Lao Peoples Democratic Republic

Peace - Independence - Democracy - Unity - Prosperity

Technical Booklet 7

Demonstrating Agricultural Land Use Practices in the Uplands

System 1
Participatory Village Development and Sustainable Land Use

Lao-Swedish Forestry Programme, June 2001

Foreword

The Government of Sweden has provided technical assistance to the Government of Lao PDR in the Natural Resources Sector since 1977. Until the mid 1980s the assistance focused on support to the Department of Forestry and two State Forest Enterprises. From 1985 assistance was expanded to include support for the establishment of a Forestry Training Organization including the Forestry Technician School at Mouang Mai. In the late 1980's the Lao Swedish Co-operation was further expanded to cover shifting cultivation stabilisation and nature conservation. During the first half of the 1990's the co-operation gradually changed to institution building/strengthening of the Department of Forestry at the centre and in selected provinces.

The co-operation is based on the premise that national ownership of bilateral programmes will contribute significantly to sustainability after the programmes have been completed.

In more recent years the programme has addressed sustainable land use aspects in the village development context with the view that community participation in partnership with government services will enhance the potential for sustainable management of forest and agricultural resources.

The Phase IV of the Lao Swedish Forestry Programme (1996- 2001) has concentrated on three aspects of institutional building; competence development, model development and research management. The development efforts have covered a process of formulating, improving and disseminating models (methods and procedures) in four main areas including Participatory Village Development and Sustainable Land Use, Participatory National Bio-diversity Conservation Area Management, Natural Resources Management, and Institution Building. Monitoring and gender mainstreaming have been incorporated as cross-cutting efforts in the model development work. The development activities have been performed in partnership with national, provincial and district administrations and with village communities in response to Lao policies.

The LSFP has supported the strategy and policy development of the Government of Lao PDR and contributed to the emerging consensus on rural development that is taking place within the accepted Socio-economic Priorities of the Government of Lao PDR under which broad development policies have long been operative.

This document is one in a series of resulting documents, which have been produced in both Lao and English languages to assist and provide knowledge and ideas to personnel responsible for policy, planning, and implementation of agriculture and forestry development programmes. It contains lessons and experiences learnt during the programme.
I encourage the personnel of departments and agencies to study and assess the content of the documents and apply the relevant parts depending on local conditions.

I wish to commend the Swedish International Development Cooperation Agency (Sida) for it's continued support during four phases of technical assistance to the Ministry of Agriculture and Forestry, and the LSFP personnel and advisors, who have made a major contribution to this development and documentation.

20 March, 2001
Minister for Agriculture and Forestry

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Participatory Village Development and Sustainable Land Use System

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About this Document

1. Intended Audience of this Technical Booklet

- Heads of Provincial Forestry and Agricultural Sections.
- Heads of District Agriculture and Forestry Offices.
- District Land Use Planning and Land Allocation Officers.
- Regional Forestry and Agricultural Training Centres (RTC) staff.

2. Explanation of "Manuals/Guides/Technical Booklets"

Manuals/Guides and Technical Booklets provide practical information on procedures and methods for implementing activities at field level. They have been developed based on experiences at the local levels during Phase 4 of the Lao Swedish Forestry Programme (LSFP). Documents have been produced in both the English and Lao languages for each of the four systems in the model/method development programme.

3. Purpose of this Document

- To describe the procedures and methods for demonstrating improved land use practices in upland areas based on experiences of the LSFP.
- To provide guidance for provincial and district land use planning and extension staff working with upland farmers to improve land use practices. This document may be used as instructional material for Regional Training Centre personnel responsible for training district staff in upland farming methods.

4. Information Provided in this Document

- A definition and explanation of "land use plans".
- An explanation of the role of land use plans in sloping land development initiatives.
- An explanation of how the demonstration of improved upland farming practices is integrated into the extension process.
- Procedures and methods for establishing upland land use demonstrations including the selection of sites and co-operating farmers, survey, mapping and planning activities on the site, technical training, implementation of the plan, monitoring of results and forward planning.

Table of Contents

Introduction

The demonstration of land use practices in the uplands (referred to as "Land Use Plan") is one of several method development activities undertaken by the Land Use Planning Sub-programme of the Lao Swedish Forestry Programme.

Land use planning and land allocation (LUP/LA) results in the delineation of village boundaries, village forest-land use zones and the allocation of agricultural land parcels to families within the agricultural zone.

Village Forest and Agricultural Land Management Agreements are prepared with the village committees and the village community based on the forest-land use zones delineated. The village agreement provides a "framework" in which more detailed land use planning can be undertaken, eg, management plans can be prepared with villages for the area delineated as "Village Protection Forest" or the area delineated as "Village Use Forest" and so on.

"Agricultural Land Use Plans" are prepared with families who have been allocated parcels of agricultural land in the "village agricultural zone" with the aim of improving land use practices and productivity.

Definition

Land use plans refer to the establishment of a demonstration of appropriate land use within the agricultural land use zone of a village. A representative upland area is selected and land use plans are prepared with the families for parcels of land within the demonstration area. About 20 farmers are selected.

The steepness of land slope is the main criteria on which the plans are based. Appropriate land use options based on slope and farmer land use proposals are used to make decisions on future land use. Planning, implementation and follow-up and monitoring of activities is made much easier if the demonstration area is surveyed and mapped in detail at a scale of 1:2000.

In the past it has been the practice of extension agents to use "model farmers" for the purpose of introducing improved land use practices. The model farmer method is based on a concentration of effort and funds on selected farmers with the aim of creating a model for others to follow. The "land use plan method" works on another premise, ie, that small groups or networks of farmers learn and evaluate land use options and practices on adjoining farms with the assistance of land use planning, extension and if available, research personnel.

Objectives

The objectives of land use plan demonstrations in the upland are:

- To support the programme of shifting cultivation amelioration.
- To test and describe methods for stable and sustainable land use in upland areas.
- To provide tools for land use extension activity at village level.
- To demonstrate how extension staff can use available LUP/LA data, village maps and village agreements in village extension work.
- To train district Extension and LUP staff in upland land use methods.
- To involve villagers in the application, evaluation and benefits of upland land use methods and practices.

End Users

The end users of the methods are:

- District extension and land use planning staff.
- Village organisations and groups.
- The owners of upland fields (families and individual men and women).

Chapter

1

Relationship to GOL Sloping Land Strategic Initiatives

The following summary indicates that demonstrations on sloping land use respond to sloping land initiatives as elaborated in the Government's "Strategic Vision for the Agricultural Sector, November 1999".

Strategic GOL Initiatives to which Sloping Land Demonstrations Respond
1. Land use zoning based on slope and land capability
2. Participatory land allocation entitlements *
3. Community management of natural resources
4. Farming systems diversification and agro-forestry development using adaptive research, trials and demonstrations on farmers fields
5. Sustainable land use management with soil erosion control
6. Afforestation and conservation management **
7. Rural savings and micro credit extension

* These rights are provided by land allocation undertaken in conjunction with sloping land extension work.

** Forest-land use zoning undertaken during LUP provides the framework for developing management plans for different categories of forest within village boundaries

Chapter

2

Land Use Demonstrations in the Extension Process

Land use demonstrations are an extension tool that fit within the extension procedures for sloping land areas. Before the demonstration is planned a number of extension activities should take place in order to prepare both extension staff and villagers for involvement in the demonstration.

These are explained in the "Guide for Sloping Land Extension and Finance" in the sections dealing with sloping land extension and village financing methods. These activities include:

Initial dialogue with villagers: Discussions with existing groups including women, identification of needs, wants, problems, opportunities and possible solutions, testing ideas for extension.

Village study: Studies and surveys to collect village information, including land allocation data, village maps etc.

Villager training: Training of all villagers, including men and women on sustainable development and an introduction to options for sloping land farming and village financing to support farming activities, study trips, presentation of key land use options.

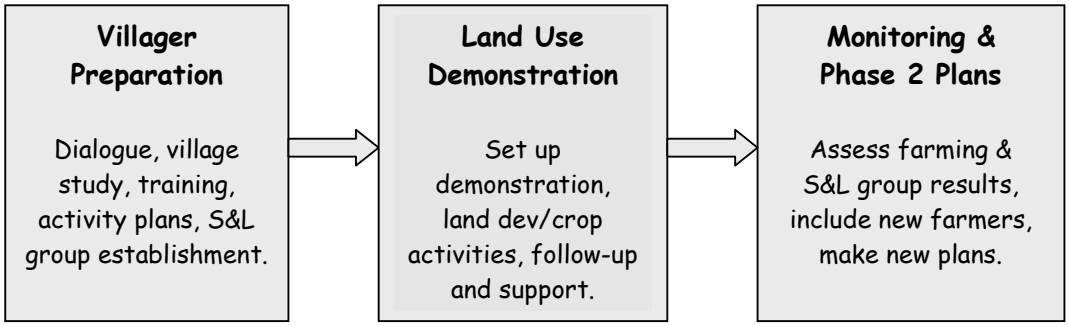
Follow-up dialogue and training: Reinforcing matters covered in the village training, villagers express views on preferred land development and cropping activities.

Activity planning: Formation of production groups, defining farming activities to be supported.

Training and establishing savings & loan/credit group: Encouragement, training, and formation of group if villagers desire; group rules, election of office bearers, payment of group entry fees, and group committee training.

The sequence of extension and demonstration activities is expressed in Figure 1.

Figure 1: Land Use Demonstration in the Extension Process



Caution: It is not wise to start a land use demonstration until villagers have been properly "prepared" for it. The reasons and the need for the demonstration have to be recognised by the villagers to ensure they participate willingly. They need to feel and accept "ownership".

Chapter

3

Procedures

Land use demonstration areas are permanent or long-term demonstrations that should run for a minimum of 5 years. In that time land development and permanent cropping activities must be well established to provide awareness and training functions for the target community and visiting groups. It is therefore important that land use planning and extension staff think in the "long term" when planning these demonstrations.

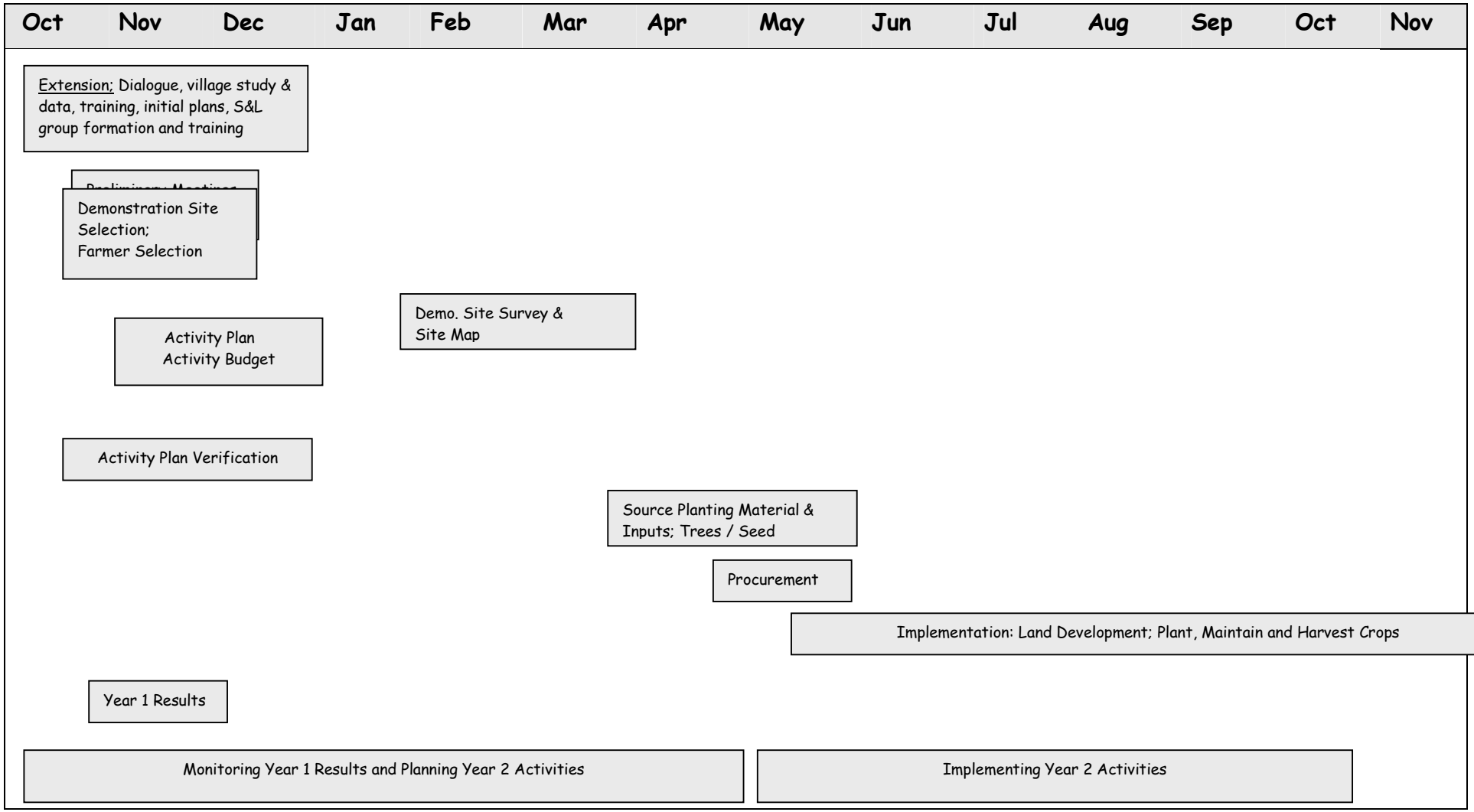
The eight steps in planning and implementing upland land use demonstrations are:

Step	Explanation
1	Preliminary or preparatory meetings.
2	Selecting the demonstration site / selecting co-operators.
3	Field survey of the demonstration site.
4	Mapping or sketching the demonstration site.
5	Preparing the demonstration activity plan.
6	Preparing the activity budget.
7	Activity implementation, follow-up and support.
8	Monitoring activities and 2nd phase planning.

The calendar of demonstration activities below indicates the approximate timing of activities commencing with the preparatory extension activities that lead into the land use demonstration activities. It is important to undertake the preparatory extension activities first because these prepare the villagers for the demonstration activities that follow.

When the Year 1 activities have been completed the results are reviewed and a new cycle of planning commences for Year 2 activities.

Calendar of Demonstration Activities - Year 1



Chapter

4

Explanation of Steps and Methods

Step 1: Preliminary or Preparatory Meetings

- Meetings are held by resource persons with district staff to explain the purpose, procedures and methods for establishing demonstration sites (see the objectives listed above).

  Resource persons may be specialist departmental or project staff from central or provincial level

- Meetings are held by district extension and land use personnel with villagers from various social groups and the village committees to discuss the proposal to establish a demonstration.
- Matters discussed in this initial meeting include:
  - The characteristics and problems of the existing farming system and land use in the village.
  - Villager perceptions on solutions to land use problems.
  - Land allocation outcomes (if LA has been done)
  - Village forest and land management agreements (if they exist).
  - Village land use maps (if they exist).
  - Previous land use activities undertaken; demonstrations, model farmers, study trips etc (if they have been done).
  - The willingness of farmers to be involved in the demonstration and an outline of the activities and responsibilities involved.
  - The S&L group role in the demonstration.
  - A possible location for the demonstration.
  - Future extension and land use planning activities.

Step 2: Selecting the Demonstration Site and Selecting Demonstration Co-operators

The selection of a suitable site and appropriate participants are considered at the same time because the aim is to select several interested farmers for a demonstration site in the same location.

Selecting the Demonstration Site

The important points to consider when selecting the site are:

- Use the information gathered from villagers during the preliminary meeting (see above) to help select the site.
- Choose a site in which 15 to 20 farmers have plots of land adjoining each other, so that:
    - Land development, extension and planting material supply to the site is convenient.
    - Farmers can work together in preparing land and planting crops.
    - Farmers can assess the results of demonstration activities on their adjoining fields.
    - There will be a visual impact when land development and cropping activities have been completed.
- Where possible choose a site within the village where some farmers have been involved in some previous land use extension activity, ie, a demonstration, a study trip, a training course or model farmer activity.
- Choose a site that is accessible from a road or the village.
- Chose a site with mostly sloping land and some flat land so that a range of land use options can be demonstrated.
- Choose a site for which a village land use map (from LA) is available.

Selecting Demonstration Participants

When choosing farmers to participate the following selection criteria should be used:

- Farmers who are already members of the village Savings and Loan Group or farmers who intend to become members of the group.
- Farmers who have one or more plots of land within the proposed demonstration site.

- Farmers who have some previous experience or show an interest in trying the land use practices that will be introduced.
- Farmers who have some previous training or who have attended a study trip to a similar site.
- Farmers who have good communication abilities and are respected among the other members of the community.

Important Points:

- The aim is to produce quality results for other farmers to observe and follow.
- It is not necessary to select every farmer within the demonstration area in the first year; only those who show a keen interest should be selected.
- About 5 to 10 farmers in the first year is probably an ideal number as these can be serviced by extension staff more easily.
- It will be less likely that farmers will fail with their activities in the first year if there are fewer farmers for extension workers to support.
- The supply of materials and setting up the demonstration will be more convenient if there are fewer farmers.

Step 3: Field Survey of the Demonstration Site

The owner/users of each plot accompany extension and or LUP personnel to the field to assist with location of plots, recording information and survey work.

The purpose of the field survey is to:

- Verify that the proposed site is suitable to conduct demonstration activities.
- Identify each plot of land on the ground and verify the owner/users of each plot of land.
- Identify and draw the boundaries of each plot of land.
- Record the average slope (%) of each plot of land.
- Collect and record land use and cropping information about each plot of land from each owner/user for the last 5 years.
- Collect and record other important particulars for each farmer and each plot of land, including; family identification (registration number), Administrative Unit number, location of plot and approximate plot area.

- Record what each farmer proposes to grow on each plot of land in the next wet season.
- Draw the plots of land on a village map, land use map or, if available, on aerial photographs.

> This information is used to prepare a "land use plan" for selected plots of land owned by farmers who will participate in the demonstration in the first year.

The following equipment is required to complete the site survey.

Equipment	Purpose
1. Topographic map.	To locate the demonstration area in relation to features such as the village, roads and streams.
2. Village Land Use Map (if LUP and LA has been done already).	To locate and draw the location of farmer plots (approximately) on the land use map.
3. Aerial photographs of the site if available.	To define more accurately the location and boundaries of each plot of land, and to calculate the approximate area of each plot of land.
A slope meter, (clinometer) if available.	To measure the angle of the slope of the land in each plot.
5. A 50 meter measuring tape or a nylon measuring rope marked at 3 or 5 meter intervals.	To measure the length of boundaries of each plot.
6. A hand-held compass (Silva).	To measure the bearings of plots boundaries.
7. A Demonstration Site Survey Form.	To record the land use and other details for each plot.
8. A set of the Temporary Land Use Certificates and Parcel Maps from previous land allocation activity (if land allocation has been done and the forms are available).	To provide information on plots allocated within the demonstration area, ie owners, area, boundaries etc.

A completed Demonstration Site Survey Form is shown below.

Demonstration Site Survey – Na Samphan Village - 28th June, 1999

LUP Plot No.	Aerial Photo ID & Land Reg No.	Land Owner's Name	Reg. No.	Unit	Location	Area Ha	Slope %	Aspect	LU '96	LU '97	LU '98	LU '99	LU 2000	LU Class	Comments
1	85/2 146	Mr Thongwan	105	5	Near Vill. Cons. Forest and road to Pong Taharn	0.5 0.6	0-5%	NA	F	F	F	HR	MD	2	Imperata infested; now farmed by Mr Chan, an illegal settler.
2	---	Mr Phet	----	16	As above	0.3	0-5%	NA	F	F	F	HR	?	2	Imperata infested.
3	---	Mr Lit	111	1	As above	1.17	0-5%	NA	?	F	F	HR	MD; HR	2	Imperata infested.
4	---	Mr Boon	?	16	As above	1.47	0-5%	E	?	F	F	HR; Corn	HR; Corn	2	Imperata infested; ploughed in 1999 (K220,000).
5	---	Mr Oh	?	4	Huay Kok Mak Fan	0.91	0-5%	E	?	F	F	F	?	2	Imperata infested; No TLUC issued.
6	---	Mr Phouvong and Nang Lek	?	8	Huay Kok Mak Fan	0.66	0-5%	E	F	F	F	HR	?	2	Imperata infested; Soldier; No TLUC issued.
7	51/2 144	Mr Khamsao	62	10	Neua Hong Leuay	1.46	0-5%	S	F	F	F	HR; MD	MD	2	Imperata infested; TLUC issued.
8	124/2 ? 142	Mr Somsanit	9	7	Neua Hong Leuay; near Nam Puie	1.85	0-3%	S	F	F	F	F	?	1 and 2	Imperata infested; TLUC issued; has water available but can not do paddy because of floods, and poor water retention.

HR = Hill Rice; MD = Mak Duay; F = fallow

Step 4: Mapping or Sketching the Demonstration Site

The demonstration site map does not have to be a highly accurate scale map of the area. It should, however, indicate:

- The boundary of the demonstration area.
- The location of each land parcel.
- The approximate area of each parcel.
- The land parcel number for each plot.
- The angle of slope for each plot.
- Important land features within the area, ie, roads, streams, forested areas etc.

The map or sketch map of the demonstration site is prepared using information acquired during the ground survey. This includes:

- Information recorded on the Demonstration Site Survey Form.
- Pencilled notes and sketches of the demonstration site boundaries made on the topographic map.
- Notes and sketches of plot boundaries drawn on the aerial photos.
- Plot data acquired from measuring tape, compass and clinometer surveys.

> If aerial photographs, topographic maps or survey equipment are not available, sketch maps can be drawn from visual observations and discussions with farmers.

The map should be drawn at a scale of 1:2000 to 1:5000 so the plots are easily identified and can be used for the activities explained below.

Uses of the Demonstration Site Map

The map or sketch map is an extension tool used for:

- Preparing activity plans with farmers:
  Farmers can visualise their plots of land on the map and assist staff to make land use plans, using slope information.
- Indicating the land development and cropping activities undertaken on each plot. Each year the land development or cropping activities undertaken on each plot can be sketched on the map using symbols or colour coding.

- Monitoring progress of the demonstration:
  At the end of each cropping season staff and farmers can use the map to discuss progress with land development and cropping activities; this assists with planning a) next seasons activities b) replanting failed tree crops c) rehabilitating any unsuccessful land development interventions (eg, vegetative contour strips).

- Field days and training sessions:
  Farmers and staff can use the map to explain the demonstration aims and activities to government visitors and study groups and village study groups.

An example of a Land Use Demonstration Map is provided as Appendix 1.

Step 5: Preparing the Demonstration Activity Plan

- Activity plan preparation is a very participatory activity between DAFO staff and land owners/users.
- Land owners/users must contribute their ideas and preferences when decisions are being made on land development and cropping activities.
- Land use planning and extension personnel have a responsibility in the planning process to explain to farmers recommended or appropriate land development and cropping practices.
- The activity plan is the result of combining the ideas and preferences of farmers and the technical recommendations of land use planning and extension staff.

The following guidelines should be followed in preparing the activity plan:

- The size of each farmer's activity plan will be based on each farmer's capacity (mainly labour availability).

- Activities will be based on farmer cropping preferences and will be decided in close consultation with farmers.

- Cropping or land use options should be chosen based on the steepness of slope so that soil erosion is minimised.

- Limits should be placed on the area of annual crops and the number of fruit trees which farmers are permitted to plant each year to ensure the crops are managed properly and to reduce the risk of failure.

- Developments should be phased in over a three to four year period, ie:

Year 1:	About 20 % of the area
Year 2:	Another 20% to 40% of the area
Years 3 and 4:	The remainder of the area

Planning Activities

Visits are made to each farmer in the field to discuss the land use history for each plot and then what the farmer proposes to develop or crop in the coming year. This information should be entered on the Demonstration Site Survey Form so that it can be referred to during on-going planning.

Land use planning and extension personnel need to use technical guidelines or land use option recommendations when discussing future activities with farmers. Frequently farmers will have different views than extension workers on land use so the technical guidelines and land use options are used to explain and negotiate alternate land uses and practices. While these options cannot be applied rigidly they should be followed as much as possible.

The Land Use Options Picture Board can be used to help make decisions on land use based on the slope of the land.

The slope classes and preferred land use options are indicated below

Slope Class	Slope (%)	Land Use Options Based on Slope Classes
I	0 – 12%	Paddy; Fish Ponds; Rice/Fish; Terraced Paddy; Grazing; Field Crops; Fruit Trees; Commercial Trees; Small Animals.
II	13 – 36%	Terraced Paddy; Field Crops; Fruit Trees; Commercial Trees; Short-term Fruit Trees (Banana, Pineapple, Paw Paw).
III	37 – 45%	Field Crops; Short-term Fruit Trees; Long-term Fruit Trees; Commercial Trees.
IV	46 – 60%	Dry Season Grazing; Commercial Trees; Natural Forest.
V	60% +	Natural Forest

General Agreements and Recommendations

The objective of using land use options is to make agreements with farmers to adopt various land development or cropping practices that will lead towards more permanent, stable and sustainable land use.

The following conservation guidelines should be used by extension personnel when discussing activity plans with farmers with the aim of reaching agreement that farmers trial some of them. What they try or trial will depend on their preferences.

- Each family shall undertake some type of soil conservation measures on each parcel of land. These may be shallow contour ditches (with or without companion crops), contour vegetative strips, terracing (continuous or intermittent), or individual tree benches.
- Each family shall conduct some conservation cropping practices on each parcel of land. These may be contour planted field crops, contour planted fruit trees, the introduction of legume cropping, rotations, crop residue retention, mulching, the use of organic manures, agro-forestry planting mixes, the encouragement and regeneration of naturally occurring crops, eg, paper mulberry, cardamom, bamboos etc.
- The planting of legume crops will be encouraged when cropping plans are being prepared.
- For tree crops and fruit trees, quality planting material should be procured. Grafted or layered planting material is preferable to seedling material.
- Attempts should be made to plant contoured soil erosion strips or dig shallow ditches so that uniform and continuous contoured lines or strips are created from farm to farm to provide more effective soil erosion control.
- Cultivation practices that minimise soil disturbance should be encouraged.
- Retention of crop residues and vegetative matter on the soil surface should be encouraged.
- Burning should be minimised to increase organic matter retention.
- Timely weeding of both annual crops and fruit trees should be encouraged to reduce competition and improve plant growth.
- Organic fertiliser or manure should be applied to fruit trees.
- Dry season mulching of tree crops and fruit trees should be practised.

The activities that have been agreed with each farmer are recorded on a Land Use Activity Plan Form, an example of which is shown below.

Land Use Activity Plan for Farmers in Land Use Plan Demonstration Area – Na Samphan

			Annual Crops (Area)						Bi-annual Crops (No.)			Perennial Crops (No.)							Land Development (Area)			
Plot No.	Slope %	Farmers Name	Hill Rice	Mak Duay	Corn	Peanut	Black Bean	Sesame	Por Sa	Pine-apple	Banana	Teak	Mango	Tamarind	Jakfruit	Longan	Lime	Orange	Paddy	Contour Strips	Contour Plough	Fish Ponds
1	0 – 5	Lit	0.5	0.5		0.1															1	
2	0 – 5	Phet		0.33									25						0.2		0.33	
3	0 – 5	Thongwan		0.42																	0.42	
4	0 – 5	Boon A	1		0.45		0.45														1	
5	0 – 5	Oh		0.65															0.2		0.65	
6	0 – 5	Nang Lek		0.45															0.2		0.45	
7	0 – 5	Khamsao		1.5							50							25			1.5	
8		Nang Lek	No plan for this parcel to date																			
9	0 – 3	Somsanit		1	0.75		0.75															

Step 6: Preparing Activity Budget

A budget is prepared using unit costs for each item in the activity plan. The activities of each farmer are aggregated to produce a summary for all crops, fruit trees and land development activities as shown in the table below.

Na Samphan Land Use Plan – Summary of Activity Inputs and Budget – 1999/00

(Subject to change after further discussions with farmers before procurement)

Activity	Area Ha	Qty	Unit Cost Kip	Budget Kip	No.	Unit Cost Kip	Budget Kip	Total Budget Kip	Procure-ment (Month)	Activity (Month)
Hill Rice	5.35	Own Seed	-	---------				---------	----------	----------
Mak Duay	13.21	Own Seed	-	---------				---------	----------	----------
Maize	3.20	96 Kg	10,000	960,000				960,000	Feb/Mar	April
Peanuts	0.30	30 Kg	10,000	300,000				300,000	Feb/Mar	June
Black Bean	8.21	246 Kg	10,000	2,460,000				2,460,000	June/July	August
Sesame	0.30	1Kg	10,000	10,000				10,000	April/May	June
Por Sa					400	1000	400,000	400,000	May	June
Pineapple					1100	200	220,000	220,000	April	May
Banana					400	500	200,000	200,000	April/May	June
Teak										
Mango					50	10,000	500,000	500,000	May	June
Tamarind					25	10,000	250,000	250,000	May	June
Jak Fruit										
Longan										
Lime					25	10,000	250,000	250,000	May	June
Orange					25	5000	125,000	125,000	May	June
Contour Plough	8.60 ha		350,000	3,010,000				3,010,000	Feb/Mar	April
Contour Strips	12.33 ha	Leucaena 130 Kg	1000	130,000				130,000	May	June
Paddy Dev.	0.60 ha		350,000	1,050,000				1,050,000	Jan	Feb/Mar
Fish Ponds					3x1000 fish	500 / fish	500,000	500,000	Mar	July
Fertilizer 15-15-15		4 bags	75,000	300,000				300,000	Mar	June
Total				**8,220,000**				**10,535,000**		

Step 7: Activity Implementation, Follow-up and Support

During implementation villagers participate in activities which have been identified during the planning step and verified as explained above. Activities are supported and serviced by extension and land use planning staff. Extension activities include demonstrations of all types, training and study tours, group and media extension, the establishment and support for savings and loan groups or revolving funds.

Follow-up advisory and support activity is concerned with addressing and solving the more immediate problems being encountered by families and individuals participating in the demonstration.

There are several important steps in activity implementation, including: Verification of Farmer Activity Plans, Activity Plan Implementation, Introduction of Savings and Loan Groups, Technical Training, Land Preparation, Procurement, Planting, and Crop and Tree Maintenance.

7.1 Verification of Farmer Activity Plans

Verification and adjustment of activities occurs at all times when extension and development activities are being organised and implemented. This is a result of farmer's wishing to change or modify activities as the planting season approaches.

Plan verification includes the review, verification and adjustment (and improvement) of all the activities in the demonstration activity plan before activities in the demonstration plan are implemented. This involves dialogue between staff and villagers about their particular activities in the demonstration activity work plan to ensure that both parties agree on activities to be implemented. For example, villagers may wish to plant different crops or reduce or enlarge the area of a crop; planting materials may not be available for a particular crop etc.

These adjustments in the annual activity plan are necessary so that the farmers' preferences are included in the plan. The extension organisation must maintain flexibility to respond to these changes.

7.2 Introduction of Savings and Loan Groups

During preparatory extension work villagers are encouraged to establish some type of saving and loan or credit organisation in the village so members have access to funds which can be used for various development and economic activities. One main use is for agricultural land development, improvement of land use and increasing crop productivity.

If the village has already established a savings and loan (S&L) group or a revolving fund (VRF) some of the participants in the land use demonstration may already be members of the fund. If some participants are not members they should be encouraged to join.

If a village fund has not been established, extension and land use planning workers should initiate discussions and form a S&L group or VRF and encourage the farmers who are participating in the land use demonstration to join.

A few important principles of village financing need to be understood and followed if it is to be successful:

- Fund planning and management must be clearly understood by villagers before they decide to establish a fund.
- Villagers must have "ownership" of the fund and take responsibility for managing the fund. This is likely to occur if villagers contribute their own money to establish the fund.
- The fund must be based on safe economic activities so the potential exists to repay monies borrowed for development and land use improvement. The fund will not survive if bad debts accumulate.
- Management rules must be established and followed to ensure secure operations.
- The formation of the fund must be undertaken before members start land use or cropping activity so their commitment to repay loans to the fund is strengthened.
- Funds should not be established on the premise that decisions will be made on repayments depending on the level of success and/or failure of cropping activity.

Full details of the procedures and methods for planning and establishing village finance organisations are provided in the "Guide for Participatory Extension Procedures and Methods".

7.3 Technical Training

Preliminary Training

During the preparatory extension phase in the dry season staff and farmers undergo technical training and villagers also form a S&L group (refer to the Calendar of Demonstration Activities).

Following this farmers are also advised on land use options and land management practices for sloping land situations using option picture boards and drawings.

During this preparatory period staff and farmers should undertake a study trip to a land use site in a similar topographic situation so that they can observe and learn lessons from farmers who have experience with similar agricultural practices.

Follow-up Training

To limit the risks of failure of demonstration activities both staff and villagers must have adequate knowledge of the technical and husbandry practices of the various land development and cropping activities. Follow-up technical training is necessary during the latter period of the planning phase and throughout the implementation phase. It should be provided in co-operation with the Regional Training Centres if this is possible and convenient.

Technical training will include:

- Land use options and management practices.
- Land preparation and soil conservation practices.
- Tree crop and fruit tree husbandry practices.
- Annual crop practices (grain and legumes).
- Savings and loan/credit group management.

Extension and LUP/LA staff should prepare simple graphic recommendations and explain these to farmers involved in the demonstration activities.

On site Training

On-site training is provided to farmers before land development and cropping activities take place. A farmer's field is selected and the demonstration farmers are invited to take part in a method demonstration, eg, marking out contour lines with an A frame or preparing a planting hole for fruit trees. This practical training is very important as it is the last opportunity extension staff have to show farmers methods or techniques. Not only should farmers observe the method or technique, they should try it. If this practical training is not done success rates will be low.

7.4 Land Preparation

Land preparation is undertaken after on-site training for farmers has been completed. Adequate time must be allowed to prepare the fields for annual crops and prepare planting holes for tree or fruit tree crops before the on-set of the wet season. The work should therefore start one month before planting time. Farmers should be encouraged to follow the methods that they learned during farmer exchange visits, earlier training sessions and on-site method demonstrations.

The most important activity is fruit tree planting hole preparation. Farmers have a tendency to dig small planting holes because it is arduous work, therefore extension staff should undertake a field visit during this period to ensure that holes are prepared to specifications. Animal manure should be placed in the planting hole when the soil is being back-filled at least three weeks before planting time. A stake is placed in the middle of each planting hole site after back-filling has been completed.

In the case of vegetative contour strips, shallow ditches or crops such as bananas, paper mulberry or pineapples, the A frame is used to mark out the contour lines along the hillsides.

7.5 Procurement

Identifying sources of planting materials (seed and trees) well before planting time is most important. Mistakes are often made because this activity is left until too late, and as a result, good quality material cannot be found. If farmers are supplied poor quality material for the demonstration they will be dissatisfied and will not co-operate well during the remainder of the demonstration.

A common fault is to purchase fruit tree seedlings rather than propagated stock. Appropriate varieties must be selected from a nursery with a good reputation. This is particularly important as fruit trees are a 20 to 30 year investment.

Correct planting timing for trees and annual crops is most important for successful establishment and growth. Therefore annual crop seed should be purchased one month before planting time and delivered to the village. Planting recommendations must be provided.

Fruit trees may have to be transported long distances by vehicle so particular care has to be taken. The tree planting bags have to be thoroughly watered before transportation, trees carefully placed in the vehicle and the trees covered with a large sheet of plastic or a canopy to protect them from the wind during transportation. If this is not done there will be mortalities and farmers will receive fewer trees than they expected.

7.6 Planting

Planting time is very important. Planting method demonstrations must therefore be given at least 4 to 5 weeks before the planting time on the crop calendar. This is necessary to give farmers adequate time to prepare the fields for annual crops and prepare planting holes for tree or fruit tree crops.

Legume seed will usually need inoculating if there is not a history of planting the particular crop in the selected field. Inoculum is very cheap and can improve yields significantly.

Tree crops and fruit trees should be fertilised with organic manures. Therefore farmers should be encouraged to collect animal manure at the end of the dry season ready for placing in the planting hole at least 3 weeks before planting time. This will ensure good root growth and reduce tree mortalities at the end of the dry season when moisture stress occurs.

7.7 Crop and Tree Maintenance

Crop and tree maintenance is particularly important. In rain-fed sloping land situations the two critical crop practices are weeding and mulching because these improve soil moisture availability.

Weeding

Annual rain-fed crops need regular weeding starting from 2-3 weeks after seedling emergence. A general rule of thumb is to undertake 3 weeding operations during the life of the crop if possible.

Fruit trees also need regular weeding. Weeding of fruit trees should commence no later than 1 month after planting and should be done 3 times during the wet season. Ring weeding around the tree to a distance of 1 meter is all that is required. Interplanted crops such as hill rice, maize and jobs tear should not be planted within a 1 meter radius of the tree, or the trees will be shaded and make insufficient growth during the wet season.

Mulching

Mulching is a very important dry season practice for fruit trees. Mulch (grass or crop stubble) should be applied 12-15 centimetres deep in a 1 meter circle around each tree. This should commence in October-November. A thick mulch cover should be maintained until the following June when reliable rains have arrived.

Step 8: Monitoring and 2nd Phase Planning

Progress or Activity Monitoring

This is the monitoring of demonstration activities conducted during the cropping season.

It is conducted for two reasons:

a) to assess the achievements and quality of extension activities conducted by farmers and extension staff; and
b) to provide useful information aimed at effecting ongoing improvement of demonstration activities in year 2.

   Examples:

   - *The collection of information from members of S&L and production groups to understand their views on the performance of the group, ie., checking the S&L accounts*
   - *The inspecting and discussion on maintenance of crops by co-operating farmers, ie pineapples planted on the contour; fruit tree survival rates.*

Monitoring activities need to be undertaken at regular intervals during the wet season to ensure farmers understand the crop maintenance practices required. Method demonstrations should be conducted with farmers during field inspections.

Villager Progress with Farming or Husbandry Practices

Assessments of farmer progress with farming or husbandry practices are undertaken so that the requirements for farmer training for Year 2 are identified, eg , soil conservation measures in sloping land areas. Information is collected towards the end of the dry season on fruit tree survival rates so that plans for replanting in Year 2 can be made.

Planning for Year 2

Planning for Year 2 follows a similar planning calendar as Year 1. The information gathered during Year 1 monitoring visits to farmer fields is used for on-going planning.

It is probable that more farmers will wish to enter the programme if the activities of Year 1 have been relatively successful. In year 2, therefore, the following matters need to be considered:

- The number of new farmers entering the programme.
- The areas in which replanting or rehabilitation of soil conservation measures will be necessary.
- The number of fruit trees that need replanting.
- The planting materials required for new plantings of annual crops and fruit trees.
- The farmer training required to improve farming practices.

Appendix 1: Map

Glossary of Terms and Acronyms

DAFO	District Agriculture and Forestry Office
DoF	Department of Forestry
GOL	Government of Lao PDR
LSFP	Lao Swedish Forestry Programme
LUP	Land Use Planning
LUP/LA	Land Use Planning and Land Allocation
PAFO	Provincial Agriculture and Forestry Office
RTC	Regional Training Centre