which are clearly clarified:

- **Responsibilities communities and farmers**
 - Actively manage, implement and monitor experiments
 - Use labor and available resources to conduct experiments
 - Closely link with extension and researchers in the process
 - Share their experiences with other farmers in their villages.
- **Responsibilities of extensionists**
 - Directly and regularly participate in the process from providing practical experiences to farmers, facilitating to select experiments to monitoring and evaluating experiments.
 - Provide input services and related information to farmers, share experiences with farmers.
 - Link farmers with researchers to conduct experiments.
 - Carry out extended extension activities such as organizing farmer to farmer experience exchange, developing extension materials based on experiments results and disseminating experiments results.
- **Responsibilities of researchers:** Researchers have responsibilities to implement research and technology development in reality, through PTD, instead of holding all power in research, they have to:
 - Study local knowledge, analyze issues of farmers in order together with them identify prioritized experiments

- Participate in PTD process together with farmers and extensionists, provide technology information, scientific knowledge to support the implementation of farmers
- Support farmers in monitoring and documentation to evaluate results of experiments.

PTD bring benefit to different involved stakeholders because it is a process of experimenting and experience sharing. Basically, participation is motivated by benefit each actor get in PTD process. 3 main actors are also 3 main beneficiaries. Of course direct benefit is for farmers, villages because objectives of PTD is to develop new technologies for villages to improve livelihood and sustainably manage natural resources. It is recognized the benefit - direct or indirect - of each actor in PTD as follows:

- **Benefits of farmers and villages**

- Get an opportunity to solve their problem or try out their new idea, that they themselves could not do without the support of the researchers and extensionists.
- Improve experimenting and technology development capacity.
- Learn and share production experience with outside actors and other farmers
- Better access to extension programs, services and information about technologies, markets, prices etc.

- **Extensionists:**

- Learn new extension tools and methods which satisfy farmers' needs.
- Improve their capacity through closely monitoring of experiments, a learning by doing process
- Better access to scientific and local knowledge
- Get supported by the farmers and better spread out the results through "farmer-to-farmer" process

- **Researchers and teachers:**

- Learn local knowledge through working with the farmers and extensionists in PTD process.
- Implement research that suit farmers' conditions.
- Improve research methods and facilitate field based learning. Improve knowledge and skills in participatory research approaches.

In addition, the information on PTD process also helps policy makers to have a new way of looking at technology development issues in rural agriculture and forestry to amend policies and make decisions for appropriate AF extension.

3 Principles in PTD application

In order for PTD becoming an effective tool for participatory research and extension, following principles must be applied:

- All actors are equally regarded. The researchers, extensionists and farmers are all involved in the process of finding out 'new things' to create an effective common learning environment.

- PTD experiment topic should be at reach of the households who can decide and control it, or the experiment topic should be at community/village level such as development of community forest management practices or village management innovations. PTD will not deal with issues that are beyond the control of the local community.

Ueli Scheuermeier & Elisabeth Katz (2000) used an egg as the metaphor for identification of PTD spheres and topics. Chart 4 presents this point of view

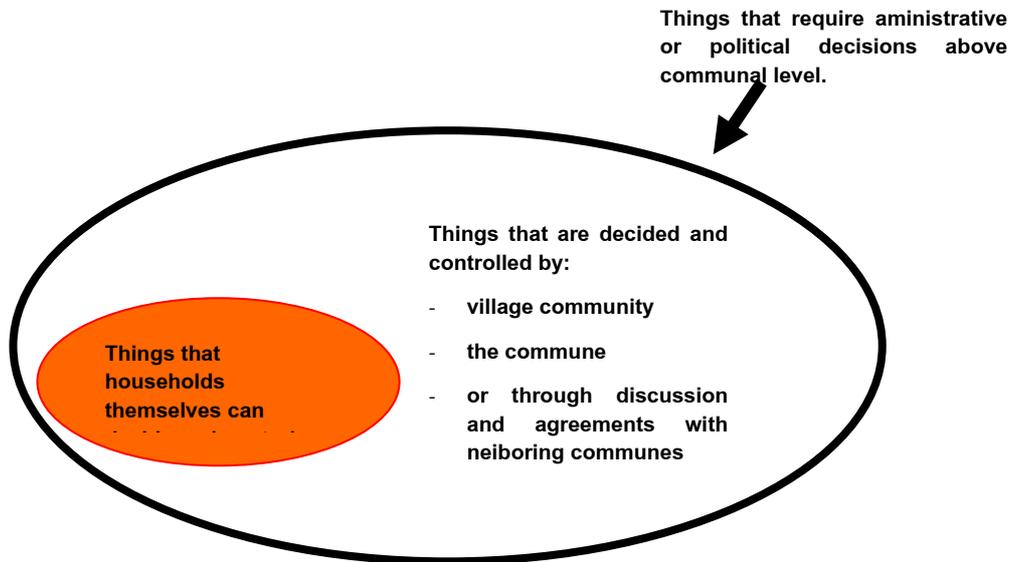


Chart 4: an egg - the metaphor of PTD sphere

- The yolk stands for all things that the individual households can decide and control. PTD concentrates on such things.
- The white part stands for things at community and communal level that cannot be decided by individual households on its own. PTD can also deal with these things. They are community experiments such as development of ways to manage community forests or improvement of village management.
- The egg shell stands for the legal and administrative framework, which allow villagers to decide and act on their own. Beyond the shell are the things which is beyond the control of the community. PTD does not deal with these things.

Box 1: What is a new idea?

- New in technical aspect: the idea is about technologies which have not been applied or heard.
- New in organisation: the idea is about a significant change in production management or resources management. For example: idea to manage forests based on forest user groups.
- New in applying conditions: It is possible that this type of experiment has been applied somewhere else but not in local area. However local conditions must be different with conditions of the areas where the things have been applied. If the conditions of the local area are similar it is not needed to conduct experiment but technology transferring. The information on this aspect need to be clarified and provided by researchers and extensionists.

- In PTD, only new ideas are experimented (the idea that has never been tested in the local including technical novelty and new way of organization, or new applying conditions).
- New ideas must come from needs and capacity/resources of local people to ensure the participation of interested people and the suitability of the technologies in local ecological and socio-economic conditions.
- Selected ideas which are going to be experimented must have potentials to be disseminated so that many other farmers can benefit from.
- PTD is a learning and research process of villages and other stakeholders, therefore information on experiment process and results, experiences gained and related data need to be monitored and recorded for evaluation of experiments results and impacts. Lessons learnt should be collected to be shared with related stakeholders and o farmers through extension system.

4 PTD process

Based on PTD development within SFSP in areas with different conditions of agro-ecology and human-ecology of Vietnam, phases and steps have been identified by participants/working partners. There are clearly distinguished steps in the PTD process so that the stakeholders recognize all issues to be fully discussed and implemented as well as the objectives to be achieved. There are 5 main phases and 1 preparation phase to be implemented in order. The 14 steps will instruct implementers to conduct PTD process completely. The main phases and steps are presented in the chart 4.

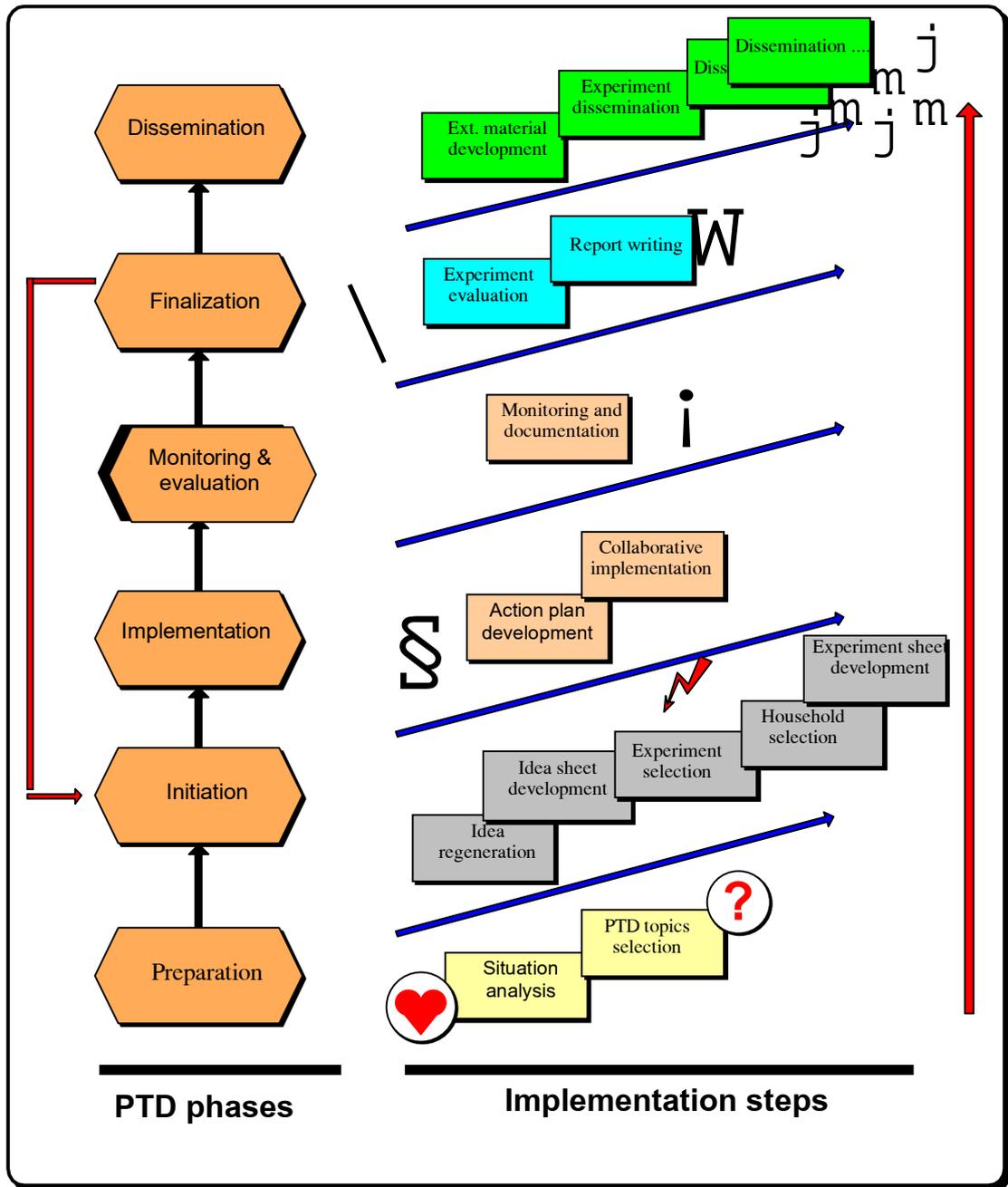


Chart 4: PTD process

1. *Preparation phase:* The PTD group (including researchers/teachers, extensionists and key farmers) collects primary information and analyzes issues and opportunities in villages, especially selects topics they are interested in, from where the topics of PTD are identified. This stage includes 2 steps: 1) situation analysis and 2) selection of the PTD topic. At the same time, they also prepare the organizational aspect, make the agreement with the local authority, clarify reasons, purposes, meanings, benefits and responsibilities of local people, make a plan to involve the local farmers in PTD initiation.
2. *Initiation phase:* This is an important phase of the process, new ideas are discovered, appraised and selected for experimentation. The PTD group in collaboration with other

farmer groups design new selected experiments. Farmer interest groups are formed and start designing their expected experiments. There are 5 steps in this stage: 1) Generation of new ideas, 2) Clarification of ideas through idea sheets, 3) selecting prioritized ideas for experiments; 4) Selecting households to conduct the experiments; and 5) designing the experiments with specific reasons, indicators and technologies in experiment sheets.

3. *Implementation phase*: The stakeholders develop action plans, visiting schedules and collaboratively implement the experiment. The farmers are implementers; the extensionists are facilitators and supporters; the researchers provide consultancy during the experimentation process. This stage includes 2 steps: 1) planning and 2) collaborative implementation.
4. *Monitoring and documentation phase*: In term of time, this stage is implemented in the same time with the implementation stage but because of its importance it is mentioned as a separated component. In this stage, all stakeholders involve in monitoring and documentation of all emerged issues and lessons learnt. The indicators identified in the experiment sheets are recorded in the experiment diary by farmers with support of the extensionists and researchers. Comments of outsiders and other farmers will be fully recorded in the diary. Documents, regular reports are produced by the extensionists and provided to related management staff and other interested people in and outside the village. One key step in this stage is participatory monitoring and documentation of the process.
5. *Finalization phase*: This stage occurs in a short time, it is actually an event rather than a stage, but it plays an important role in synthesising experiences. The objective of this phase is to evaluate and identify whether the experiment is successful or not? The evaluation in the field is conducted, the farmers who conduct the experiment prepare and explain to other stakeholders and farmers their experiences and results. Synthesis of the data and evaluation results will help to write a final completed report. This report is written by the extensionists and researchers. This stage includes 2 steps: 1) organization of participatory evaluation in the field, and 2) documentation, report writing.
6. *Dissemination phase*: Experiences and innovations should be disseminated. Tools, extension materials are applied. "Farmers to farmers" extension is useful for dissemination and experience sharing with other farmers and villages. This stage includes 2 main steps: 1) develop extension materials and 2) organize different ways to spread out the experiment results.

4.1 Preparation phase

4.1.1 Collection of information and situation analysis - creating relationship

Table 2: Summary of the step 1: situation analysis

Objectives	Implementation process	Methods and tools	Duration	Participants
<p>Stakeholders have common understanding on village conditions</p> <p>Identify opportunities and problems</p> <p>Agree with village on implementing PTD, clarify benefits, responsibilities of stakeholders.</p> <p>The researchers and extensionists create reliable relationship with authority and farmers.</p>	<p>Organize rural assessment</p> <p>Select village to involve in PTD</p>	<p>RRA, PRA</p> <p>PLA, SWOT, 5 Why, problems tree</p> <p>Meeting and discussing with farmers and local authority</p> <p>Based on criteria</p>	<p>3 – 5 days</p>	<p>Key farmers</p> <p>Extensionists</p> <p>Researchers</p> <p>Other stakeholders</p>

Objectives

This is the preparation step for PTD, the objectives are:

- Stakeholders have common understanding on village such as economic, social, cultural, nature conditions
- Identify opportunities and problems in village
- Agree with village on implementing PTD, clarify benefits, responsibilities of the stakeholders.
- The researchers and extensionists create reliable relationship with local authorities and farmers.

Implementation steps and the way to do

1. **Organize rural assessment:** This is the first preparing step, the researchers and extensionists organize this activity. The extensionists who understand village condition will play an important role in providing information and propose the assessment of local.

The way to do:

- Collect primary data, visit and discuss with commune and village leaders to have general information and to understand each other.
- Select appropriate RRA or PRA tools to collect and analyze information. By doing this, issues, opportunities and potentials of the communities related to production management and improvement are identified.
- Discuss with and ask the farmers to identify and select priorities.

- Analysis tools such as SWOT, 5 Whys, problem tree are applied by the researchers and extensionists to analyze issues with communities. This results in finding out reasons/causes of problems and drawing prioritized solutions.

2. Select a village for PTD implementation and create the relationship:

This activity is done to identify the village for PTD implementation, in which researchers and extensionists agree with the local people on responsibilities, benefits, and what will be supported and will not be supported when they involve in PTD. A reliable relationship should be created with villages, and farmers’ expectation on “non refundable” aid should not be created. It is important to harmonize interests in the process and to create an initial cooperation environment.

The way to do:

- Meet local authorities and farmer representatives to clarify PTD objectives
- Discuss with the villages to confirm their participation and select a village for PTD if fulfilling the following criteria:
 - + Farmers and local authorities are willing to involve in PTD process under the explained conditions (benefits, responsibilities of the authorities and farmers; what will be supported from outsiders, what not).
 - + Farmers have land ownerships.
 - + The village is the representative of conditions on agriculture, forestry ecology, ethnic, economics, culture, society in the area, so that the experiment can be disseminated easily.

4.1.2 : Selection of PTD topics and preparation for PTD initiation

Table 3: Summary of the step 2: Selection of PTD topics- preparation of PTD initiation

Objectives	Implementing process	Methods/ tools	Duration	Participants
General information of PTD is provided to villagers. The participation of villagers is agreed upon. The PTD topics and scope are agreed upon. The program for PTD initiation in villages is agreed. Core farmers involved in PTD initiation are identified (sex, ethnic groups, wealth groups, ages).	Introduce PTD to farmers. Clarify stakeholders’ responsibilities, benefits Agree PTD topics Make the PTD initiation plan Select farmers for initiation .	Village meeting 1	1/2 day	All villagers Commune and village leaders Extensionists Researchers Other stakeholders

Objectives

This step to achieve the following main objectives:

- Concepts, common PTD principles and scope of PTD are presented and discussed in front of the whole village. Villagers understand the process, including their benefits and responsibilities.
- PTD topics are agreed harmonizing interests of different stakeholders and the village.
- A common program is agreed upon to work in the village for PTD initiation.
- Core farmers to participate in PTD initiation are selected by villagers.

Implementation process and the way to do

The extensionists and researchers co-organize the first village meeting. Participants include representatives of households in the village. It is recommended to encourage women to participate right from the first meeting; commune and village leaders, village patriarch; representatives of agriculture, forestry and cadastral functioning groups of the commune, local agriculture and forestry organizations; district extensionists and the research group. Followings are contents of the meeting:

1. **Introduction of PTD to create a common understanding**, clarify roles, responsibilities, and benefits of researchers, extensionists, the village, and households in PTD.

The way to do: The extensionists and researchers introduce concepts, general principles of PTD, clearly inform the farmers about their responsibilities and benefits in PTD

2. **Agree upon PTD topics:** The expected result of this activity is that a clear PTD topic is agreed by the village, farmers, researchers and extensionists.

The way to do: all stakeholders discuss and agree on the PTD topic. The topic is identified based on the situation analysis and harmonization of different interests of the program/project and the farmers.

Box 2: An example of a PTD topic

In village 6, Dak R'Tih commune, Daklak province, natural forests have been allocated to M'N«ng community. The issue here is how to manage and use the forests effectively to generate income from the forests. The topic of PTD in this village was:

How to manage and use the allocated forests and forest land to improve livelihood of villagers in village 6

3. **Make a program** for following days of the initiation. The program needs to be prepared in details including activities/methods and tools used/ tasks for different groups/number of households involving in each step/ expected results/responsible people/venue/ time.

The way to do: The facilitation group (the extensionists, researchers) discuss and make a plan with the farmers using a planning matrix on flip chart. The facilitators propose the process,

activities, tools, expected results, duration and responsible people, and the farmers propose the households, venue etc.

4. **Select core farmers to participate in the initiation phase:** The core farmers to involve in the PTD initiation are selected. There should be 3-5 core farmers in one group to work in the field.

The way to do: proposed criteria should be discussed and selected by the village, the proposed criteria as follows:

- Interested in innovative production and improvements.
- Representatives of main ethnic groups in the village.
- Balance the ratio of sexes, ages and wealth groups.



Picture: The first village meeting to make agreement on PTD initiation plan

4.2 PTD initiation

4.2.1 Idea generation

Table 4: Summary of the step 3: idea generation

Objectives	Implementation process	Methods Tools	Duration	Involved persons
Discover new ideas of villages within the PTD topic.	Set up PTD group including 3 stakeholders Find out new idea in the field	Transect tour to have informal discussion with different farmer groups Merry - go - round Conduct a survey on innovations Use PRA and other facilitation tools.	1-2 days	Core farmers Farmers who are working in the field. Extensionists Researchers

Objectives

This is the first and important step of PTD initiation stage with the objectives of finding out new ideas of the farmers and stakeholders. The new ideas must meet the following criteria:

- be innovations of technology or management or new in application conditions and generated in the field.
- based on farmers' needs.
- relevant to the PTD topics

Implementation process and the way to do

In order to find out new ideas, it's needed to establish PTD groups and give assignment to each group that includes 3 actors of extensionists, researchers and farmers.

Finding out new ideas in the field: In this activity, new ideas that are generated by farmers, researchers or extensionists would be found out. But it is recommended that researchers, extensionists need to discuss, listen and facilitate farmers and give out their ideas when necessary and these ideas later on should be considered and selected by farmers under their needs.

The way to do: There are many tools to facilitate discussion and idea generation

- Transect: PTD groups will take a transect tour through different kinds of land and forest use of the villages. It is not necessary to draw a complete transect. In each place, the actors have opportunities to observe and discuss directly in the field. Questions, opportunities, obstacles of farmers will be found out, and new idea for improving production and cultivation then could be generated.
- In addition, PTD groups can use other tools such as land use mapping, development of the chart of land use changes in accordance to timeline, matrix of crop selection... In fact, it is very difficult to ask farmers for ideas through interviews. Use of visual tools of PRA is very useful for discussion with farmers. By using these tools stakeholders clearly identify problems and reasons/causes leading to ideas of changes or improvement. In terms of organizational and management issues especially on natural resources management, tools like VENN diagram, **matrix of traditional organizations** ... can be used to generate ideas for improvements/innovations.
- Merry – go – round: it is very useful for finding out new ideas which are interested by many stakeholders. After making a field survey, PTD group (including 3-5 core farmers, researchers and extensionists) sit around, and brainstorming method should be used, color cards will be used to take note the ideas, as follows:
 - + Group leader will make a brainstorming question related to PTD topic
 - + The leader write his/her name on the top of card, then write 1-3 ideas on it.
 - + He/she then gives the card to the person on his left hand who will fill ideas on it. The card will go round until it comes back to the leader.
 - + The leader reads all ideas on the card, and mark “X” on the ideas that he think to be best

+ Then the card should be given to the person in the left who will read and mark “X” on the ideas that he think to be best (regardless whether the ideas was marked bu others or not). Continue until the card comes back to the leader.

+ The leader will rewrite the ideas that selected by most of the people (with highest number of marks) then inform everybody.

4.2.2 Idea sheet development

Table 5: Summary of the step 4: Idea sheet development

Objectives	Implementation process	Methods Tools	Duration	Involved persons
Ideas are considered carefully. Development of idea sheet with farmers	Clarify all ideas Develop idea sheet	Discuss with farmer groups. Use of idea sheet tool on Ao papers	1 day	Core farmers Extensionists Researchers

Objectives

- Clarify all ideas that was found out in the previous step.
- Develop idea sheets

Implementation process and the way to do

After finding out ideas, the groups continue to clarify ideas, and develop idea sheet.

1. Clarify idea: PTD groups continue to clarify ideas. Ideas must be clear, specific, ideas must be new and relevant to topic.

The way to do: Discussion within PTD groups so that researchers and extensionists could provide more related information. Each idea is analyzed to see if it is new as the mentioned criteria, what the benefit it would bring, challenges and possible risks... Finally, the topic of ideas is written completely, specifically, clearly, easily to understand to all stakeholders.

2. Develop idea sheet: idea sheet is a tool which clarifies proposed ideas. There are 2 questions in the idea sheet that need to be answered: 1) objectives of trying out, what are new things we want to find out? and 2) reasons why?.

The way to do: idea sheet is used (see improved form of idea sheet in Annex 1). Researchers and extensionists facilitate farmers to develop idea sheet, questions in idea sheet are made for farmers. These questions should be explained in different ways to make farmers understand exactly and answer completely. The farmers brainstorm and discuss together to give out answers, stakeholders select complete, clear, exact answers to write on the idea sheet.

An idea sheet is considered good when it explains:

- What to be discovered if it is experimented
- The reasons for experimenting are clear and suitable with farmers’ need and local conditions.

The form of idea sheet is presented in the annex 1.



Picture: A PTD group is discussing on new ideas in the field

Box:3

Idea sheet

Topic: Plantation of Tre mo in Lo o degraded forests along streams.

What do we want to find out ?

- How to manage and to do business on this type of forest.
- Whether Tre mì species can grow in Lo O forests?

Why do we want to find out these?

- Soil and water conservation along streams.
- Creation of work/jobs for villagers.
- Make use of land in LO O degraded forests to grow bamboo for shoots.

Persons involved in developing the idea:

Group 3 : Lê Thị Lý, Nguyễn Đức Định, Nguyễn Trọng Tường, Kiều Quý Diệm, Điểu Kâu, Đ. Nơi, Điểu NSêh, Điểu Nhót, Thị Khem.

Date and place:

13/3/2001 – Thôn 6, xã Đăk R'tih, Đăk R'lấp, Đăk Lăk

4.2.3

4.2.4 Experiment selection

Table 6: Summary of the step 5: Selection of experiments from ideas

Objectives Expected results	Implementati on process	Methods Tools	Duration	Involved persons
Ideas presented to all villagers are screened carefully. Ideas for experimenting are selected by the whole village	Screening idea sheet Select idea to be experimented	Group discussion with core farmers Second village meeting: + presentation + Multi-voting	1 day	All villagers Extensionists Researchers Commune and village leaders

Objectives

In this step the following specific objectives need to be achieved:

- All idea sheets developed from PTD groups are screened and finalized
- Ideas are clearly presented to all villagers.
- Important ideas are selected by the village to be experimented.

Implementation process and the way to do

- 1. Screening idea sheets:** This activity is organized when all idea sheets have been developed by PTD groups. The idea sheets are carefully re- considered based on the criteria of a good idea sheet which is useful and appropriate with the PTD topic. As the result, good idea sheets are selected to present to all villagers.

The way to do:

Before organizing the village meeting to present idea sheets and select experiments, researchers and extensionists make a final discussion with core farmers to screen idea sheets. Collect all idea sheets and carefully consider the ideas to reject overlapped ideas and combine similar ones.

Below are basic criteria used to select good idea sheets to present to the village:

- Ideas must be related to agreed PTD topic
 - Ideas must have potentials for dissemination later and useful for many farmers instead of benefiting only few farmers.
- 2. Select idea to be experimented:** a village meeting 2 should be co-organized by village leaders and extensionists. Objective of this meeting is to discuss, select potential ideas that will be developed into experiments.

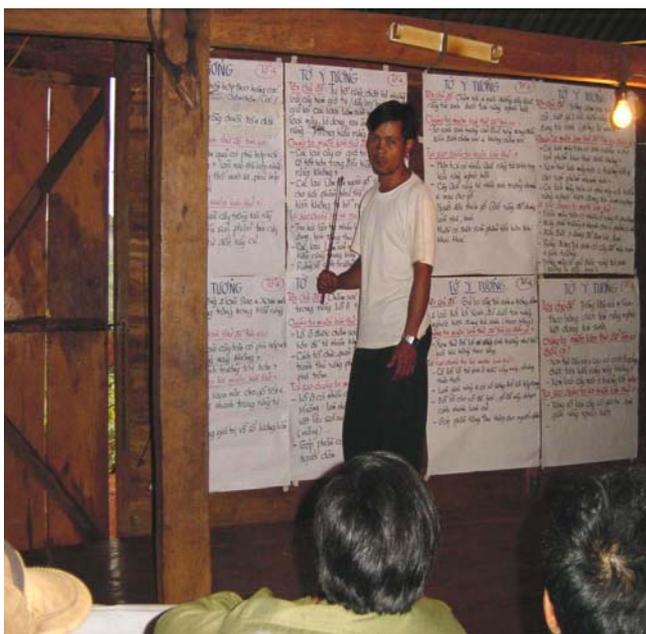
The way to do:

- Present idea sheets to the village: In the meeting, core farmers of each group present idea sheets developed by their group (on flipchart). Extensionists facilitate farmers to discuss and clarify idea sheets.

- Multi - voting: this method is used to facilitate whole village to select ideas to be experimented. The process should be done as follows:
 - + Write down on Ao papers all the names of ideas and summary of what need to be found out (see the example in the below box).
 - + Each household is allowed to select 1/2 of the total ideas by ticking on boxes in accordance to the ideas. If it is necessary to find out gender based interests, men and women should use different colors to mark.
 - + The number of ticks will show the priorities given by the villages (see the selection result in the example of below box)

Note:

Before selecting, it is compulsory to discuss on potentials, practical value and possible risk of each idea. Villagers and researchers, extensionists can exchange their views. For selecting it is recommended not to start with prestige people, village patriarch or village leaders to avoid personal impacts of these people on others resulting in incorrect selection which does not well represent the need of different groups especially the disadvantaged groups. Researchers and extensionists can also vote. However they should vote after the people of the village.



Picture 6: Core farmers present idea sheet

Box 7: Example of a idea summary table for selecting experiments to do first

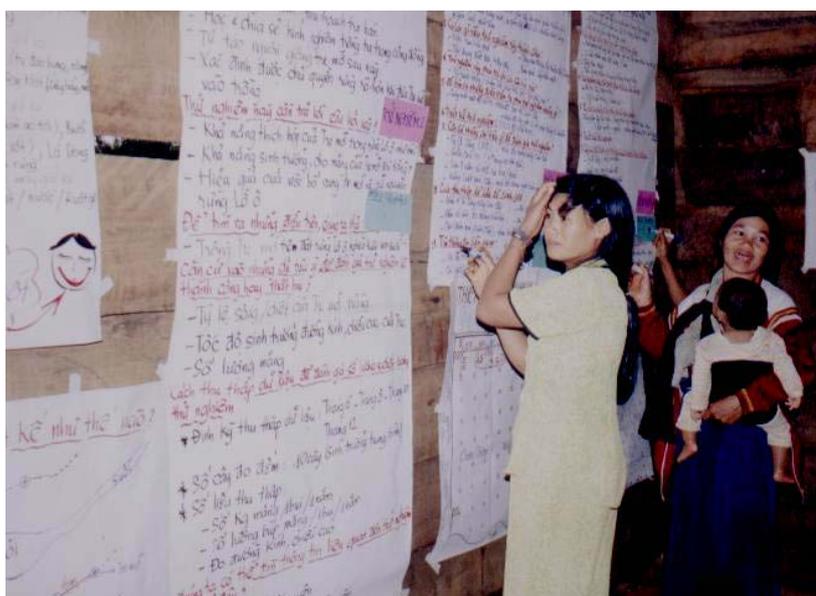
No	Topics	What do we want to find out?	Votes	Total	Priority ranking
1	Plantation of Sao, Dau rai intergrated with agri. crops in bared infertiled gardens which are distant from water resource.	Plantation trial of Sao, Dau on bared land .	++++	4	6
2	Pruning, cutting off creepers, thinning and rearing poor forest.	Compare growth rate of forest with thinning and pruning treatment and with those without interference.	+++++ +	6	4

No	Topics	What do we want to find out?	Votes	Total	Priority ranking
3	Growing bamboo (tre mo) on the bambosa balcoa forest area where has been exhaustedly exploited.	The suitability and improvement of effective forest utilization.	+++++ +++++ +	11	2
4	Growing Edibal canna under old forest canopy, low density	Planting and tending techniques.	+++++ ++	7	3
5	Growing Spondias pinnata Krez (new variety) in old forestland and poor holly field.	Planting techniques and yield.	+++++	5	5
6	Growing mixed fruit trees (rabutan, longan) on sloping hill surrounding by banana.	Suitability and density.	+++++ +++++ +++	13	1

(Source: PTD in Village 6, Dak RTih, Daklak)

In selection, if the number of households participating in the meeting are few, farmers can write their names on the cards and stick it on the idea card that they are interested. By doing this, not only priorities are defined but interest groups are also identified.

This can be a basis for selection of households for experiments.



Picture 7: Women are involved in selecting ideas to be experimented

4.2.5 Selection of households

Table 8: Summary of Step 6: Select households for experiments

Objectives	Implementation process	Methods Tools	Duration	Participants
Develop criteria for selecting households involving Households are selected under the criteria	Agree criteria for selecting households Village votes household involving experiment	Brainstorming to develop criteria for selecting households Discussing in the meeting	1/2 day	Whole village Extensionists Researchers

Objectives

This step is need to achieve:

- Criteria for households selection are developed
- Experimenting households are selected based on the criteria

Procedure and the way to do

In the second village meeting, after selecting ideas, extensionists continue to facilitate farmers to select households to do experiments.

1. Agree on criteria for selecting households: after identify ideas to be experimented, it's necessary to propose households for each experiment. In order to do this well, criteria for selecting households should be agreed by villagers firstly.

The way to do:

Extensionists facilitate the meeting, brainstorming can be used to propose criteria for selecting households. The criteria must be defined by the villages. Suggested criteria are:

- Households are interested and willing to participate and have a sense of responsibility. The households are active and motivated in finding out new things.
- Households agree and implement accordingly to commitment

Other criteria can be developed in the village meeting. In addition, it is possible that each experiment wouls have its own specific criteria.

2. Select households to do experiments:

Based on criteria, the village will select households participating in each experiment. In principle, any household in the village who meet conditions and willing to do can conduct experiments. However, in some cases, the village need to consider and select households in order to have a relevant number of households involved experiment as well as the households meet all criteria.

The way to do:

Extensionists facilitate the second village meeting to select households:

- Help households to register to participate in each experiment. This can be done by asking households to write their name on the card and paste it on the idea sheet that they would like to involve in the experiment later. The result of idea selection of households in the previous step (if done by writing household's name on cards and stick on the idea sheet they are interested in) can be used for this purpose.
- Then, balance the number of households involved in each experiment so that is not too big to ensure the ability of implementing and monitoring later or not too small to have exact statistically data.

If the number of households is so big, it is necessary to recommend these households about “experimental aspect” of PTD. When the result of the experiment is not confirmed to spread out, some households involved in each experiment are enough.

Secondly, we need to take statistical aspect into consideration. As it is an experimenting process, each involved household will be counted as a replication, and the number of replication is at least 2, as result an experiment should not have only one household involving.

- After that, facilitate households to discuss and go through the list of households who registered in experiment under the criteria to agree the list of households in each experiment.

Box 5: some remarks on a case of household selection for experiments.

After PTD initiation in Da Nhar village (Lam Dong), the researchers of the Forestry Faculty of the Ho Chi Minh Agriculture and Forestry University, extensionists and farmers had identified 9 ideas. The community after that selected 3 ideas to be developed into experiment sheets. The experiment sheets were written on large size papers. In the meeting in the afternoon of the same day, representatives of each group presented their experiments. Everyone agreed to carry out 3 experiments in the local. However, in order for the households to have equal opportunities to participate in the experiments, the facilitators had discussed with Technical Advisor and reached the consensus that each household could only select one experiment. Every household had the right to select their experiment. The selection results showed 39 households had been interested in home garden group, 5 households interested in hilly group and 5 other households in natural forest management group. The results reminded the researchers about the real needs. In this case, the selection of farmers was governed by their expectations on the support of the Project. On the strategical side, the farmers in the area still depended very much on natural forest and hilly cultivation, but they had put low interests in these issues because there was a lack of clear policies for support. On the other hand, the process also requires longer dialogical time to make farmers understand that the experiments aim to find out appropriate technologies and later disseminate them but not supporting materials for each experiment. Thus, for each experiment, there should be a reasonable number of households in one experiment in order to manage well. As a result of the dialogue, the garden group had to screen to select 10 households to conduct this experiment..

(PTD initiation report, Da Nhar (Lam Dong))

4.2.6 Formulation of experiment sheet

Table 8: Summary of Step 7: Formulation of experiment sheets

Objectives	Implementation process	Methods Tools	Duration	Involved persons
Experiments are designed based on local knowledge and scientific knowledge. The complete experiment sheets with criteria and indicators	Develop experiment sheets Get ideas from the village or other farmers	Tool: the Experiment Sheet Present and discuss with farmer groups and core farmers to get comments	Half a day	Interest groups Extensionists Researchers

Objectives

Objectives need to be achieved as follows:

- Experiment sheets are developed with interest groups who will conduct the experiments and based on local knowledge and scientific knowledge.
- The complete experiment sheets are available with criteria and measurable indicators.

Procedure and the way to do

1. Development of the experiment sheets: The experiment sheets are developed with clear indicators/criteria, the requirement of the new technology and clear design. The experiment is designed with the participation of the researchers, extensionists and selected households. The researchers facilitate this process.

The way to do:

Use the experiment sheet tool: The experiment should be designed in the field. The experiment sheet tool is used to facilitate the farmers to design the experiment on A0 paper in the own land (see the form of Experiment Sheet in annex 2). During the designing process, we need to walk to the experiment site so that the design on the paper matches the experiment site.

The experiment sheets must meet the below requirements:

- Goal, objectives, reasons of each experiment are clarified
- Experiments are designed in details, experiment treatments are identified
- Qualitative and quantitative criteria/indicators for monitoring and evaluation are defined by the farmers and stakeholders.
- Identify where to collect more information related to the experiment to support the experimentation process

2. Ask for comments of the village and other farmers: to get more ideas of other core farmers or village to complete the experiment sheets.

Way to do: After the experiment sheets are developed, the farmers who designed the experiment sheets present them in the meeting or with other farmers to get their comments and finalize them.

The experiment sheet should be kept in each household who conducts the experiment so that the researchers and extensionists and farmers can follow up the implementation progress and support the monitoring and evaluation process.

An experience:

In Mr Bui Van Quynh household in Bui village, Lac Son (Hoa Binh), design of the experiment in the field was conducted by the husband, while implementation of the experiment was carried out by the wife. As the wife did not know the experiment design, she planted trees at wrong positions. Therefore, the extensionists and researchers need to encourage farmers to share information about the experiment with their household members

Box 7: Example: EXPERIMENT SHEET

Topic: Cinnamon plantation on degraded land (fallow 2-3 years).

What exactly do we want to find out?

- Whether the cinnamons can survive on this type of land.
- To compare the cinnamons planted in this type of land with the one planted in the coffee gardens on Village 2 and the cinnamons planted in degraded forests of Quang Tan forest enterprise.
- To find out appropriate techniques for plantation and tending of the cinnamons on the 2-3 years fallow land.

Why do we want to make this experiment?

- Compare economic efficiency of cinnamon plantation with other experiments implemented in the village.
- Use the fallow land effectively.
- Use regenerated grasses to cover and protect the cinnamons when young.
- Plant the cinnamons on a larger scale in the village if the experiment is successful.

How will this experiment be designed?

- Hole size 40 x 40 x 40cm
- Grid 6 x 3 m.
- The 5 m hedgerow is left-over for shade coverage.
- Clearance of 1 m wide to plant cinnamons. The regenerated woody trees are left-over for shade coverage when the cinnamons are young.
- Seedlings at time of plantation need to be 20 months old, 30 - 35cm height, with shoots and disease free.
- 55 cinnamons are planted in 1 experiment plot.
- The area of one experiment plot is around 1000 m²

What do we need to know to be able to tell whether the experiment is successful?

- The survival rate is 70% after 1 year.
- The cinnamons reach an average height of 50 cm, well growth and disease free.
- Quality of cinnamon bark is 90% compared with the Tra Mi origin.

What will we measure (quantitative data)? What will we discuss and judge (qualitative data)?

- *Quantity:*
 - Number of trees survive/dead; height to top; clump diameter; height to branch
- *Qualitative indicators:*
 - Quality compared with the origin.
 - Growth ability, the ability of cinnamons to grow in the young regenerated forests following crop plantation.
 - The ability to restore young forests, fallow land by planting the cinnamons in row
 - Economic efficiency of cinnamon plantation

- The farmers involving in experiments
- The researchers, extensionists
- Representatives of local authority, related departments such as: agriculture department, DARD, forestry enterprises, forest protectors etc.
- Other research institutions related to the experiments

The contents of the meeting should be as follows:

- The PTD group presents the initiation results
- The stakeholders discuss and share their experiences

The stakeholders make commitments to support the process (See commitment of stakeholders in Annex 3).

4.3 Experiment implementation

Here the stakeholders come to the implementation stage of the experiment. First of all, an action plan is made with the participation of the farmers to implement and monitor the experiment. Researchers and extensionists need to be present at the start of the experiment. This is very important to help the farmers implement the experiment accordingly to the design. Some adjustments in the experiment sheet might be needed to make it suitable with field reality.

4.3.1 Development of the action plan

It is very important to make an action plan as it helps farmers, researchers and extensionists to estimate the amount of work they need to carry out, and helps to arrange activities timely, orderly as well as to assign specific responsibilities for each actor. The feasibility, quality and progress of the experiment's follow-up activities are depended on the action plan.

Table 9: Summary of Step 8: Action plan

Objectives	Procedure	Methods Tools	Duration	Involved persons
<p>A specific action plan is developed for each experiment, that is suitable with local, experimenting household and involved stakeholder conditions.</p> <p>The action plan clearly defines responsibilities of each actor, time, necessary inputs, and contributions of farmers.</p>	<p>Plan with the participation of 3 actors</p> <p>Inform the action plan to other relevant stakeholders</p>	<p>Facilitate the interest group to develop the action plan.</p> <p>Tool: Planning Matrix</p>	1 day	<p>Interest groups</p> <p>Extensionists</p> <p>Researchers</p>

Objectives

A detailed action plan (activity, time, responsibility and necessary inputs) is developed with the consensus of all actors to help farmers, researchers and extensionists arrange their suitable time and resources for implementation of the experiment.

Procedure and the way to do

In this step, the action plan should be agreed upon. The extensionist is the organizer and facilitator of this planning meeting, together with the participation of researchers and farmers involved in the experiment.

The way to do: A planning table, which is a simple matrix, is used to help farmers to easily make the plan suitable with their season and resources.

Before planning process, the households should review their own available land, forest and resources, and an intended area for the experiment. Then, the matrix planning tool is used to make the action plan with following procedure:

- List out all necessary activities
- Arrange the activities in chronological order
- Identify who will be responsible, and who will monitor, who will support each step of the plan
- Define resources needed for each step

The action plan should be made annually for the long term experiment, while the experiment lasts for less than one year, the plan is developed for the whole process (See the planning format in table 10)

Note that: if only men attend the “planning meeting”, not all activities will be listed out, or women will not have information related to the experiment, thus it will be difficult for implementation as many activities will be conducted by the women.

Beside the three above-mentioned actors who involve in the planning, other relevant stakeholders such as village, commune and district authorities, district and province extension centers, and other interested people should also be informed about the action plan. This should be the task of the extensionists.

Table 10: A suggested format of PTD annual action plan

Activities	Months												Tools, materials	Responsible people Monitoring people	
	1	2	3	4	5	6	7	8	9	10	11	12			
1.															
2.															
3.															
4.															
5.															

4.3.2 Collaborative implementation and supporting farmers conducting their experiment

While the farmers are implementing their experiment, the researchers and extensionists need to have their plan to support them. Necessary support includes: 1) Technical support during experimentation 2) Promoting information and experience sharing among the farmers. In order to do this, the researchers and extensionists need to make a schedule of the visits.

Table 11: Summary of Step 9: Collaboration and supporting farmers to implement their experiment

Objectives	Procedure	Methods Tools	Duration	Participants
<p>The researchers and extensionists help the farmers to implement the experiment following the designed plan.</p> <p>The farmers receive necessary support from the researchers and extensionists to implement the experiment</p>	<p>Make the schedule for visits.</p> <p>Together implement the experiment and work in the field</p>	<p>Make the schedule for visits of researchers and extensionists with the participation of farmers.</p> <p>Use experiment sheet to implement the experiment</p>	<p>Number of visits and duration according to the action plan</p>	<p>Households</p> <p>Extensionists</p> <p>Researchers</p>

Objectives

- Researchers and extensionists help farmers to implement the experiment following the designed plan.
- Farmers get necessary support for the experiment implementation.

Procedure and the way to do

1. **Make the schedule for visits:** Extensionists, researchers and farmers agree on the visiting schedule.

The way to do: Make the schedule for visits with the participation of 3 actors by monthly or quarterly.

2. **Work in the field:** Right at the beginning of the experiment, researchers, extensionists should be present on the field site to support farmers implementing the experiment. After that the 3 actors carry out their tasks according to the agreed plan.

The way to do: Researchers, extensionists help farmers using the experiment sheet to implement the experiment. The experiment sheet sometimes might need to be adjusted to accord with the specific conditions of farmers and their resources. During the experiment implementation, researchers and extensionists provide farmers information and technical support, and share their experience with the farmers.

4.4 Monitoring and documentation of the experiment process

This phase is taken place during the experiment implementation. However, because it is important in PTD process, it is emphasized and mentioned as a separated stage. This



Pic. 8: Farmers are monitoring the experiment and recording data

phase consists of two important activities including monitoring of the experiment and documentation of the experience gained during the process.

Monitoring of the experiment is a regular activity. Additionally, for experiments dealing with perennial trees, 6-month and annual evaluations need to be carried out to find out problems and necessary improvements, and to develop plans for coming activities. This is also a good opportunity for interested people in different villages, insiders and outsiders have an opportunity to see the experiment' results on the field, and together discuss the experiences gained during the implementation process.

Table 12: Summary of the step 10: Monitoring, recording and documentation

Objectives	Procedure	Methods Tools	Duration	Involved persons
Participatory monitoring and evaluation is organized and carried out during the experiment process. Results and experiences are recorded, documented and provided to related organizations.	Organize participatory monitoring and evaluation Document experiment procedure/ process	Monitoring diary of farmers. Experience exchanging between farmers. Document the process in different types: reports, documents, farmer diaries, pictures, video tapes...	During experiment implementation	Farmers Researchers Extensionists Other farmers Other interested stakeholders

Objectives

- Participatory monitoring and evaluation is organized and implemented during the experiment process
- Results and experiences are recorded, documented and provided to related organizations.

Procedure and the way to do

• **Participatory monitoring of the experiment:**

1. Researchers, extensionists together with farmers monitor experiments as planned.

The way to do: The experiment diary of farmers is used. Extensionists facilitate farmers to design the monitoring diary with consultancy support of researchers. In this book, tables are designed, and data are recorded according to the criteria/indicators identified in the experiment sheet. (See example of an experiment diary in the Annex 4). Farmers use the diary to regularly record monitoring data, while researchers and extensionists use it to record down their comments. Besides, the diary is also used to record comments of other farmers and stakeholders during the monitoring and visits.

The diary comprises the following items:

- Name of the experiment, place, size of the experiment, households involved, group leader
- Idea sheet
- Experiment sheet, experiment design
- Annual activity plan

- Forms to record activities, materials farmers invested and materials subsidized by outsiders
- Tables to collect data and indicators include of: Qualitative and quantitative indicators (according to criteria identified in the experiment sheet)
- A section for comments of visitors and other farmers.

The extensionists may organize cross-visits between households in the group and attract the visit of other farmers. In these visits, comments and recommendations are recorded in the farmer diary.

Experience on the development of the experiment diary by NISF:

The fact shows that farmers often find recording difficult. To overcome this problem it is necessary to clarify monitoring indicators and measurement methods:

- The experiment group leader (farmer) presents indicators identified in the experiment sheet.
- The households discuss to get an agreement on these indicators, to which more indicators can be added if necessary.
- The group leader together with other households develop detailed monitoring forms.
- Extensionists facilitate the process, researchers provide consultancy on technical indicators if needed.

- **Documentation**

The results of each stage and the process need to be recorded and well documented to support the experiential learning of farmers and other stakeholders, and to make sure that the results and lessons learnt are not forgotten, and that new and promising findings are fully recorded during process which are to be used for evaluation by the end of the experiment.

The way to do: Depends on who are the target users to develop different types of document.

- PTD initiation report: This document should be written by researchers when ending the initiation stage. Contents of the report consist of the objectives, topics, methods and results of the initiation. The report should be sent out to farmers, village – commune - district leaders and extensionists to let them know about the new process that is initiating and monitor the experiment when it is implemented.
- Farmer diary: As mentioned above, with the facilitation of the extensionists and consultancy of the researchers, the farmers will develop their own monitoring diary basing on the experiment sheet. The farmers, extensionists and researchers will use this diary to monitor the experiment according to the agreed criteria. The diary records complete information about the process such as: inputs of the experiment, data of each stage. Therefore, the diary is very important in terms of monitoring the progress and final evaluation of the experiment.

- Progress report: This report should be written by the extensionists with consultancy support of the researchers. Based on the farmer diary, the extensionists write the progress report (6 month and annual). It presents results of each period, progress, arising issues and lessons learnt from the experiment. The report will firstly be used by the PTD group (researchers, extensionists, farmers) to monitor the process. However, it should also be sent to other stakeholders to monitor and support. These stakeholders include leaders at village, commune and district level, and other related organizations such as communal agricultural section, district extension station and provincial extension center.
- In addition, the results of each step of the experiment can be documented by pictures, video tapes, specimen. This should be done by the extensionists because the materials are useful for disseminating the experiment results later on.

4.5 Finalization of experiments

When the experiment's products are available, it is time to evaluate and terminate the experiment. At the time of developing the experiment sheet, we could already anticipate this and decide when the experiment would last. It takes long time for perennial trees or forest trees. In this case, if after 2 -3 years of implementation, the experiment shows stable and promising results, while households are capable and experienced enough to continue managing the experiment; the support from outsiders is not necessary any more; and a spontaneous dissemination is taken place in the village, at this moment in term of extension, it is considered the time to terminate the experiment. However, research activities need to be continued until final outputs are produced to have final conclusions on the experiment. The researchers need to collect information and data, use appropriate statistical tools to analyze and evaluate the experiments results with a scientific point of view.

4.5.1 Experiment evaluation

Table 14: Summary of the step 11: Experiment evaluation

Objectives	Procedure	Methods Tools	Duration	Involved persons
Experiments are evaluated with the participation of other relevant stakeholders and farmers Results are analyzed and consolidated to draw the experience.	Prepare for the evaluation by the farmers Evaluate at the experiment site	Data analysis Participatory evaluation at experiment site Using criteria in the experiment sheet to evaluate the experiment	1 day	Farmers in the village and in other villages Households involved in the experiment. Extensionists Researchers Other relevant stakeholders District, commune and village leaders

Objectives

At the finalization stage, the evaluation aims at the following specific objectives:

- The experiment is evaluated with the participation of other stakeholders and farmers in the field.
- The results are analyzed, and experience and lessons learnt are consolidated.

Procedure and the way to do

Farmers, researchers and extensionists together evaluate the experiment in the field. Suggested procedure:

1. **Farmers prepare:** Farmers involved in the experiment prepare documents such as idea sheet, experiment sheet, monitoring diary and a presentation on Ao paper.

The way to do: The researchers help the farmers analyzing the data related to yield, quality and efficiency based on the data in the diary. Then help them to present the process, experience and results on Ao paper.

2. **Organize the evaluation in the field:** This will be organized by the extensionists, including sending out invitations to other farmers in and outside the village, other relevant stakeholders such as AF management organizations, leaders of village – commune–district. The evaluation is carried out the field and facilitated by the extensionists.

The way to do: Organize filed discussions, observations and evaluations in the following procedure:

- The farmers who conducted the experiment present the process, experience and results.
- Then, the extensionists facilitate a plenary discussion. The discussion , questions and answers should focus on:
 - ? How was the experiment conducted? What knowledge and skills did the households grasp and learn from their experiment?
 - ? How were the roles of different actors in the process? Compare with the commitment made by all stakeholders at the beginning of the experiment, what needs to be improved to have a better PTD implementation in the future?
 - ? What are the experiment's results? Positive or negative? Successful or failure? Reasons?
 - ? Compare the actual results with the qualitative and quantitative indicators and criteria identified in the experiment sheet.
 - ? What could be next experiments?

The feedback, discussion results, comments of the stakeholders are recorded by the researchers, extensionists and farmers for writing the final report later on.

4.5.2 Writing report

Documentation is attached a special importance during the PTD process. The PTD initiation documents, idea sheet, experiment sheet, action plan, farmer diary, progress reports, periodic reports, photographs, specimen etc. should be kept and documented carefully so that they contribute to knowledge and technology development. Besides they also contribute to the development of extension materials, which are important for expanding the experiment results to a wider scale. Therefore, documentation needs to be done regularly during the process especially at the finalizing phase. Documentation means consolidation of the knowledge and experience gained, which is used for research, training and technology dissemination.

Table 15: Summary of step 12: Report writing

Objectives	Procedure	Methods Tools	Duration	Involved persons
<p>A final report of the experiment is completed, in which the experiment process and lessons learnt are presented.</p> <p>The report meets the information demand of relevant actors</p> <p>The report is distributed to related organizations and farmers</p>	<p>Make a report outline for each specific target user.</p> <p>Write the report</p>	<p>Developing the outline with the participation of farmers</p> <p>Documentation</p>	<p>1 week</p>	<p>Researchers or extensionists</p> <p>Farmer</p>

Objectives

The objectives of this step including:

- A final report with complete information on the process, experiment results, lessons learnt on organization and management of the experiment is written.
- The results and impacts, effectiveness of the experiment are analyzed and assessed.
- The report meets the need for information of the users and is distributed to these users.

Procedure and the way to do

The final report should be written by the researchers or extensionists. It should reflect the experience and lessons learnt from farmers who conducted in the experiment. The following steps are suggested to write the final report:

1. **Making the report outline** specific to each target user, including to other extensionists and researchers, and to agricultural and forestry management and planning organizations.

The way to do: The researchers and extensionists talk to each other and consult the farmers to make the outline for each target user.

2. **Writing the report for each target user:**

- The report for follow-up research and training is written by the researchers, in which it analyzes in-depth on the new technology developed, the methodology and the impacts of the PTD experiment in reality.
- The report for extension and management organizations is written by the extensionists. It reflects the analysis of successes or failures of the experiment, whether the approach is appropriate to extension, and recommendations for the results dissemination.

The way to do: select, analyze and synthesize data/information for each target user based on the developed outline. The report is written following the outline.

The report should be distributed to relevant stakeholders and users.

4.6 Dissemination phase

The results of PTD activities will support and encourage the experiments and the findings of the actors, and improve their experimental skills. This creates the adaptability to the changes, and improving self-confidence in rural development of farmers and involved stakeholders.???

When the experiment is completed, in order to make best use of its impacts and to contribute to livelihood improvement of the farmers, its results should be disseminated.

4.6.1 Development of extension materials

The extensionists design the different materials to disseminate the experiment results. The materials may be leaflets, posters, handbooks, video tapes, photographs, documentaries, articles etc. in which information is presented concisely and scientifically so that other farmers can apply the tested technology.

Table 16: Summary step 13: Development of extension materials

Objectives	Procedure	Methods Tools	Duration	Participants
Lessons learnt are consolidated in diverse extension materials which are appropriate to farmers.	Select appropriate documents Develop different types of materials.	Analysis and selection of materials relevant to the experiment Design the materials	1 month	Extensionists Researchers' provide consultancy

Objectives

Development of extension materials should achieve the following objective:

Lessons learnt are consolidated in diverse extension materials which are appropriate to the farmers.

Procedure and the way to do:

1. Select appropriate types of materials: the extensionists develop the extension materials which are suitable with different types of experiment.

The way to do: Analyze the nature of the experiment to select suitable extension materials.

- If the experiment followed obvious steps, the extension material should be in form of a procedure.

- If the experiment consists of different techniques, the extension materials should be pictures, samples, demonstration/description of techniques, guiding book.
- . . .

2. Development of extension materials: These materials should reflect experiences, technologies, techniques in different types.

The way to do: develop the outline, draft of the procedure and design the materials, print/publish.

4.6.2 Dissemination of successful experiments

Table 16: Summary of step 14: Dissemination of successful experiments

Objectives	Procedure	Methods Tools	Duration	Participants
<p>New technology developed from the experiment will be available for other farmers.</p> <p>Diverse approaches for dissemination are organized and facilitated by the farmers and extension system.</p>	<p>Prepare</p> <p>Organize field experience sharing</p> <p>Evaluate the cross-visit activity</p> <p>Support other farmers to apply the experiment results.</p>	<p>Farmers to farmers</p> <p>Mass media system</p> <p>Cross-visit, meeting in the field</p>	5 days	<p>Extensionists facilitate the dissemination process</p> <p>Farmers participate in</p>

Objectives

This last step needs to achieve the following objectives:

- New technology developed from the experiment will be available for other farmers
- Diverse approaches for dissemination are organized and facilitated by the farmers and extension system

Procedure and the way to do

Base on the developed extension materials, the extensionists collaborate with the farmers who conducted the experiment to spread out the results in and outside the village. **Farmers to farmers** is an effective approach for this.

- **Farmers to farmers:**

The farmer-based extension – farmers-to-farmer extension, is organized in many different ways, in which the central role is taken by core farmers who conducted the experiments and became the trainers to transfer their experience as well as the technologies to other farmers. This could be done by bringing the farmers who conducted the successful experiments to other communities to transfer the technologies.

Procedure of this method:

1. Preparation: Identify objectives and participants, and prepare a farmer’s presentation.

2. Farmer-to-farmer experience sharing in the field:
 - The farmers who conducted the experiment present the findings.
 - The discussion among the farmers is facilitated.
3. Evaluation of the visit: Organize participatory evaluation to draw out experience.
4. Discuss, facilitate and support the farmers to apply what they have learned after the visit.

In addition to the farmer-to-farmer method, others methods are also used in extension such as:

- **Dissemination through mass media**

The extensionists use mass media available in the local to spread the experiment's results. The effective tools include local radio, television or newspapers. In addition, the experiment's results can also be disseminated through mass associations.

- **Organizing field visits, workshops:**

The extensionists organize field visits and training activities to stimulate interest of other farmers to the experiment's results

Further, they can also organize workshops with the participation of different stakeholders including households who conducted the experiment.

Organization of the workshops creates good opportunities for farmers to exchange and share their experience with other people who are interested in the experiment.



Picture 9: Experience sharing among farmers

5 PTD monitoring

Monitoring of PTD process is to check the objectives, activities, methods for each PTD step to ensure that the process is implemented in the right way and fully followed the PTD principles.

In order to do this, specific criteria/indicators need to be defined. These criteria will be the basic for the researchers and extensionists to have appropriate views and ways of PTD application with the farmers in reality. The table below presents these criteria.

Table 17: Criteria of a good PTD

Stages	Steps	Criteria of a good PTD
Preparation	1. Situation analysis	The researchers and extensionists have a common understanding about the situation of the village. The researchers and extensionists create a trustworthy relation with the village
	2. Selection of PTD topic	The villagers are provided with information about PTD PTD topic is agreed by the relevant actors.
PTD initiation	3. Finding ideas	Researchers and extensionists spend sufficient time in the village and walk with different farmer groups to the field and forest for ideas finding and identifying what could be done. The ideas must be new (new technology, way of organization or distance)
	4. Development of idea sheet	Idea sheets are developed with the farmers in the field.
	5. Selection of experiments	The identified ideas are screened by the key farmers. The ideas are presented clearly to all villagers by the key farmers. Risks and benefits of the experiments are analyzed. The ideas to be experimented are ranked and selected by villagers.
	6. Selection of households to conduct the experiments	Criteria for household selection are defined by the villagers. Households voluntarily participate in the experiment implementation and are selected by the villagers, and have competent conditions.
	7. Development of experiment sheet	The design of the experiment is based on local and scientific knowledge. The experiment sheets are clear and sufficient number of criteria. The experiment sheets are developed with interested groups.
Implementation experiments	8. Development of action plan	The action plan is suitable with local and farmers' conditions. The action plan identifies clearly responsibilities of relevant actors, time, necessary inputs and contributions of farmers.
	9. Collaborative implementation	The researchers and extensionists are present when the farmers start the experiment and visit the field regularly according to the action plan. The researchers and extensionists help farmers to solve problems in techniques and organization which are raised during the experiment process.

Stages	Steps	Criteria of a good PTD
Monitoring & documentation	10. Recording and documentation.	The farmer diary is developed based on the monitoring criteria/indicators identified in the experiment sheet. The farmers are supported to document all events and comments of other farmers and external people into their diary.
	11. Evaluation of the experiment	The experiment is evaluated with the participation of relevant actors, the fame's who conducted the experiment and other farmers in the field. The evaluation is based on the criteria in the experiment sheet
Termination of experiment	12. Report writing	The final report of the experiment is completed, in which the experiment process and lessons learnt are presented. The report meets the information demand of relevant actors.
	13. Extension material development	The farmers' lessons learnt are consolidated in various extension materials which are suitable to other farmers.
Experiment dissemination	14. Experiment dissemination	The extensionists facilitate the “ farmer-to-farmer” extension process. Local communication media are used in the dissemination.

6 Lessons learnt and challenges

6.1 Lessons learnt

• Prerequisites of PTD experiments implementation

Identification of the requisites before implementing PTD is very important being a decisive factor to the success of PTD process. Some experiences are drawn:

- Relevant actors need to understand clearly about PTD, their benefits and responsibilities in order to make PTD distinct from other activities of an investment project, and/or “technology transfer” where farmers used to be the “passive receivers” from outside. Therefore, at PTD initiation stage, it is very important to have a common understanding and commitment of and collaboration among relevant actors, especially the interest and support of local authorities.
- The farmers and village must show real needs and desires to find out new technologies. Only in case they have a need, they will participate voluntarily and actively in finding new things which are suitable to their specific conditions, developing their production, improving their livelihood and managing the natural resources. If the need is unclear, the farmers only participate unwillingly, and make it difficult to find new things.
- Clearly defined land ownership is one of the conditions to implement PTD. When the experiment is implemented, the farmers invest resources and labor, thus they want to be ensured about the benefits they can get from their investment. If farmers don't have the land use right, they will be afraid that they could not get the outcomes from the experiment. The longer the experiment lasts, the more risks the farmers face. Therefore, if the land use right is unclear, the farmers feel it difficult to accept the risk to implement PTD, especially with long term trees like forestry trees.

- **Financial and materials support to farmers who conducted the experiment**

“Whether we should support farmers in term of finance or not?” is a topic that creates a lots of debate in PTD initiation in Viet Nam.

Some people think that the following cases should be financially supported:

- Those poor farmers who want to innovate but don't have money to do it. In the Vietnamese reality, there are still quite a lot poor rural areas. It is difficult for those who live in these areas to conduct new experiments. Even though the requirement of investment for the experiment is not high, they can't do it because they don't even have enough food to eat or don't have enough to invest in even simple production that helps to produce enough food. Without a minimum initial investment, they never have a chance to change or improve their lives.
- Some extension programs in remote areas that are supported by the government or international organizations, consideration to support farmers should be taken when PTD is initiated in order to stimulate production innovation, and improve the livelihood of farmers and effectiveness of resource use and management. However, support to farmers should ensure the sustainability. Avoid supporting everything, but only necessary materials and seedlings that are not available at local or impossible for farmers to buy. Farmers should contribute labor and most of the materials for the experiment. In this case, the support needs to ensure that the experiment could be disseminated in local conditions.

Some people think that we should not financially support to the farmers due to the following reasons:

- The objective of PTD is to find out new thing that can be developed in the available conditions of many farmers in the area. Thus, if the farmers are paid or supported to participate in PTD, other farmers who are not supported will not get any benefit from it, and the results of the experiment will not be persuasive to other farmers.
- When participating in the PTD experiment, the farmers already accept the risk if the experiment fail. This principle requires farmers to think carefully about benefits, successes or failures when implementing the experiment . If farmers receive support, they will consider less and will not carefully select the experiment that has a potential of success.

In some cases if poor households would like to conduct one experiment but would not be able to pay for it, and ask for support, it is suggested to look for another experiment that is more suitable with their resources.

Box 9: Materials support for farmers to conduct the experiment - A debate

What support should be given to the farmers? This question causes an extensive debate. Many people think that no support will not suit the “Vietnamese context”

However, we should be aware that PTD is to find “new things” that work in farmers’ conditions. Support, therefore, can lead to a wrong judge about the essence of the problem, and non-pursuable results of the experiment to farmers. The farmers will assume that the experiment’s success is thanks to the outside support, and only try out new things when they are supported.

So best is to concentrate on PTD process. To attract farmers’ interest, it is suggested to stimulate their curiousness of exploring new things.

So what can we do? support or not? the lesson learnt from SFSP is that we should not mention any support when start PTD process because we don't know exactly what experiment will be conducted and what investment is required for the experiment.

In fact the farmers also receive support that can not count by money term such as the consultancy of the researchers, the facilitation and information of the extensionists.

Another option is using loan credit. The farmers can borrow money to implement the experiment. This will make them more be responsible and think more carefully to avoid risks. At the same time, the results' dissemination is possible because other farmers could also follow this track for their production improvement.

6.2 Challenges

- **Participation of extension and co-ordination**

One of the important elements of PTD is the participation of extensionists. They plays facilitation role in the PTD process, and a role in the dissemination of PTD results, in terms of new technologies and new ways of organization. Reality shows some challenges to this role:

In Vietnamese reality, the extensionists are not effectively trained in participatory rural approaches. They often lack of communication and facilitation skills. This will be one of the challenges when applying PTD, an approach that requires the extensionists to be active and facilitate well all activities in the village. Thus, improving capacity for extensionists through training and field practices is necessary to help improving their skills.

Difficulty in the co-ordination of the three actors in PTD. Lack of information as well as unclear collaboration mechanism among the researchers, extensionists and farmers is a fact in Vietnam. How can they collaborate with each other in such conditions? This should be done right at the start of PTD initiation, in order to create a trust and collaborative environment. Responsibilities and benefits of each stakeholder in PTD also need to be clearly defined before the process starts.

- **Some issues relating to PTD approach**

Challenges encountered in PTD approach:

- There are difficulties in finding out new ideas for experimenting. Although PTD's objectives and its topic were agreed with the farmers, there are still ideas that are "already known". They, sometimes, only require resource support, or technology transfer that the farmers believe to be already successful. Therefore, this needs to be clarified with the villagers in each step of the PTD approach.
- In addition, there are cases where the ideas are new but the experiments are designed to solve problems superficially, which don't deal with the key issues in natural resources management in the local. Therefore, it is necessary to have the preparation phase and problem analysis through PRA to understand key issues in the area and the related causes. Moreover, improving facilitation skills for the researchers and extensionists is necessary to facilitate the farmers finding out new ideas which are important for community development.
- Innovative organization or management is rarely facilitated. Thus most experiments conducted focus on purely technical aspects because these experiments bring results to farmers quicker and more visualized than the one concerning with organization.

Meanwhile, PTD can be used to facilitate identifying community-based resources management practices.

7 Conclusion

This PTD handbook is completed based on the 3-years experience in PTD implementation in the Social Forestry Support Program, which was taken place in various areas all over the country. Through practical activities, collaboration with other stakeholders, and sharing experience between the core members, the program has drawn experiences in PTD application in the Vietnamese conditions, and this handbook is developed.

Currently, there have been quick changes in rural development in Vietnam. This requires to have appropriate extension approaches responding to the demands. PTD can be considered as a potential for development research and improvement of extension approaches. It is able to create a chance for the collaboration and co-ordination of researchers and extensionists. In addition, it helps to direct the research towards community-driven, and to provide information and technologies for the extension system in order to promote the innovations in the production and in the rural resource management. Obvious and practical benefits from PTD to all actors are the important motivation for the collaboration among the stakeholders and farmers.

PTD in forestry activities is a long term process due to the long-term cycle of a forest and a forest tree. Till now the results of PTD in forestry have just begun. PTD application in forestry area is also a challenge as short-term needs of farmers are usually regarded more important. This shows that PTD should be integrated in the development of community-based management practices including innovations on forest management, and diversified forest technology development such as: non-timber forestry products, innovative shifting cultivation and forest business.

This handbook is not the final. It will be revised, improved and adapted when more experiences and more understandings about PTD are gained.

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8 Annex

8.1 Annex 1: Idea sheet

Idea Sheet

Topic

What do we want to find out?

Why do we want to find out this?

Person involved in developing the idea

Date and place

8.2 *Annex 2: Experiment sheet*

Experiment Sheet

Topic:

What exactly do we want to find out?

Why do we want to make this experiment?

How will this experiment be designed?

(Attach detailed design of the experiment here)

What do we need to know to be able to tell whether the experiment is successful?

What will we measure (quantitative data)? What will we discuss and judge (quantitative data)?

Where can we get additional information regarding this experiment?

Persons involved in developing the experiment sheet

Date and place

8.3 Annex 3: An example on Commitments of the stakeholders

Forestry Faculty - Tây Nguyên University

- Find out documents related to the experiments to provide to farmers
- Go to the village to implement the experiments
- Coach farmers on technologies, recording and collecting data related to the experiments
- Organize regular meeting every 3 months and every year with extensionists and farmers to evaluate the experiments.
- Analyse results, provide reports on experiment results to concerned stakeholders

Organisations in Dak Rti Commune

Commune People Committee, Forestry Board

- Commune People Committee regularly check and remind experiment groups to apply correctly the activity plan.
- The commune provides help to researchers from SFSP, province and district while they are working in the commune.
- Closely collaborate with Quảng Tân forestry enterprise and Management Board of village 6 to implement the activities effectively.

District organizations

Section of Agriculture and Rural Development + Extension station

- Send staff to participate in experiment implementation process in village 6.
- Develop a sub library for extension related books.
- Participate in workshops, review organized by SFSP.

Quảng Tân enterprise :

- Send staff to participate, monitor and evaluate the experiments with villagers in village 6.
- Produce seedlings available in the enterprise such as Rabutan, Longan, Bamboo, Sao, Dau, Xoan Moc for the experiment dissemination.
- Support villages in village 6 when illegal loggers cutting the forests.
- Participate actively in workshops, training and review activities organised by SFSP Tay Nguyen.

Provincial organizations

DARD, Institute for Agriculture and Forestry Research

- Seek and provide information related to the experiments (technological guidelines, material providing resources, price information...)
- Provide technical support when requested.
- Provide procedures and norms to use and manage forest resources and forest land in accordance with policies of the Government
- Together with farmers to monitor and evaluate successes of the experiments.

Commitments of households involved in the experiments in Dăk RTih commune

- Households register to do the experiment on volunteer basis and do it actively.
- Households involved in the experiments help each other and exchange experiences gained from the experiments.
- Group leaders check and facilitate households to tend, protect and implement experiments and criticize households who did not do the work properly.
- Households/groups regularly monitor, measure and record data and keep the experiment diary
- Make use of locally available resources to implement PTD
- Participate in workshops and cross visits and technological training.
- Use financial support of SFSP correctly.

8.4 Annex 4: An example of the experiment diary

Đak Lak province

Đak R'Lấp district

*Đak R'Tih commune
Village 6*

Tây Nguyên University

Agriculture and forestry faculty

SFSP

Experiment diary of the household group

**Mix plantation of fruit trees (rabutan, longan)
on hilly fields which have been used for
agricultural crops for a long time.**

**Group leader: *Điểu Khương*
and 15 households in the group 1 who got land
allocated**

***Number of trees planted: 48 trees
(24 rabutan + 24 longan)***

Date of plantation: 15/ 4/2001

In line mix plantation of fruit trees (rabutan, ivy, longan), which is rounded by bananas on hilly fields that have been used for agricultural crops for a long time.

What do we want to find out?

Are fruit trees able to growth on hilly fields that have been used for agricultural crops for a long time? Which one is the most suitable species.

What is the most appropriate density which gives most successful harvest?

Why do we want to find out these things?

To increase number of crop species which are planted growth on hilly fields that have been used for agricultural crops for a long time.

To have different fruit products from hilly fields that have been used for agricultural crops for a long time.

Participants:

Group 4 : Nguyễn Xuân An, Cao Thị Lý, Nguyễn Võ Loan Anh, Thị Diệu, Thị Khôi, Thị Quỳnh, Thị Mạnh, Thị Long, Thị Ngọc^a

Date and place:

13/3/2001- Village 6, Tân Thới commune, Tân Lập, Tân Lộc

Experiment sheet

Topic:

Mix plantation of fruit trees (rabutan, longan) hilly fields that have been used for agricultural crops for a long time.

What do we really want to find out?

Are rabutan and longan suitable to be grown on hilly fields that have been used for agricultural crops for a long time?

What is the yielding of these two species.

In what conditions (near forests with a lot of shade, in the centre of the fields with a lot of light, near streams) do these two species grow better?

How to plant and tend these two types of trees?

Why do we want to do this experiment?

To have fruits; to improve income.

Fruit can be sold for cash.

Make use of land on hilly fields.

How is the experiment designed?

1 experiment plot is 3 (1080m²), 48 rabutan + longan (24 seedlings each type). 4 households do the experiment (4 replication).

Attach the experiment design

What should we know to say the experiment is successful?

The survival rate is more than 80%

Trees are higher than 3 meters after 3 years.

Trees give harvest after 3 years.

What will we measure?

Count the number of survival trees to find out survival rate.

Measure the height and diameter of the trees.

Count the number of branches, measure the diameter of the canopy.

Record the time when the trees flowering and fruiting.

Scale fruits (count number of fruits/branch/tree); taste the fruits.

Fruit yielding/tree; flavor of the fruits (sour or sweet).

Where can we find the information related to the experiment?

Tay Nguyen University.

Forestry and agriculture scientists from the Institute of Agriculture and Forestry Research.

Places where people are successful to grow rabutan and longan.

Experiment action plan

Mix plantation of fruit trees (rabutan, longan) on hilly fields that have been used for agricultural crops for a long time.

2001 - In village 6 - S'k R'Tih commune

Activities	Month											Amount, tools, materials, varieties	Responsible people
	3	4	5	6	7	8	9	10	11	12			
Land clearance												Hoes	Households
Making holes												Hoes, knives	Households
Basement fertilizing, plantation												1 tone of manual, 100kgs of P, 200 seedlings	Seedlings and K fertilizer provided by SFSP Farmers contribute manual;
Fence for protection												Stakes, rattan strings, knives	Households
Tending and fertilizing												NPK fertilizers: 40 kgs/time x 3 = 120 kgs	NPK provided by SFSP
Pile up the stumps of the trees to keep humidity												Hoes, knives, rubbish	Farmers
Monitoring												Monitoring notebook, pens	Extensionists and SFSP support and guide
Regular measurement												Measurement rulers	Extensionists and SFSP support and guide farmers how to measure
Protection, prevention of diseases												1 sprayer, 1 litter pesticide	Extensionists support, farmers do on their own
Fire prevention												Knives, hoes	Farmers
Visits												Transportation means,	Supported by SFSP

											accommodation	
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Measurement form

Date:.....

Number of death trees in the experiment plot:.....

	<i>Species</i>	<i>Circumference (cm)</i>	<i>Height (cm)</i>	<i>Note</i>
1	Rabutan			
2	Rabutan			
3	Rabutan			
4	Rabutan			
5	Rabutan			
6	Rabutan			
7	Rabutan			
8	Rabutan			
9	Rabutan			
10	Rabutan			
	Average			
11	Longan			
12	Longan			
13	Longan			
14	Longan			
15	Longan			
16	Longan			
17	Longan			
18	Longan			
19	Longan			
20	Longan			
	Average			