Ministry of Agriculture and Forestry

National Agriculture and Forestry Research Institute

Report on Research Review and Planning Workshop

July 31 – August 1, 2008

Upland Research and Capacity Development Programme (URDP)
August 2008

URDP Workshop Report 0803

Report on

Research Review and Planning Workshop

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Executive Summary

The Annual URDP review and planning workshop was held from July 30 – 1 August, 2008 at NAFRI in Vientiane. This workshop was different than past ones in that it focused on continuing the process to refine and hone the current research agenda. The workshop explored how to ensure that research topics are addressing key problems and issues identified and making contributions to poverty alleviation efforts in the northern uplands.

Key points that arose from the meeting:

- The current research agenda is too broad and needs to be consolidated in order to focus on priority topics and issues

- Many of the research topics are too technical focused and should have a broader system based approach. There is a need to also look at how improvements to one system will affect the overall livelihood systems of farmers involved.

- The research proposals will need to be redone and these should focus on how the specific commodity fits into the system as a whole and not just an isolated technical proposal. In addition, issues and problems need to be clearly identified and defined. The current issue statements are very well articulated and thus it is often unclear as to what problems the research is trying to solve.

- It was decided that team leaders will be assigned to each of the topics as well as research coordinators.

- From the workshop, research topics were consolidated into the 11 research topics as shown below.

Consolidated URDP Research Topics for 2008-2012

Topic	Districts
Land and Forest Management	Phonexay, Meung
Tea	Namo, Meung
Rubber	Namo, Nalae
Khang	Viengkham
Maize	Houn
Upland Rice	All districts,
Lowland Rice	Namo, Viengphoukha, Pha Oudom
Fish production (natural and aquaculture)	Nalae, Viengkham
Vegetables & Fruit trees	Houn, Pha Oudom
Livestock	Viengkham, Phonexay, Namo, Houn, Viengphoukha, Pha Oudom, Nalae
Local Agriculture Knowledge and Information systems: Linking the Kumban and technical service centers	Phonexay Namo

1. Introduction

Over the past year, the Uplands Research and Capacity Development Programme (URDP) has been carrying out a process to identify, plan and implement its first year of research activities in its eight target districts. This includes:

1. Bokeo: Mueang Mung and Pa Oudom
2. Luang Namtha: Nale and Viengphoukha
3. Luang Prabang: Phonexay and Viengkham
4. Oudomxay: Namo and Mueang Hung

URDP aims to initiate participatory action research that contributes to identified upland development issues and problems. The identification of the research agenda was based on an area based analysis of development potentials in key target districts as well as understanding the overall issues in upland development and resource management. This will ensure that URDP research is clearly articulated as well as responding to local needs and government priorities.

This workshop was organized to review past research efforts and better define the scope of research in the eight districts for the coming year.

2. Workshop Objectives and Process

The objectives of the workshop were to:

- Explain to researchers and district staff process for carrying out research in the next year
- Revise and update research proposals made to ensure they are systems focus
- Develop plan for each research topic in the next year
- Introduce process for preparing annual progress reports and plans for coming year
- Present and discuss administrative and programmatic issues

The expected outputs included:

- Final decision on district priorities for 2008-09 research period
- Decide on two major research priorities/projects for each of the new district
- Develop scaling up approach for Phonxhai and Namo, initiate follow up research or new research priorities for P and N
- Consolidation and incorporation of existing research projects/proposals into district priorities
- Select project leader at NAFRI, NAFReC and in the district, select inter disciplinary research team
- Prepare draft work plan, timeline, budget for projects

More than 40 participants attended the workshop from NAFRI, NAFReC, and the 8 districts (see Annex 1 for list of participants). The agenda (Annex 2) was designed to focus on revising and improving research proposals and priorities 2008-2009, rather than focus on reporting of previous plans and achievements. Thus, Day 1 and Day 2 were focused on preparing systems based research proposals for two research topics per district. For the old districts (Namo and Phonexay), the focus will be on identifying topics for scaling up. The afternoon of Day 2 and all of Day 3 focused on preparing and exchanging plans for the coming year between the three components, NAFReC and the districts.

3. Introductory Presentations

3.1 Opening speeches by senior NAFRI managers

Mr. Khamphay Manivong, Deputy director of NAFRI emphasized that there is a need to find ways to ensure that research is linked to development issues arising in the different districts and how it is impacting on wider issues in the Northern Uplands. The research proposals should be more systems focused rather than focusing on technical trials. There is also a need to address institutional constraints. Technologies and models developed in the programme can be used not just for the northern uplands but can also be spread to the uplands in the South. In the eight districts there is a need to see how the current research agenda can be integrated into extension plans in others parts of the district. The research should not be separated out. Finally, there is a need to also look at social and cross cutting issues such as institutional mechanisms, gender and ethnicity.

Mr. Sisongkham Mahathilath, Programme Coordinator, explained the agenda and the expected outputs of the workshop. The programme has just three more years to run and it is important to ensure that research is running so that results can be presented back and lead into other development activities by the end of the programme period.

One priority of the government, and thus the programme, is to develop models for Technical Service Centers. This does not mean only how to construct the buildings but also provides methods and systems for how they can function effectively and provide better services to farmers. Each area is different and models should be adaptable to different conditions. There are three areas to explore further:

1. Overall mandates and responsibilities of TSC staff
2. How to develop management and administrative functions of the centers and how it will link to other levels or institutions at the Kum Ban leve;.
3. What type of services will they provide (developing staff). Need to have design and methods for providing services that are appropriate for the different situations and conditions.

3.2 Presentation status of farming systems changes in Northern Uplands

Dr. Vangthong made a presentation on the rapidly changing context within the uplands as well as comments on the overall research proposals. There are two major farming and agriculture systems in the Uplands: traditional mixed farming and emerging commercial production.

Some of the main issues and problems identified include:

- Large investments from foreign and local investors and expanding markets in China, Thailand and Vietnam are the biggest drivers of change. A number of boom markets (rubber, khang, agarwood) are driving the market as well.
- Government policy has supported and helped to encourage this investment.
- Experience and capacity of farmers and government staff to deal with rapid influx is still a problem.
- There is an increase in use of land for agriculture production. This has lead to increasing conflict and forest conversion
- Decline agri-biodiversity and traditional food sources as the push to mono-culture production and conversion of forests take place
- Big risks of food security in this transition phase
- Rapid changes in culture are also taking place as result of the transition.

The main goals of MAF and the URDP were then presented which are very complementary. MAF's goals include: 1) Food security 2) promoting commercial production 3) Shifting cultivation stablization 4) sustainable forest management.

The URDP research objectives are to:

- Develop productive and sustainable upland farming systems and land management recommendations that have the potential to benefi t a wide range of households with different characteristics
- Generate socio-economic knowledge that is relevant for different levels of policy making.
- Strengthen the capacity of NAFRI through an integrated capacity development effort focusing on human resources, organizational and institutional development.
- Improve information management systems and the communication of research results to different stakeholders.

In terms of development there are three inter-linking factor to improve sustainable developent:

- Policy and support mechanisms: this includes resource, credit, inputs, donor support, etc.
- Institutions: this includes agencies at all levels able to manage, facilitate and support (government agencies, local production groups, etc)
- Appropriate technologies: which are adapted to local context and sociall, economically and environmentally appropriate.

For URDP's research, there is a need to see 3 types of research:

- Research to find solutions (technologies, etc)
- Research to understand mechanisms for scaling up
- Research to provide policy recommendations

Over the past year we have been using a participatory approach to planning research which includes, diagnosing main problems and issues, writing up research proposals, implementing research, M&E and then looking for ways to scale up.

3.3 Status of URDP Research topics for 2008

Mr. Khampha Chantathilrath then presented an update on the research agenda for the past year. There are currently 22 topics of research that are being conducted or will start in the near future (see Annex 3). Some of this is a continuation of past research and some of this has just started in the new districts. The topics have been divided into the three main agro-ecological zones that the research component has used to classify its research topics across districts. In general the zones can be broken into the following categories:

- AEZ 1: Highland zone, good forest areas, still remote, focus should be on: Guaranteeing food security, NTFPs management, Long term commercial crops and Livestock raising – large and small livestock
  Districts in AEZ 1: Meung, Vieng Phou Kha, Viengkham

- AEZ II: mid-slopes, land competition and conversion, research focus is on: Guaranteeing food security, Commercial cropping, rubber , maize, cassava, Pidgeon pea (kang), Upland rice and paddy rice, Large livestock
  Districts in AEZ II: Meung, Vieng Phou Kha, Viengkham, Houn, Pha Oudom, Na Lea

- AEZ III: lowland vallies, increased land competition and marketization, Topics to focus on: Vegetables and fruit trees, Poultry and fish ponds, commercial crop production and establishment of production groups for: Paddy rice, Cash crops (maize, rubber, cassava), marketing
  Districts where topics in AEZ III: Pha Oudom, Vieng Phou Kha, Houn, Viengkham

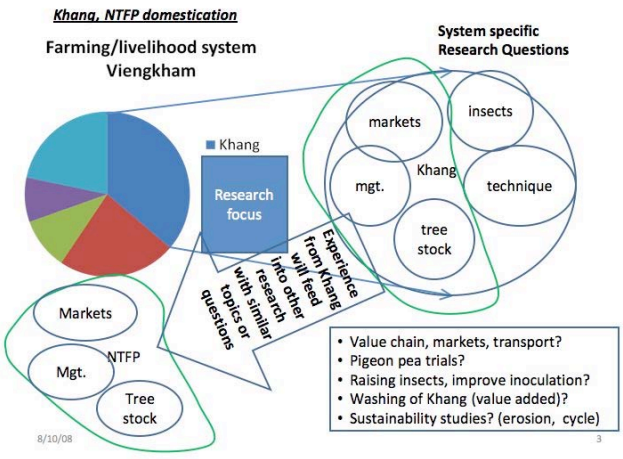
3.4 Comments on current research proposals and how to develop systems based research topics

Dr. Horst Weyerhauser and **Dr. Vangthong** provided an overview of how the research team can go about improving the current research agenda and make sure that it is tackling research for development problems rather than just testing out technologies. The issue is "what are we doing the research for". There is a need to think of the system as a whole and how different crops fit into a system or impacts on a particular livelihood or farming systems. For example the proposals for corn only focus on technical aspects but on the social and environmental impacts nor how to deal with the marketing and processing problems that have been identified.

There is a need to look at the whole system. It is not only about improving production or efficiency, what are the risks and impacts of expanding the whole system?

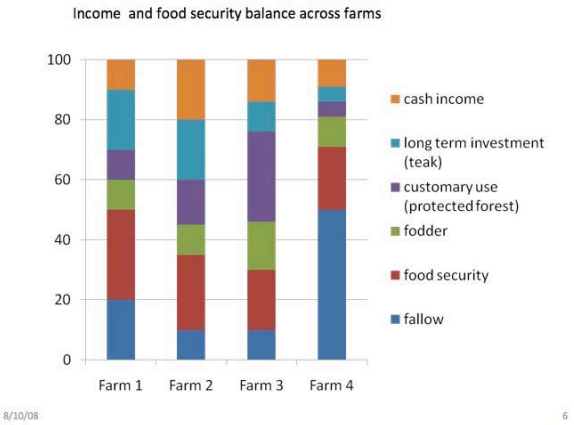
Dr. Horst then made a presentation on how the programme can begin to view research proposal from a systems perspectives and how the programe might work at different levels: from a farming systems approach to an area based approach. As the diagram to the right shows there is a need to look at a range of different inter-linknig processes. The focus is not on the technology itself but on upland farming systems. How doesthis relate to specific problems and issues farmers face in their livelihoods. At a wider what at the changes taking place in terms of area development priorities, regional markets, Government of Lao and MAF priorities. So we have to see the research URDP is carrying out form a wider perspective.

The next diagram shows the example of khang. Researchers should not only look at how to improve production of khang but also the markets. However, it is not only a matter of understanding the khang system, there is also a need to see how khang fits into other systems. What will be the impacts on the faming system if more khang is produced, What will be benefits and risks of this approach? How does Khang compare to other livelihood sources that farmers have. This will help to



solve the main question that Luang Prabang Province has posed: What potential does Khang have to reduce poverty and stablize shifting cultivation. An example of the research questions and activities to address the full system are shown in Annex 4.

The final diagram shows the need to look at how different crops and technologies cotribute to the livelihood system. The main point is that we don't want to take away this diversity of the farming system so that farmers are dependent on one crop. Rather the challenge for the URDP research is to ensure that new technologies and research help to reinforce such diversity and that research on improving production and efficiency strengthen farmers livelihoods and do not place them at further risk .



Khamphay agreed with the presentation and mentioned that this is the key to NAFRI research: to see the system as a whole and not just an isolated technical proposal. In addition, we have to understand the importance of clearly defining ***'issues'.*** If we have clear issue statements then it will lead to clear research questions and then even more precise and relevant research activities. Issues should also not be seen as only problems but can include opportunities, risks and challenges. There is also a need to address institutional issues and mechanisms within the research and not only focus on the farming systems. We can develop a nice example with a limited number of farmers but scaling such success up depends upon many different institutional issues.

4. Revision of research priorities and topics for 2008-2012

NAFRI research managers and advisers have been discussing how to improve the current research agenda and ensure it is focused on development priorities in the different districts and achieving MAF's overall goals. Some of the main concerns were mentioned in earlier discussion but can be summarized as:

- There are too many topics and staff cannot oversee all the topics in an efficient manner.
- Many topics are overlapping and can be combined into larger research proposals.
- There is a need to prioritize topics and rationalize why we are focusing on different topics for the coming year.
- Topics are too technology focused and do not take into account the farming systems or institutional issues for scaling up.

Thus, the rest of the meeting was focused on revising and updating current research proposals to ensure they are more systems focused and addressing key issues identified. The process included two working group sessions.

4.1 Comments on Current Proposals

The first working group session focused in improving the research topics and questions based on identified issues. The purpose was to provide an opportunity for district, NAFReC and NAFRI staff to look together at the proposals and see how to improve them. See Annex 4 for a list of all the results of the group work for each of the different topics.

Results of the discussion on the revising the current proposals is shown below:

Topic	Key issues
Land & Forest management	▪ Decided to combine these two topics as they were working on the same thing ▪ At what level do we do this? Watershed? Kum ban, village ▪ How to link wider area-based to local management? ▪ Understanding impacts of LUP before developing new models
NTFPs/Khang	▪ Look at different planting techniques and means not just testing out ourselves ▪ How does it fit into different systems
NTFPs/Tea	▪ How to integrate with other systems ▪ How to manage in the forest and link to land management and forest management
Rice	▪ There is a need to look beyond just planting rice but also look at seed multiplication systems since NAFRI has the responsibility for this.
Corn	▪ Focus should be on marketing and production groups rather than on continuing trials on inter-cropping
Vegtables	▪ Focus on issues of sustainability and the market. What the market will take
Fruit	▪ Need to focus on appropriate fruit for market and conditions.
Information	▪ Focus on more than information dissemination but on roles and responsibilities, information flows, participation, local groups
Rubber	▪ Focus the priorities and focus them on broad questions
Livestock	▪ Focus on management system and forage/cut and carry ▪ Demonstration?
Fisheries	▪ Focus on food security and fisheries contribution to food security & nutrition ▪ How to get communities involved, how to get them participating

2.2 Summary of research plans for 2008-2012

Based on the feedback from Day 2, staff were asked to refine the research topics and then to develop priority plans for the coming year. Below is a summary of the key comments on each proposal. The results are shown in Annex 4.

Topic	Key issues
Land & Forest management	▪ Need to look at scale and look at one watershed rather than focusing on village or kumban level. This is in-line with the government strategy. ▪ Focus less on land suitability studies and more land management arrangements. ▪ The challenge is to find ways that district and provincial staff can use the plans and implement at different levels. Currently, maps and other information are not used at the district and provincial level. ▪ Could also include the issue of carbon emissions and climate change as Lao has been chosen as one of the 14 countries to work on deforeatation and climate change.
NTFPs/Khang	▪ Look at different planting techniques and means not just testing out ourselves ▪ How does it fit into different systems and don't just look at the Khang system itself. What impacts will it have on other systems.
NTFPs/Tea	▪ How to integrate with other systems ▪ How to manage in the forest and link to land management and

	forest management
Rice	▪ Could focus also on looking at seed supply and how to improve this from the farmer perspective ▪ Could also look at what can be planted in the off-season to maximize productivity and income for farmers.
Corn	▪ The focus is too much on inter-cropping and not on the issue of sustainability and soil erosion ▪ Need to look at regulations and support to establishing groups. ▪ Again, we don't have to do research only on planting techniques but should focus on the problems such as soil erosion and improvement. Look at integreated systems ▪ Also explore processing and storage issues since these also come up
Vegtables	▪ Research topics 1 and 2 seem to be very similar. This should be differentiated. ▪ Could also focus on food security or commercial products. ▪ Need to differentiate between research and extension and show the linkages to the development. This does not really seem like research as such
Fruit	▪ The research questions are not very specific. ▪ Should look at markets, livelihoods, etc. and not just on growing techniques
Information	▪ There is a need to look at the whole system rather than just the level of the Kum Ban and technical service center. ▪ Need to look at various conditions. For instance in Viegnkham, they have made the TSC a regional center for 2-3 kumbans because of capacity and needs. ▪ Don't just look at the TSC but also how to get different projects to work together and cooperate ▪ How do we get different technical service centers to work together or coordinate or create linkages between them. ▪ Need to create a system for management and clarify roles and responsibilities, similar to the LSFP modeling in Phase 4. Need to have a model to create the whole system within the TSC.
Rubber	▪ The activities and questions do not seem to be linked. There are a number of activities but not sure if this is an integrated proposal as of yet ▪ Could also look at how rubber is growing and how farmers can produce efficiently in the future. ▪ Another area could be looking at regulations and mechanisms in relation to the environment. What will be the future impacts of rubber factories. ▪ There is already a wealth of information on the internet regarding rubber. There is a need to start there. ▪ Main question should focus on how rubber can improve livelihoods and what impacts it will have the environment ▪ Could also look at the contract farming arrangements and how these can be improved. ▪ Need to look at the economic benefits which are different compared to the financial benefits. ▪ For the manual this does not seem like a research activity rather an extension activity. This should be done in collaboration with AIM and the information center.
Livestock	▪ There has been a lot of research on forages and livestock so there is not a need to test out the approach again, the focus should be on management and understanding how to improve group formation

Fisheries	▪ For cassava and fish it is clear how it works but not sure of how much feed is needed and don't understand the whole system. The research should focus on the system rather than on the specific technology

3. Administration and management

Sisongkham introduced the time schedule to prepare the annual work plans 2008/2009 and annual progress reports 2007/2008, where the first step is for the components to prepare their plans (see table below)

An important part of plan preparation is the clarifications around research to be performed. Other aspects of the plan are better known since before or are already better elaborated for extension from this budget year into budget year 2008/2009.

Presently various units costs etc for use in the planning process are being set up and will be circulated. Sisongkham suggested that staff engaged in the preparation of progress reports and plans communicate with him over phone for any clarifications needed,

Stages	Activity	Who
Stage 1; 30 July – 1 August	Annual Programme Planning Workshop in Vientiane	
Stage 2; 1 - 31August	Various meetings within and in between components to discuss and develop plans Workplans should be finalized by September 1	Components, advisers, programme management
Stage 3; 1 - 10 Sept	Finalization of draft to plans for components including budgets	Staff of components and advisers
Stage 4: 10 – 15 September	Compilation of component plans and submission of plan to Swedish Embassy	NAFRI Management, Programme Coordinator and adviser
Stage 5: 9 – 10 October	Annual Review including discussions on the AWP	MAF, NAFRI, Sida Swedish Embassy
Stage 6: 11 - 31 October	Adjustments of plans if needed	Programme coordinator, staff of components and advisers
Stage 7: Before mid November	Approval of plan by Swedish Embassy	Swedish Embassy

6. Conclusion and next steps

Khamphay Manivong closed the meeting by congratulating all the participants on the hard work done. He emphasized the need to develop research proposal which are support development and that we are not just carrying out research for research sake. The focus should be on developing methods and technologies to find a way out of problems and support managers and extension workers.

The key challenge is to make the research appropriate for extension. How can we work with extension and have a systematic approach both at the district level and the national level.

Annex 1: List of participants

Day 1: Wednesday, July 30

Time	Activity	Facilitator
8:00 – 8:30	Registration	
8:30 – 9:00	Welcome and introduction	Khamphay
9:00 – 9:15	Objectives and focus of the workshop	Sisongkham
9:15 – 9:45	Presentation 1: Overview of research agenda process and issues	Dr. Vangthong
9:45 – 10:15	Presentation 2: Overview of current 21 research proposals and update on progress	Khampha and Khampou
10:15 – 10:30	Coffee Break	
10:30 – 11:00	Presentation 3: Strength and weaknesses of the current proposal and developing systems based proposals	Dr. Vanthong
11:00 – 11:30	Presentation 4: Example of systems based proposals	Dr. Horst Weyerhauser
11:30 – 12:00	Discussion	
12:00 – 1:00	Lunch	
1:00 – 1:30	Introduction into Working Group Session 1 & Breaking into groups	Bandith/Michael
1:15 – 4:30	Working Group Session 1: Revision of proposals to make them systems based	Working Groups

Day 2: Thursday, July 31

Time	**Activity**	**Facilitator**
8:00 – 8:30	Registration	
8:30 – 8:45	Introduction to the Day	Khamphay
8:45 – 12:00	Presentation of all revisions to research proposals	Dr. Vangthong
10:00 – 10:30	Coffee Break	
10:30 – 12:00	Presentation of all revisions to research proposals	
12:00 – 1:00	Lunch	
1:00 – 4:30	Presentation of all revisions to research proposals	

Day 3: Friday, July 31

Time	Activity	Facilitator
8:00 – 8:30	Registration	
8:30 – 8:45	Introduction to the morning	Khamphay
8:45 – 9:00	Group work to develop research plans	Bandith/Michael
9:00 – 10:00	Presentation of research plans	
10:00 – 10:30	Coffee break	
10:30 – 12:00	Presentation of research plans	
12:00 - 1:00	Lunch	
1:00 – 3:00	Presentation of research plans	
3:30 – 4:00	Programme Management and Administration issues	Sisongkham and Carl

Annex 2: Participants List

0N	Name and familyname	From
1	Mr. Simone vongkhamhor	FRC
2	Mr. Khankham Ounoudom	IC
3	Mr. Sithon sommalat	Nafrec
4	Ms. khamsao houngpaseuth	Nafrec
5	Ms. Valy lavahom	Nafrec
6	Ms. malay soukkhy	Nafrec
7	Mr. Vilayphone sitthideth	Houn district
8	Mr. Kannada sayyalath	Nafrec
9	Mr. Singha sivilay	Phonexay district
10	Mr. Somevang soukhaphon	Nafrec
11	Air saymany	Viengphoukha district
12	Mr. Somsay	HRD
13	Mr. sombat khattiyavong	Meung district
14	Mr. Khamphou Oravong	NAMO
15	Mr. Khamsomepheng	Phonxay district
16	Mr. Khamtan	NALEA district
17	Mr. Bounthom	HRC
18	Mr. Khamphout Keobounma	Phonxay district
19	Mr. Bouaphant Souphatthone	NAMO
20	Mr. Micheal Victor	IC
21	Mr. Nate	URDP
22	Mr. Linkham Doungsavanh	PRC
23	Mr. Sinthavong Vilavong	LARREC
24	Ms. Vilaysouk	Phommalisack
25	Ms. Chay Bounphanouxay	ARC
26	Ms. Alounny Sinbandith	NAFRI
27	Ms. Phousone Savongsy	NAFRI
28	Ms. chanmy	NAFRI
29	Ms. Bounnao Silaphet	NAFRI
30	Ms. Khanti	NAFRI
31	Ms. Phanmaha Sihanouvong	NAFRI
32	Mr. Khamphai Manivong	NAFRI
33	Mr. Somphachanh Vongphasouvanh	FRC
34	Mr. Horst	NAFRI

35	Mr. Khamphone Sengdara	FRC
36	Mr. Cher Santisouk	Viengphoukha district
37	Mr. Sysongkham Mahathilath	NAFRI
38	Mr. Khampha chanthilath	NAFRI
39	Mr. Khamphou Phoutthavong	NAFRI
40	Mr. Chanphasouk Thantaphone	RCCRC
41	Mr. Chanthavisay Keobounnam	NAFRI
42	Mr. Thanoukhum Khennavong	NAFRI
43	Mr. Sayyadeth	NAFRI
44	Mr. Hom Chitsavash	NAFREC
45	Ms. Hongthong	ARC
46	Mr. Shythone Sommalath	NAFREC
47	Dr pheng sengseu	ALRC
48	Mr. Oudong	NUOL
49	Ms. Vilayphone	NAFRI
50	Mr. Dr Vanhthong Phengvichith	NAFRI
51	Mr. Dr Carl Mossberg	URDP

Annex 3: List of research topics for 2008

Zone	Research Area	Problems	Topics	District
1	NTFPs Utilization		Survey of priority NTFPs which have market potential and can be managed	All districts
	Forest Tea	Illegal felling	Set up management arrangements for community forestry in nale district, LNT	Viengphoukha, Meuang Mueng
	Tea planting for commercial production	Price is not sure	Study the market for tea	Namo
	Upland rice	Seed, market, technologies	Test out different seed varieties	All districts
2	Commercial production			
	Khang	Seedling, market, planting technique	Improve commercial production of khang	Viengkham
	Corn	Seed, soil erosion, price fluctuations	Study on improving production, inter-cropping for soil fertility and group development	Muang Hun
	Rubber	Competing land uses with rubber and livestock	Intercropping of stylo with rubber and	Viengkham, Viengphouka, Phaoudom
	Large cattle raising	Conflicts between the commercial production crop and the natural method of livestock rearing, varieties	Study on how to develop livestock groups	Namo and Phonxay
			Study techniques for planning feed fro buffalo	Viengkham and Nale
			Study market for grass seed.	Namo and Phonxay
			Study on improving cattle breeds in the North of Laos.	Phonxay
	Animal feed	Seed, planting techniques and management of animals	Testngi planting three varieties of grass (gini, rusi stylo)	Viengkham, Viengphoukha, Nale, Pha Oudom
	Small livestock (goat)	Cannot produce for the market and animal feed problems	Study system for raising goat and using 3 improved varities (Gini, rusi, stylo)	Viengphoukha, Nale, Pha Oudom
3	Rice planting (dry and wet season	Seeds, technical skills to improve production	Test out improving production of seed	Viengphoukha, Pha Oudom, namo
			Improve production of different rice systems (wet/dry season, corn-rice, rice-vegetables)	Viengphoukha, Pha Oudom, namo
	Rice planting in 1, 2, 3??	System for multiplying rice seed		Viengphoukha, Pha Oudom, namo
			Test the improvement in the rice quality in Session 1 and production techniques in Sessions 2 and 3 in the farmers' fields (The field is the farmers'	

Zone	Research Area	Problems	Topics	District
			school place)	
	Fish	Varieity and fish food	Study the technique for raising fish and feeding them appropriate local feed	Viengkham
	Soybean	Seed, price, harvesting practices.	Test out the processes to improve production in places where the is crop rotations of soy bean	Hun District
			Study soy bean improvements with rice and local conditions.	Hun District
	Integrated fruit tree production	Management techniques, seed	Planting and scaling up of benefits of fruit trees	Namo and Phonxay
	Vegatables	Market, techniques, seeds	Improve wet season production (cabbage, tomato)	Phonxay
	Chicken	ລະບົບການລ້ຽງແບບທຳມະຊາດ, ອາຫານ	Study system for chicken raising which promotes food security and income generation.	Viengkham

Annex 4: Example of systems based proposal (khang)

Research Question:
Khang has been introduced into upland farming systems as a domesticated NTFP.

- Are present growth schemes sustainable and well suited for a diverse farming system as in Viengkham?
- To what extend should the traditional farming system be changed to focus on Khang production (minor component and often collected 'off-farm' to a major component to replace other shifting cultivation activities)?
- Can Khang replace upland rice, what balance and rotation is needed?

Research projects to address the above questions:
Assessment of sustainability of present systems on and off farm (wild collection of Khang)

- Economic potential of Khang across the district
- What is collected where, when and by whom
- Quantities and qualities

Farming system studies on Khang

- Where does Khang grow best, and how (ecological niche, micro climate, altitude)
- How does the quality of the pigeon pea influence presence/absence of the insect and quality and quantity of the Khang (stick lack)
- What management and technology is fostering and improving Khang quality and development
- Are there known diseases or problems with Khang commercialization?
- What changes does a farmer need to put in place to grow Khang, input/output?
- Sustainability studies

Markets:

- Economic value of Khang in the existing farming system
- How much cash does a farmer need to sustain Khang growth
- Trading schemes in Laos and adjacent countries
- Who is involved in NTFP harvesting, collecting, trading (village, collection points, markets, across border), and marketing?
- Who benefits? Who doesn't?
- Prices at every point of sale, village, market, across the border
- What are the possibilities for post harvest value adding (washed Khang vs raw Khang)

Output:

- Report/manuals on possible improvements (technology, mgt, species & AF combinations, inoculation and harvesting, pest & diseases, etc.) for sustainable Khang production in Viengkham and recommendations for other districts.
- Report includes suggestions for post harvest mgt and bulk pricing/coop development at village and district level.

Training involved or needed: inoculation, washing of Khang, etc.

Annex 5: Outcomes of Research based Working Group Topics

Forest Management

Forest Cover				
	Current situation	**Research Question**	**Research Topic**	**Priority**
Technique	The conversion of forests (the Nam Ha National Conservation Area) so that they are able to support various prosperous activities and provide other benefits: growing rubber… The use of modern tools for cutting wood and gathering non-timber forest products (NTFPs) are bringing about the rapid reduction of forests.	How is it possible to manage forests?	The study of ways of using forested land for other purposes	***Level 1 (2008 - 2009 Plan)***
Marketing	There is a great demand in neighbouring countries for our forest resources, NTFPs and aquatic and animal resources. Lao people still need to use a large amount of the forest resources, NTFPs, aquatic and animal resources	Why do the markets of our country neighbours have such a high demand for our forest resources, NTFPs, aquatic and animal resources?	Study the links between the demand and the market for forest resources, NTFPs and aquatic and animal resources both domestically and abroad.	***Level 1 (2008 - 2009 Plan)***
Mechanism	The dissemination of existence of the laws on forestry, aquatic and animal resources, articles of agreement, decrees and guidelines does not reach the people whose livelihoods are related to the forests. The officials and the people	What methods could be used in forestry management?	Study the establishment of village forestry groups.	***Level 1 (2008 - 2009 Plan)***

	involved are not managing the proper implementation of the laws, articles of agreement, decrees and regulations.			
Society	The number of people depending on the use of forestry resources, NTFPs and aquatic and animal resources is ever increasing and bringing about greater reduction of forests. People's livelihoods are still closely connected to nature (the Nam Ha National Conservation Area)	?	?	
Environment	The forested land is reducing because of the clearing of forests for upland rice growing, illegal felling and collection of NTFPs. The extent of the reduction of the forestry resources, and aquatic and animal resources is a matter of concern. The climate has changed, the rains do not come at the proper season, there is less water in the streams and wetlands.	How can we have the methods and the ways to achieve their enforcement for the management and the protection of forestry resources, NTFPs, aquatic and animal resources?	Provision of sustainable management of forestry resources, NTFPs and aquatic and animals resources	***Level 1 (2008 - 2009 Plan)***

Land Use Planning and Management				
	Current Situation	**Research Question**	**Research Topic**	**Priority**
Technique	There are methods, and the regulations (concerning the relative importance of water resources, laws, other regulations) - -Land is used inappropriately - -Poor quality land (without any improvement) - -Land is used in many different ways, not in keeping with the law or ways which are permitted (catchment areas, land protected by forest, conversation forests, state owned land, cultural lands and others)	- How to plan for the correct use of land and to be able to use this at the village and district levels? - How to encourage the farmers to accept different techniques like: using sloping land, improving land and others? - How to use mechanisms for supporting the implementation of land use planning and management and the coordination between the different management organisations in land use planning and management?	Look for information (tools, equipment) to use in the land use planning and management. Get feedback on the methods and other regulations working with the relevant management organisations. Provide and formulate plans for the management and use of land at the level of both developed village groups and villages collecting water in small amounts. Use techniques to protect land against erosion and techniques to improve systems of agricultural production in the mountainous regions.	Level 1 (2008 – 2009 Plan) Level 1 (2008 – 2009 Plan)
Marketing	There is a large demand for the use of land resources by business men from neighbouring countries while the local	Why do businessmen from neighbouring countries want to invest in our land?	Study models of appropriate investment and funding.	Level 1 (2008 – 2009 Plan)

	people still have their own high demand.			
Mechanism	Dissemination of information on articles of agreement and laws about agricultural land and forestry to encourage and promote the implementation of different articles of agreement, laws and other regulations rules by officials and the people in the management of the implementation.	What are the appropriate methods at different levels for land use planning and management? How to achieve successful enforcement in the management of the implementation of articles of agreement, laws and regulations governing land use planning and management?	Study the establishment of branch management committees at the level of both groups of developed villages and villages.	Level 1 (2008 – 2009 Plan)
Society	The population increase is resulting in an increasing use of land resources (there is more conflict). People's use of land is still closely connected with nature (customary use) Time is needed to change land use models. Investments in land are bringing about changes in the farmers' ways of earning a living.	How does investment in land impact on society?	Study the impact investment in land has on society at district and developed village group levels	

Environment	Both the clearing of forest land for upland rice and the use of incorrect techniques lower the quality of the land and also cause changes in the climate. There are changes in the rainfall pattern, less water in streams and wetlands, and more water flowing from previously forested areas and drought.	How is it possible to manage and enforce the protection of land resources? What kind of environmental impact does the investment in land have?	Provide ways to manage land sustainably Study the impact of investment in land and using the land for a single crop in Houne district	Level 1 (2008 – 2009 Plan)

A Review of Research on Crops and Fruit Trees

I./ Crops:

1. **Current situation/problems:**

- **Wet season**
  - + farmers lack methods and knowledge for growing crops for example in Houne and Pha Oudom districts.
  - + crops fail to grow, and if they do they rot and die
  - + there is destruction by disease and insects
  - + some vegetables like cabbage, coriander, spring onions, Chinese cabbage, lettuce and others aren't on sale in the markets
  - + in the wet season vegetables are expensive
  - + vegetables are imported from other places both inside and outside the country

- **Dry season**
  - + farmers grow many vegetables (the majority of families grow the same kinds)
  - + price of vegetables is not fixed (middlemen influence the prices)

2. **Potential:**

- + there are productive areas and a market demand
- + in the dry season there is a tradition of farmers growing vegetables
- + possible to produce for export to other districts
- + there are convenient transportation links

3. Market:

- + there is a great demand for vegetables in the rainy season
- + in the dry season there are no fixed prices for vegetables

4. Mechanism:

- + farmers are not brave enough to invest their own capital
- + there must be encouragement from the government and other organizations

5. Society:

- + there is a lack of information (techniques and marketing)
- + there is no exchange of lessons learnt or of experience gained

6. Environment:

- + the use of chemical will impact on the water resources
- + soil nutrients will be lost (infertile soil, hard soil) if the soil is not improved

Crop Research Topics

Research Topics	Priority	Place	Comments
1. Study the growing of vegetables in the rainy season to raise the quality	1 (07 - 08)	Houne district, Pha Oudom	
2. Study vegetable growing systems and the use of dry and wet season varieties		In all 8 districts	
3. Study the demand for the consumption of vegetables inside and outside the district markets		In all 8 districts	
4. Produce vegetables and seeds to meet market demands		Houne district	
5. Establish vegetable cultivation groups to produce vegetables for sale		Phonexay district	
6. Study the cultivation of organic vegetables for sale			

Research Topics for Fruit Trees

Research Topic	Priority	Place	Comments
1.Study the cultivation, the care and seeds of Jujube and Sapodilla –in order to improve their commercial production		Houne district	
2. Study the possibility of identifying fruit tree varieties – appropriate for each region		6 districts	
3. Study the consumption and the market		8 districts	
4. Study the care and improvement of the seeds (longan, lychee, '*makman*' (ໝາກໝັ້ນ), pomelo)		Phonexay, Namor	
5. Establish fruit growers' groups to produce commercial products		Phonexay, Namor	

II./ Fruit trees:

1. **Current situation/problems:**

- Farmers lack methods and knowledge about the care
- Slow growth
- There is destruction by disease and insects
- There are blossoms but no good fruit and some trees do not bear fruit
- It is necessary to import fruit trees from abroad
- There is still no knowledge about which varieties are suitable for each region

2. Potential:

- There are productive areas and a market demand
- It is possible to grow commercially for export to other districts
- There are good transportation links

3. Market:

- There is a market demand

4. Mechanism:

- Farmers are not brave enough to invest their own capital
- There is a great need for encouragement from the government and other organisations

5. Society:

- There is a lack of information (techniques and marketing)
- There are no exchanges of lessons learnt or of experience gained

6. Environment:

- There will be an impact on the water resources through the use of chemical weed killers and pesticides
- There will be a loss of soil nutrients (infertile soil, hard soil) if the soil is not improved

04_Rice-maize

Paddy rice, upland rice and maize

	Name and surname	Sector
1	Mr Chanphasouk Thanthaphone	Centre for Research in Rice and Economic Crops
2	Mr Banthsak	Northern Centre
3	Mr Singthong Phondala	Houne District
4	Mr Khamsone Seurmmannivong	Policy Research Centre
5	Mr Phone Vongsavath	Phaoudom District
6	Mr Samith Vatsana	Meurng district

	Current Situation	**Research Question**	**Research Topic**	**Priority**
Technique	- use of local seed varieties: - use farmer style techniques - rice growing land limited - some areas of land have water resources for growing dry season crops - destruction of crops by pests	- Are there any new techniques which could be used for increasing both the quality and the yield of rice? - Are there any existing growing systems produce good quality and which could be used in growing rice?	- to experiment with crop systems in order to increase the yield and the quality of rice (produced in both the wet and dry seasons, wet season rice-maize, soy beans and crops) - to investigate the farmers' capability of producing good quality rice seeds to improve the yield. - to look for crops to alternate with rice to increase the productivity of the land (formulate a land use plan)	2007-2011 Plan 2007-2009 Plan
Marketing	For consumption and for sale in the region			
Mechanism	- Grow what you want by yourself not as part of a group and without real marketing system	- How to organise growers' groups to help farmers acquire equipment to use in production?		
Society	- Guarantee food security for the household and provide for those farmers who do not grow rice			
Environment	- the climate is not normal (rain) - cold weather during the dry season	- How to shorten the growing period of paddy rice in order to have faster growing dry season crops?	- to experiment with seeds which germinate quickly, which are resistant to cold and produce crops which can be harvested at the end of October.	

Maize				
	Current Situation	**Research Question**	**Research Topic**	**Priority**
Technique	- Improved varieties of imported seeds - Use of the same land for many years of production - Ploughing to remove the surface of unimproved land	- How to provide the farmers with information about seed varieties? - How can growing a variety of mixed bean crops without ploughing (SCV) protect the soil fertility? - Growing maize with mixed varieties of bean results in good yields.	- the system for growing maize – soy beans - the mixed cropping system of maize + ground nuts (SCV) protects against soil erosion - to test ways of improving the produce quality and appearance after harvesting –in order to increase the value of the production - to study the possibility of producing maize seeds to reduce the need for imports - to study the growing of sweet corn	2007-11 Plan 2008-11 Plan
Marketing	- There is a foreign market demand - Prices fluctuate - Appearance after harvesting is not good	- How to fix the price? - How to provide the farmers with information? - How to achieve a good quality of production?	- to study contract systems between buyers and the sellers - to look for sources of information - to study methods for storing and improving the quality of the produce after harvesting	
Mechanism	- As yet there are no groups organised for maize production - All produce is exported	- How can organised groups improve production?	- to study mechanisms for organising production groups - to study marketing systems	
Society	- There are conflicts about the use of productive land - There is loss of crop (animal) produce.	- -How is it possible to solve land conflicts? - -How is it possible to find a way to balance systems for increasing the production of maize and raising animal feed crops?	- to study the use of productive land - -to study appropriate production systems	
Environment	Both the forested areas and the biodiversity are being reduced	To find a way to produce maize while reducing the impact on the forests.	To study the possibility of reducing the environmental impact of growing maize	

	Rice		
	Research Topic	**Technique**	**Priority**
1	Paddy field: to check the quality of seeds Upland rice field: to check seeds	1. Seed varieties: Paddy rice: TDK 5, 6,11 and local varieties Upland rice: ເຂົ້ານົກ (*Khao nok* = Bird rice), ລາບຸນ (*La boun*) and local varieties 2. Fertiliser: Paddy rice: animal manure 5 tons/ha, chemical fertilizer NPK 45-22-22 kg/ha Upland rice:	I 2007- 09 Plan
2	To experiment expanding the series of the varieties of rice seeds 1, 2 and 3	1. Seed varieties Paddy rice: TDK 5 2. Fertiliser: Paddy rice: animal manure 5 tons/ha chemical fertilizer NPK 45-22-22 kg/ha Upland rice:	2007-09 Plan
3	To experiment with growing dry field rice	1. Seed varieties: Paddy rice: TDK 5, 6,11 –and local varieties 2. Fertiliser: Paddy rice: animal manure 5 tons/ha, chemical fertiliser NPK 45-22-22 kg/ha	2008-10 Plan
4	To experiment with growing maize and soy beans after paddy cultivation	1. Varieties of maize and soy beans 2. Fertiliser Paddy rice: animal manure 5 tons/ha, chemical fertiliser NPK 90-22-22 kg/ha (special expertise?)	2008-10 Plan
5	To study the land and the use of varieties in the north (project focus)	To gather information from both the district level and from field observations	2008-09 Plan
6	To study the possibility of land use planning in order to improve the quality of the production of an area.	To cooperate with Agricultural Land Research Centre and the Policy Research Centre	?
	Maize		
1	To experiment with crop rotations of maize with soy beans	1: seed varieties: maize and soy beans 2: the planting out season The first season: grow maize The second season: grow soy beans	2007-10 Plan
2	To experiment with the mixed cropping system of maize + beans using the SCV technique in order to protect soil surface erosion.		2008-10 Plan
3	To experiment with growing sweetcorn mixed with livestock rearing		
4	To study the possibility of hybrid maize production		
5	To organise maize growing groups		

05_rubber	Current Situation			Research Questions	Research Topics	Priority
	Problems	**Challenges**	**Opportunities**			
Technique	1. Illegal use of forests and natural resources. 2. Appearance of conflicts over productive land. 3. Investments in land. 4. Contracts between the rubber growers and the investors. 5. Farmers lack productive land. 6. Growing rubber requires high investments of both time and money. 7. Pastureland is decreasing or is far away. 8. There is no control of the use of rubber seeds (use of a mixture of varieties). 9. The majority of rubber plantations are alongside the roads. 10. The majority of rubber plantations have only a single variety.	1. To guarantee the amount and quality of the rubber produced. 2. Natural disasters, disease and plagues of insects. 3. Lack of special expertise.	1. Experts have the opportunity to develop their knowledge and experience about rubber.	1. Which methods or techniques can be used for mixed cropping with livestock and rubber growing? 1.1. Which is the most appropriate – crops, timber, NTFPs or livestock rearing to mix with rubber plantations? 1.2. Which is the most appropriate for each region crops, timber, NTFPs or livestock rearing to mix with rubber plantations? 2. What methods, enforcements or factors for the management of rubber plantations are there? 2.1. What are the most suitable soil conditions for rubber plantations? 3. Which of the models/techniques, enforcements and factors are the most successful and sustainable for the management of rubber plantations? 3.1. Which is variety of rubber is the most suitable for each region (fast growing, producing quickly, good quality latex, disease resistant)? 3.2. Which models/techniques to use to help the farmers to produce good quality seedlings? 3.3. Which of the models/techniques are the most successful for helping the farmers to care for the rubber trees? 3.4. What methods can be used for the protection of rubber against disease and insect attack?	1. Animal feed crops mixed with rubber in order to rear livestock. 2. Commercial crop production mixed with rubber. 3. Commercial production of timber and NTFPs mixed with rubber. 4. Study the commercial varieties of crops, timber and NTFPs which are appropriate for each region to mix with rubber. 5. Study the suitability of regions for rubber plantations and suggest those areas suitable for rubber plantations in each province. 6. Study the varieties of rubber and their suitability for each region. 7. Develop and improve the handbook on rubber planting. 8. Study ways of protecting against disease and insects for young and mature rubber trees.	**1**
Marketing	11. No real market	4. No fixed prices and farmers cannot fix them 5. Prices of agricultural produce are increasing.	2. Domestic rubber processing factories are increasing. 3. In the future the Lao PDR will be only one of the rubber exporting countries. 4. Wood from rubber trees can be a raw material for the timber industry.	4. How to enforce and guarantee the rubber price in coordination with rubber organisations and rubber producing regions? 4.1 What enforcement factors can be used to encourage entering into rubber export contracts with other countries like China? 4.2 Which technology can be used in order to guarantee the quality and price of rubber exports?	1. Study the way and the possibility of becoming a member of the rubber producing regional network. 2. Study enforcement factors can be used to encourage entering into rubber export contracts with other countries like China? 3. Study modern technology to use in the improvement of the quality of rubber exports 4. Study the feasibility of establishing rubber processing factories in the Lao PDR	**4**

Mechanism			5. The Lao PDR can be an economic centre for the rubber exports of South East Asia. 6. There are changes in knowledge and technology about international rubber production. 7. Establish centres /rubber research institutions.	5. Which factors or methods provide information for helping rubber farmers? 5.1. How can information about rubber be exchanged between villages, village groups, districts, provinces and regions? 6. How to enforce and use ways to help farmers to grow crops other than rubber? 6.1. Which of the following – crops, timber or animals is the most suitable choice for the farmers in each region and which technique?	1. Study the possibility of establishing rubber producing groups at the level of the village groups. 2. Study process and the procedures of the implementation of the rubber producing groups. 3. Study process and the procedures for the exchange of knowledge and lessons learnt within districts and provinces.	**3**
Society	12. Foreign workers are being imported.	7. Society (livelihoods are changing/negative influences)	8. People have new occupations/ alternatives to clearing for upland rice cultivation	7. How will society and the lifestyles of the farmer be changed once rubber plantations have been established? 8. Once rubber plantations have increased will there be any income or need for foreign labour? How should this be enforced?	1. Study the possibility of negative effects on society after rubber. 2. Study the changes in lifestyles of the farmers after the growing of rubber. 3. Study the possibility of foreign labour immigrants.	**5**
Environment		9. The use of chemicals in the rubber plantations. 10. Degraded environment (rotting rubber trees/ processing factories)		9. Which methods, enforcements or factors can be used for environmental conservation/protection after rubber harvesting and processing? 9.1. What materials are most successful in environmental conservation/protection after rubber harvesting and processing?	1. Study the environmental impact of rubber plantations and processing factories. 2. Study the loss of water around the rubber plantations. 3. Study the impact on the biodiversity of the rubber plantations. 4. Study the impact of the chemicals used in the cultivation of rubber.	**2**

06_fishsummary

Fish Research Topics

1. Wild fish (establish aquatic conservation areas)

Places: Nalae district,-Luang Namtha province

1. To survey the feasibility of using natural water sources as conservation areas (ecology, life and species in water sources)
2. To survey the potential of the social system in those areas for establishing groups (tradition, customs and livelihoods)-.
3. To study the potential of coordinating sectors to cooperate in being the lead, sectors to assist in implementation and follow- up the aquatic conservation management.
4. To survey the potential for cooperation at the level of the village, methods of implementation (awareness, (organise study tours), manage aquatic conservation, management of aquatic conservation control groups, protection methods, and methods for the use of living aquatic resources, by way of improving the level of natural fish production, establishment of the Regulations for the Management of Fisheries)

2. Experiments in Fish Rearing

To experiment with feeding "*Phanigh-eatgrass*" (ปาใบกินหยัา) with locally available food

Place: Viengkham district, Luang Prabang Province

1. The district sections to act as coordinators for experimenting with cooperation with individual private sector villagers.
2. To learn the results of experiments in fish growth when fed on cassava and their leaves- as used in the northern regions of the country.
3. To survey the feasibility of growing cassava in the district, -province- -and also of importing cassava from other provinces and districts.-
4. To survey the use of cassava feeding other species (raising pigs and cattle, -feeding people and so on).
5. To survey the price of cassava used as fish food and so to balance the investment against the return.
6. Must produce a handbook on raising fish fed on grass in order to disseminate these techniques to a wide range of people.
7. How does the usual market price of fish compare to that of our experimental fish and do the results show that our experimental could become a food supply?

Benefits, cheap fish:

1. Formulate a plan to make sure that this fish species is available to the farmers and the villagers.
2. To study if raising this species of grass eating fish will replace the raising of other species and provide food for a relatively small number of people.
3. To study the promotion of raising grass eating fish in relation to the raw material supply.

Unsuccessful, expensive fish:

1. To carry out research to find by experimentation methods of raising other living aquatic resources like other species of fish or frogs**.**

Livestock rearing, pasture growing and fishing groups

	Current situation	**Research Questions**
Techniques	* natural livestock rearing. *supporting government policies	* How do improved varieties of cattle varieties effect production? * Does articicial insemination produce more meat?
	* natural feeding of livestock (in the forests throughout the year). * Reduction of the size of pastures is resulting in a decrease in the number of livestock because of the increase n the area of the rubber plantations, production of cassava and maize and other crops.	
	Natural feeding system	How to change the feeding system in the north? Which technique?
Market	There is no balance between the supply and demand of animal fodder seeds	* How can the animal feeding system in the north be changed? How can one system be changed into another? In order to increase the quality of the feeding of animals?
Mechanism	The expansion of the pasture lands because of the increase in the number of animals to supply meat for the province The integration of foraging and farm feeding	How to bring about a change in the animal feeding system? And so raise the quality? How can the farmers be persuaded to accept the technique?
Society		
Environment	Foraging (natural)	How can animal feeding be improved? In order to get the greatest benefit from the manure?
		Will the techniques be acceptable to the farmers?
		What will be the impact on the farmers' livelihoods?

Research Topics	Priority	place/target district								Comments
		VK	HH	NL	VPK	POD	MM	PX	NM	
* Study the improvement of cattle in the mountainous northern regions of the Lao PDR	Level 1. (2008-2009)									NAFReC
Study models of feeding cattle and goats with 3 kinds of fodder (Guinea?, Lucerne? and Stylo)	Level 1. (2008-2009)	x		x	x	x				
Study the marketing of the seeds of animal fodder crops	Level 1. (2008-2009)							x		
Study the feeding of native pigs with cassava leaves	Level 2. (2009-2010)	x								
Cultivation of stylo in rubber plantations in order to feed pigs	Level 1. (2008-2009)			x		x				
Study and research the potential in the 6 new districts for animal husbandry	Level 1. (2008-2009)	x	x	x	x	x	x			
Study the organisation of animal husbandry groups	Level 1. (2008-2009)							x		
Experiment in test plots in the mountainous regions through growing varieties of animal fodder crops and other food crops (maize, cassava and others	Level 2. (2009-2010)		x		x					
Experiment with producing methane from animal manure	Level 2. (2009-2010)									NAFReC

Livestock rearing, fodder producing and fishing groups

	Current situation	Research Questions	Research Topics	Priority
Technique	1. Natural systems of feeding animals 2. Government support policies	1. How could the improvement of the cattle species help to raise the quality of production? 2. Would artificial insemination result in a greater meat yield? 3. Would the farmers be willing or unwilling to accept this technique?	1. To study the improvement of cattle species in the mountainous regions in the north of the Lao PDR.	**Level 1** (2008-2009)
	1. Natural feeding (bulrushes, live in forests throughout the year) 2. Restricted pasture lands are reducing the livestock numbers.	1. What impact does the method of feeding livestock have? And on the growing of fodder? 2. How can the pastures be extended and improved when more livestock are reared?	2. To study cattle pasture growing models.	**Level 1** (2008-2009)
	1. There is a lack of good quality feed for livestock.	1. How can the growing of livestock feed be increased and in such a way as to be acceptable to the farmers?	3. To study the growing of 3 varieties of livestock fodder (guinea pea? ກີນີ, lucerne? ຢູຊີ, Stylo) in the different research stations in the mountainous regions.	**Level 1** (2008-2009)
	1. Natural feeding (bulrushes, live in forests throughout the year) 4. Restricted pasture lands are reducing the livestock numbers	1. What impact does the method of feeding livestock have? And on the growing of fodder? 2. How can the pastures be extended and improved when more livestock are reared? 5. What impact does the method of feeding of livestock have? And on upland rice fields?	4. To study the feeding of goats in pastures with 3 varieties (guinea pea? ກີນີ, lucerne? ຢູຊີ, Stylo)	**Level 1** (2008-2009)
Market	1. The demand and supply of livestock feed varieties is not balanced.	1. How can the varieties of livestock feed be improved? And the marketing?	1. To study the marketing of the seeds of the varieties of livestock feed	**Level 1** (2008-2009)
		2. How is a particular variety of livestock feed converted into meat?	2. To experiment with test plots of animal feed crops in the mountainous regions.	**Level 2** (2009-2010)
Mechanism	1. Increase the pasture areas for livestock rearing 2. The introduction of aquaculture of native species of fish	1. How can livestock rearing group model assist in livestock rearing and at what level?	1. Study systems for the organization of cattle raising groups	**Level 1** (2008-2009)

Society	1. There is conflict over the use of land (livestock rearing and crop production)	1. Is it possible to have large rubber plantations linked to livestock rearing? 2. Is there any negative impact? Is it possible to grow Stylo interspersed with rubber? 3. Is it possible to cultivate Stylo as pig feed and which method should be used? And with what result? 4. Must there be models/factors? How to make it easy for the farmers to use and manage the investments in pig farming? 5. Are there methods or conditions? How to establish pig farming groups at the level of the families taking part in pig farming through the cultivation of Stylo. 6. Are there any methods? For the cultivation of Stylo in rubber plantations to enable the expansion of the production of pig feed?	1. Growing Stylo for feeding pigs in rubber plantations	**Level 1.** (2008-2009)
Environment	1. Animals allowed to forage (natural)	1. How can livestock rearing be improved? And how can the manure be used to the best advantage? 2. Will these methods be acceptable to the farmers? 3. How will these impact on the livelihoods of the farmers?	1. Study the use of manure to produce methane gas	**Level 2.** (2009-2010)

- **The overall situation of Lac in the Lao PDR**

Over a long period of time the production of Lac has gradually spread from the north to the south and now is widespread throughout the country. However it has remained a family based activity in which the sticklac is collected, cut up, mixed and then used as a dye. The trading price of the Lac is low.

A survey of specific provinces in the north demonstrated the cultivation of Lac producing trees and the spread of many varieties in the natural forests was still taking place in many provinces and districts. Collection of the sticklac takes place in two seasons (twice a year), but this is still done in keeping with the customary practices of the Lao ethnic minority groups. The harvesting of the sticklac and the collection of seeds depends on natural processes. If people intend to continue with sticklac production, then after harvesting part of the collected sticklac is used to infect other trees (in the natural forests) and part kept for sale.

Many villages still use pigeon peas for the cultivation of Lac but the results are neither reliable nor sustainable because of the lack of technical knowledge in the care of the insects and their reproduction. Sticklac can be harvested throughout the year. If there are no trees suitable for infection near at hand then a tree in the forest is infected. Pigeon pea trees are used and the sticklac for infection should be used on the day of collection or on the following day to ensure that the insects don't migrate to an alternative habitat and to avoid a reduction in the size of the insects.

The system for the cultivation of Lac producing trees has been used in the northern regions where the villagers cultivate pigeon peas between other trees. This is particularly true for Luang Prabang province and the districts of Ngoi and Viengkham.

In the past the government made Luang Prabang province the focus and the target area for the shift from slash-and-burn only for upland rice to the cultivation of trees for sticklac production together with upland rice and so providing the poor with the occupation of Lac production and so help to gradually alleviate poverty.

In the identification of a sustainable means for the alleviation of the poverty of farmers it is necessary to consider the commercial possibilities of the production of lac in the target districts looking at where the product will come from, when and who will actually produce it, and how much will be harvested and what quality is needed to satisfy the market demand.

Research into the agricultural systems of Lac production will cover the following:

- Which places are good at producing lac? And how do they do it? (ecology, climate and elevation)
- The quality of the pigeon peas (species), and the quality and quantity of sticklac, and what will happen when there are no insects? (before selling)
- What management techniques are there for managing and improving the quality of lac?

- Insect disease and problems in selling
- What do the farmers need to be able to change in the places where the trees are growing to encourage the production of lac, investment and benefit
- Research how market sustainability can be maintained:
- How much lac is there in the agricultural system?
- How much investment is needed to increase the production of lac?
- The management system of commerce in the provinces or in the Lao PDR
- Who are the people who are dependent on the collection of NTFPs (Lac), harvesting, and marketing?
- Who are the beneficiaries and who are the losers?
- What are the possibilities of increasing the value of the lac (appearance and storage)

- **Problems:**

Issues relevant to lac which have not yet been studied or researched

- The reason for infecting trees of the wrong age
- The reason for using the wrong system of infection
- Cutting off the branches which are suitable for lac insect infestation but not those which are have already produced lac
- The person responsible for the collection lac failing to check the presence and number of insects in the branches after introducing them in the net
- If there are only a small number of insects infecting the branches the lac production will be low ; however if there are too many insects infecting the branches the branches will die and no lac will be produced
- Attention should be paid to the care of the lac producing site at the time of infection and constantly thereafter:
    1. Damage by ants, field rats and hornets
    2. Cutting branches to ensure that the infected branches are or are not in the sunlight
    3. Clearing around and under the trees infected with lac insects
- The reason for the lack of technique for cultivating trees and poor infecting methods
- The reason for using the wrong harvesting techniques and harvesting in the wrong season and so producing poor quality and low amounts of lac
- In the past lac was not a commercial product, the demand was insufficient
- The production is scattered
- There is a lack of a market for trading in lac
- The establishment of lac producing tree groups

Amended Information

	Current Situation	Research Questions	Research Topics	Priority
Techniques	- The desire to improve the quality of cultivation of lac producing trees in order to alleviate the poverty of the people	- How to get methods for the long-term continuous cultivation trees for the production of lac by the people and which give the best income from the same piece of land–	- Research study into the villagers' – knowledge and the good lesson learnt about the cultivation of trees which are already producing in the country - Study techniques for tree cultivation and lac production to be introduced into the system for the farmers to get the greatest benefit from the same piece of land - Follow up the previous research topics	**1** **2** **2008 Plan**
Marketing	- Establish management systems for the trade in the provinces and in the Lao PDR - Research study into the market sustainability	- How to integrate the lac producing groups in order to be able to export	- Study methods of harvesting and storing the products before export	**3**
Mechanism	- Relevant sectors should promote the cultivation of trees producing lac - Banks have credit policies - Government priority	- Study information from the actual producers in each family in the target area	- Open training courses on implementation management methods (other techniques, study tours, exchange of knowledge between experienced villagers)	**4**
Society	- The people still lack the motivation to make their own investments - The change of occupation from clearing forests to other work is difficult	- How to ensure that information is widely disseminated (establish an information centre in order to provide information)	- Encourage the people to shift occupations based on the clearing of forests for the cultivation of upland rice to those based on the commercial cultivating trees producing lac in order to raise production	**5**
Environment	- Agricultural land has increased	- Appropriate management for sustainable agricultural production and for cultivation of trees for the production of lac	- Study the varieties of trees which can provide for the constant production of lac and so to reduce forest clearing in the long-term	**6**

The Proposal before the Amendments to the Branch Activities

	Current situation	Research Questions	Research Topics (Activities)	Comments
Techniques	- Farmers lack methods and lessons in lac production - Low production - Lac quality - Land study - Selection of the variety - The correct infection season - Care	- Study information on the sources about species of insects and good varieties of pigeon pea - Study the spacing of planting - Study the season - Study the Lac storage techniques - Land use	- Establish experimental plots to gather information - Establish –a lac production schedule - Study –species(lac insects and trees) - Study –the pests - Review the information on the –technology from other countries which has been successful	1
Marketing	- There is only a single market, no real price	- Study marketing - Increase product prices	- Increasing the product prices - Study marketing - Study –the way and the possibility of joining a trading group - - Study enforcement and different factors in cooperation agreements	2
Mechanism	- Relevant sectors promote the cultivation of trees producing lac - Banks have credit policies - Government priority	- Study information from–actual producers	- Open a training course on different implementation management methods (other techniques) - Study the possibility of establishing producer groups	3
Society	- The level of knowledge and understanding of the people is still –low - No one is brave enough to invest their own capital - No possibility of change of occupation	- Establish information centres	- Promote direct and indirect training - Study the changes in the farmers' lifestyles after the process of the cultivation of trees producing lac	4
Environment	- Climate change - High sloping land	- Study the suitability of the land and the degree of the slope - Study climate and survival of the insects	- Study suitability of the insects and the trees - Study the impact of Lac cultivation	5

Research Topics (Lac)

I. Study the villagers' knowledge of and the lessons learnt about the places in the country where there are already good systems for the cultivation of trees producing lac.

Activities:

1.1 Survey the following information in each province from the villagers who are already working in the cultivation of trees producing lac:

- the growing area
- the method of tree cultivation and lac production
- varieties of trees, species of insect
- the suitability of the land
- the previous yields
- Lac trade domestically and for export
- income from lac production (–over 6 –months and over 12 months)
- the quality of the lac
- unresolved problems of the people

1.2 Include groups of villagers from the target villages in study tours and exchange of lessons learnt with other village groups

- organise producer groups
- marketing (buying - selling)
- establish trade between production groups
- increase the product prices
- existing techniques and expertise of the villagers

II. Study the techniques used in tree cultivation and in lac production to become part of the farmers' system and so increase their incomes from the same area

Activities:

2.1. Study the ecology of the Lac producing trees

- Appropriate species
    - Cultivation areas
    - Climate
    - Season

2.2. Study the spacing of the different varieties of trees

- the growth of the trees
- the growth of the insects
- the yield of lac per tree /per ha/per season
- establish demonstration plots
- establish a seasonal schedule (infection and harvesting)
- mixed cultivation of short-lived crops with trees producing lac

2.3 Study the pests:

- the variety of insect pests (Kerria lacca, Lac producing trees)
- the season in which insects pests appear (dry, wet)
- the method of exterminating pests
- the method of exterminating each variety of pests

2.4. Study the age of the Lac producing trees

- At 6 months
- At one year
- At 18 months

2.5. Study the cutting of the branches with insect infestation

- collecting pigeon pea leaves for other purposes
- collecting pigeon pea seeds for other purposes
- cutting the branches in order to examine the production (gain and loss)

2.6. Study the model of mixed crop rotation

- maize cultivation
- rice cultivation
- ground nut cultivation

2.7. Review the information on the successful technology used in other countries

- Review the information available in-country (varieties of trees, species of insects, tree cultivation, infestation, harvesting and trade)
- Review the information from other countries: (varieties of trees, species of insects, tree cultivation, infestation, harvesting and trade)

III. Follow up the previous research topics (2008 Plan)

08_ntfps_tea

Group: NTFP (native tea, *maktaow* (ໝາກຕາອ), *makneurng* (ໝາກແໜ່ງ), rattan, buerkmuerk (ເປືອກເມືອກ), medicinal plants and others)

Main points of the current situation relevant to the research area in Research Stations 1 and 2

Research Station	Research areas	Problems	Challenges	Opportunities	Research Topics
1/2	The use of NTFPs which are the main source of a sustainable income for the people living in the mountainous areas	- Clear cutting - Reduced forest area - Weak regulations for management - No fixed prices for NTFPs	- Changes in land use without impact assessment (rubber plantations, maize..) - Rapidly increasing population - Export quotas exceed the existing supply of NTFPs	- forest cover is still present - a market demand exists - people know the traditional ways of management and care - - the areas of established forests can produce for export	- Survey NTFP management - Research regulations for the management of the natural NTFPs - Study the marketing chain - Study the methods for expanding the cultivation - Formulate a land use plan - Research techniques of clearing and after harvesting for sustainability and fixed pricing

Forest Management

Forest Cover				
	Current situation	**Research Question**	**Research Topic**	**Priority**
Technique	The conversion of forests (the Nam Ha National Conservation Area) so that they are able to support various prosperous activities and provide other benefits: growing rubber… The use of modern tools for cutting wood and gathering non-timber forest products (NTFPs) are bringing about the rapid reduction of forests.	How is it possible to manage forests?	The study of ways of using forested land for other purposes	***Level 1 (2008 - 2009 Plan)***
Marketing	There is a great demand in neighbouring countries for our forest resources, NTFPs and aquatic and animal resources. Lao people still need to use a large amount of the forest resources, NTFPs, aquatic and animal resources	Why do the markets of our country neighbours have such a high demand for our forest resources, NTFPs, aquatic and animal resources?	Study the links between the demand and the market for forest resources, NTFPs and aquatic and animal resources both domestically and abroad.	***Level 1 (2008 - 2009 Plan)***
Mechanism	The dissemination of existence of the laws on forestry, aquatic and animal resources, articles of agreement, decrees and guidelines does not reach the people whose livelihoods are related to the forests. The officials and the people	What methods could be used in forestry management?	Study the establishment of village forestry groups.	***Level 1 (2008 - 2009 Plan)***

	involved are not managing the proper implementation of the laws, articles of agreement, decrees and regulations.			
Society	The number of people depending on the use of forestry resources, NTFPs and aquatic and animal resources is ever increasing and bringing about greater reduction of forests. People's livelihoods are still closely connected to nature (the Nam Ha National Conservation Area)	?	?	
Environment	The forested land is reducing because of the clearing of forests for upland rice growing, illegal felling and collection of NTFPs. The extent of the reduction of the forestry resources, and aquatic and animal resources is a matter of concern. The climate has changed, the rains do not come at the proper season, there is less water in the streams and wetlands.	How can we have the methods and the ways to achieve their enforcement for the management and the protection of forestry resources, NTFPs, aquatic and animal resources?	Provision of sustainable management of forestry resources, NTFPs and aquatic and animals resources	***Level 1 (2008 - 2009 Plan)***

Land Use Planning and Management				
	Current Situation	**Research Question**	**Research Topic**	**Priority**
Technique	There are methods, and the regulations (concerning the relative importance of water resources, laws, other regulations) - -Land is used inappropriately - -Poor quality land (without any improvement) - -Land is used in many different ways, not in keeping with the law or ways which are permitted (catchment areas, land protected by forest, conversation forests, state owned land, cultural lands and others)	- How to plan for the correct use of land and to be able to use this at the village and district levels? - How to encourage the farmers to accept different techniques like: using sloping land, improving land and others? - How to use mechanisms for supporting the implementation of land use planning and management and the coordination between the different management organisations in land use planning and management?	Look for information (tools, equipment) to use in the land use planning and management. Get feedback on the methods and other regulations working with the relevant management organisations. Provide and formulate plans for the management and use of land at the level of both developed village groups and villages collecting water in small amounts. Use techniques to protect land against erosion and techniques to improve systems of agricultural production in the mountainous regions.	Level 1 (2008 – 2009 Plan) Level 1 (2008 – 2009 Plan)
Marketing	There is a large demand for the use of land resources by business men from neighbouring countries while the local	Why do businessmen from neighbouring countries want to invest in our land?	Study models of appropriate investment and funding.	Level 1 (2008 – 2009 Plan)

	people still have their own high demand.			
Mechanism	Dissemination of information on articles of agreement and laws about agricultural land and forestry to encourage and promote the implementation of different articles of agreement, laws and other regulations rules by officials and the people in the management of the implementation.	What are the appropriate methods at different levels for land use planning and management? How to achieve successful enforcement in the management of the implementation of articles of agreement, laws and regulations governing land use planning and management?	Study the establishment of branch management committees at the level of both groups of developed villages and villages.	Level 1 (2008 – 2009 Plan)
Society	The population increase is resulting in an increasing use of land resources (there is more conflict). People's use of land is still closely connected with nature (customary use) Time is needed to change land use models. Investments in land are bringing about changes in the farmers' ways of earning a living.	How does investment in land impact on society?	Study the impact investment in land has on society at district and developed village group levels	

Environment	Both the clearing of forest land for upland rice and the use of incorrect techniques lower the quality of the land and also cause changes in the climate. There are changes in the rainfall pattern, less water in streams and wetlands, and more water flowing from previously forested areas and drought.	How is it possible to manage and enforce the protection of land resources? What kind of environmental impact does the investment in land have?	Provide ways to manage land sustainably Study the impact of investment in land and using the land for a single crop in Houne district	Level 1 (2008 – 2009 Plan)

A Review of Research on Crops and Fruit Trees

I./ Crops:

1. **Current situation/problems:**

- **Wet season**
  - + farmers lack methods and knowledge for growing crops for example in Houne and Pha Oudom districts.
  - + crops fail to grow, and if they do they rot and die
  - + there is destruction by disease and insects
  - + some vegetables like cabbage, coriander, spring onions, Chinese cabbage, lettuce and others aren't on sale in the markets
  - + in the wet season vegetables are expensive
  - + vegetables are imported from other places both inside and outside the country

- **Dry season**
  - + farmers grow many vegetables (the majority of families grow the same kinds)
  - + price of vegetables is not fixed (middlemen influence the prices)

2. **Potential:**

- + there are productive areas and a market demand
- + in the dry season there is a tradition of farmers growing vegetables
- + possible to produce for export to other districts
- + there are convenient transportation links

3. Market:

- + there is a great demand for vegetables in the rainy season
- + in the dry season there are no fixed prices for vegetables

4. Mechanism:

- + farmers are not brave enough to invest their own capital
- + there must be encouragement from the government and other organizations

5. Society:

- + there is a lack of information (techniques and marketing)
- + there is no exchange of lessons learnt or of experience gained

6. Environment:

- + the use of chemical will impact on the water resources
- + soil nutrients will be lost (infertile soil, hard soil) if the soil is not improved

Crop Research Topics

Research Topics	Priority	Place	Comments
1. Study the growing of vegetables in the rainy season to raise the quality	1 (07 - 08)	Houne district, Pha Oudom	
2. Study vegetable growing systems and the use of dry and wet season varieties		In all 8 districts	
3. Study the demand for the consumption of vegetables inside and outside the district markets		In all 8 districts	
4. Produce vegetables and seeds to meet market demands		Houne district	
5. Establish vegetable cultivation groups to produce vegetables for sale		Phonexay district	
6. Study the cultivation of organic vegetables for sale			

Research Topics for Fruit Trees

Research Topic	Priority	Place	Comments
1.Study the cultivation, the care and seeds of Jujube and Sapodilla –in order to improve their commercial production		Houne district	
2. Study the possibility of identifying fruit tree varieties – appropriate for each region		6 districts	
3. Study the consumption and the market		8 districts	
4. Study the care and improvement of the seeds (longan, lychee, '*makman*' (ໝາກໝັ້ນ), pomelo)		Phonexay, Namor	
5. Establish fruit growers' groups to produce commercial products		Phonexay, Namor	

II./ Fruit trees:

1. **Current situation/problems:**

- Farmers lack methods and knowledge about the care
- Slow growth
- There is destruction by disease and insects
- There are blossoms but no good fruit and some trees do not bear fruit
- It is necessary to import fruit trees from abroad
- There is still no knowledge about which varieties are suitable for each region

2. Potential:

- There are productive areas and a market demand
- It is possible to grow commercially for export to other districts
- There are good transportation links

3. Market:

- There is a market demand

4. Mechanism:

- Farmers are not brave enough to invest their own capital
- There is a great need for encouragement from the government and other organisations

5. Society:

- There is a lack of information (techniques and marketing)
- There are no exchanges of lessons learnt or of experience gained

6. Environment:

- There will be an impact on the water resources through the use of chemical weed killers and pesticides
- There will be a loss of soil nutrients (infertile soil, hard soil) if the soil is not improved

04_Rice-maize

Paddy rice, upland rice and maize

	Name and surname	Sector
1	Mr Chanphasouk Thanthaphone	Centre for Research in Rice and Economic Crops
2	Mr Banthsak	Northern Centre
3	Mr Singthong Phondala	Houne District
4	Mr Khamsone Seurmmannivong	Policy Research Centre
5	Mr Phone Vongsavath	Phaoudom District
6	Mr Samith Vatsana	Meurng district

	Current Situation	**Research Question**	**Research Topic**	**Priority**
Technique	- use of local seed varieties: - use farmer style techniques - rice growing land limited - some areas of land have water resources for growing dry season crops - destruction of crops by pests	- Are there any new techniques which could be used for increasing both the quality and the yield of rice? - Are there any existing growing systems produce good quality and which could be used in growing rice?	- to experiment with crop systems in order to increase the yield and the quality of rice (produced in both the wet and dry seasons, wet season rice-maize, soy beans and crops) - to investigate the farmers' capability of producing good quality rice seeds to improve the yield. - to look for crops to alternate with rice to increase the productivity of the land (formulate a land use plan)	2007-2011 Plan 2007-2009 Plan
Marketing	For consumption and for sale in the region			
Mechanism	- Grow what you want by yourself not as part of a group and without real marketing system	- How to organise growers' groups to help farmers acquire equipment to use in production?		
Society	- Guarantee food security for the household and provide for those farmers who do not grow rice			
Environment	- the climate is not normal (rain) - cold weather during the dry season	- How to shorten the growing period of paddy rice in order to have faster growing dry season crops?	- to experiment with seeds which germinate quickly, which are resistant to cold and produce crops which can be harvested at the end of October.	

Maize				
	Current Situation	**Research Question**	**Research Topic**	**Priority**
Technique	- Improved varieties of imported seeds - Use of the same land for many years of production - Ploughing to remove the surface of unimproved land	- How to provide the farmers with information about seed varieties? - How can growing a variety of mixed bean crops without ploughing (SCV) protect the soil fertility? - Growing maize with mixed varieties of bean results in good yields.	- the system for growing maize – soy beans - the mixed cropping system of maize + ground nuts (SCV) protects against soil erosion - to test ways of improving the produce quality and appearance after harvesting –in order to increase the value of the production - to study the possibility of producing maize seeds to reduce the need for imports - to study the growing of sweet corn	2007-11 Plan 2008-11 Plan
Marketing	- There is a foreign market demand - Prices fluctuate - Appearance after harvesting is not good	- How to fix the price? - How to provide the farmers with information? - How to achieve a good quality of production?	- to study contract systems between buyers and the sellers - to look for sources of information - to study methods for storing and improving the quality of the produce after harvesting	
Mechanism	- As yet there are no groups organised for maize production - All produce is exported	- How can organised groups improve production?	- to study mechanisms for organising production groups - to study marketing systems	
Society	- There are conflicts about the use of productive land - There is loss of crop (animal) produce.	- -How is it possible to solve land conflicts? - -How is it possible to find a way to balance systems for increasing the production of maize and raising animal feed crops?	- to study the use of productive land - -to study appropriate production systems	
Environment	Both the forested areas and the biodiversity are being reduced	To find a way to produce maize while reducing the impact on the forests.	To study the possibility of reducing the environmental impact of growing maize	

	Rice		
	Research Topic	**Technique**	**Priority**
1	Paddy field: to check the quality of seeds Upland rice field: to check seeds	1. Seed varieties: Paddy rice: TDK 5, 6,11 and local varieties Upland rice: ເຂົ້ານົກ (*Khao nok* = Bird rice), ລາບຸນ (*La boun*) and local varieties 2. Fertiliser: Paddy rice: animal manure 5 tons/ha, chemical fertilizer NPK 45-22-22 kg/ha Upland rice:	I 2007- 09 Plan
2	To experiment expanding the series of the varieties of rice seeds 1, 2 and 3	1. Seed varieties Paddy rice: TDK 5 2. Fertiliser: Paddy rice: animal manure 5 tons/ha chemical fertilizer NPK 45-22-22 kg/ha Upland rice:	2007-09 Plan
3	To experiment with growing dry field rice	1. Seed varieties: Paddy rice: TDK 5, 6,11 –and local varieties 2. Fertiliser: Paddy rice: animal manure 5 tons/ha, chemical fertiliser NPK 45-22-22 kg/ha	2008-10 Plan
4	To experiment with growing maize and soy beans after paddy cultivation	1. Varieties of maize and soy beans 2. Fertiliser Paddy rice: animal manure 5 tons/ha, chemical fertiliser NPK 90-22-22 kg/ha (special expertise?)	2008-10 Plan
5	To study the land and the use of varieties in the north (project focus)	To gather information from both the district level and from field observations	2008-09 Plan
6	To study the possibility of land use planning in order to improve the quality of the production of an area.	To cooperate with Agricultural Land Research Centre and the Policy Research Centre	?
	Maize		
1	To experiment with crop rotations of maize with soy beans	1: seed varieties: maize and soy beans 2: the planting out season The first season: grow maize The second season: grow soy beans	2007-10 Plan
2	To experiment with the mixed cropping system of maize + beans using the SCV technique in order to protect soil surface erosion.		2008-10 Plan
3	To experiment with growing sweetcorn mixed with livestock rearing		
4	To study the possibility of hybrid maize production		
5	To organise maize growing groups		

05_rubber	Current Situation			Research Questions	Research Topics	Priority
	Problems	**Challenges**	**Opportunities**			
Technique	1. Illegal use of forests and natural resources. 2. Appearance of conflicts over productive land. 3. Investments in land. 4. Contracts between the rubber growers and the investors. 5. Farmers lack productive land. 6. Growing rubber requires high investments of both time and money. 7. Pastureland is decreasing or is far away. 8. There is no control of the use of rubber seeds (use of a mixture of varieties). 9. The majority of rubber plantations are alongside the roads. 10. The majority of rubber plantations have only a single variety.	1. To guarantee the amount and quality of the rubber produced. 2. Natural disasters, disease and plagues of insects. 3. Lack of special expertise.	1. Experts have the opportunity to develop their knowledge and experience about rubber.	1. Which methods or techniques can be used for mixed cropping with livestock and rubber growing? 1.1. Which is the most appropriate – crops, timber, NTFPs or livestock rearing to mix with rubber plantations? 1.2. Which is the most appropriate for each region crops, timber, NTFPs or livestock rearing to mix with rubber plantations? 2. What methods, enforcements or factors for the management of rubber plantations are there? 2.1. What are the most suitable soil conditions for rubber plantations? 3. Which of the models/techniques, enforcements and factors are the most successful and sustainable for the management of rubber plantations? 3.1. Which is variety of rubber is the most suitable for each region (fast growing, producing quickly, good quality latex, disease resistant)? 3.2. Which models/techniques to use to help the farmers to produce good quality seedlings? 3.3. Which of the models/techniques are the most successful for helping the farmers to care for the rubber trees? 3.4. What methods can be used for the protection of rubber against disease and insect attack?	1. Animal feed crops mixed with rubber in order to rear livestock. 2. Commercial crop production mixed with rubber. 3. Commercial production of timber and NTFPs mixed with rubber. 4. Study the commercial varieties of crops, timber and NTFPs which are appropriate for each region to mix with rubber. 5. Study the suitability of regions for rubber plantations and suggest those areas suitable for rubber plantations in each province. 6. Study the varieties of rubber and their suitability for each region. 7. Develop and improve the handbook on rubber planting. 8. Study ways of protecting against disease and insects for young and mature rubber trees.	**1**
Marketing	11. No real market	4. No fixed prices and farmers cannot fix them 5. Prices of agricultural produce are increasing.	2. Domestic rubber processing factories are increasing. 3. In the future the Lao PDR will be only one of the rubber exporting countries. 4. Wood from rubber trees can be a raw material for the timber industry.	4. How to enforce and guarantee the rubber price in coordination with rubber organisations and rubber producing regions? 4.1 What enforcement factors can be used to encourage entering into rubber export contracts with other countries like China? 4.2 Which technology can be used in order to guarantee the quality and price of rubber exports?	1. Study the way and the possibility of becoming a member of the rubber producing regional network. 2. Study enforcement factors can be used to encourage entering into rubber export contracts with other countries like China? 3. Study modern technology to use in the improvement of the quality of rubber exports 4. Study the feasibility of establishing rubber processing factories in the Lao PDR	**4**

Mechanism			5. The Lao PDR can be an economic centre for the rubber exports of South East Asia. 6. There are changes in knowledge and technology about international rubber production. 7. Establish centres /rubber research institutions.	5. Which factors or methods provide information for helping rubber farmers? 5.1. How can information about rubber be exchanged between villages, village groups, districts, provinces and regions? 6. How to enforce and use ways to help farmers to grow crops other than rubber? 6.1. Which of the following – crops, timber or animals is the most suitable choice for the farmers in each region and which technique?	1. Study the possibility of establishing rubber producing groups at the level of the village groups. 2. Study process and the procedures of the implementation of the rubber producing groups. 3. Study process and the procedures for the exchange of knowledge and lessons learnt within districts and provinces.	**3**
Society	12. Foreign workers are being imported.	7. Society (livelihoods are changing/negative influences)	8. People have new occupations/ alternatives to clearing for upland rice cultivation	7. How will society and the lifestyles of the farmer be changed once rubber plantations have been established? 8. Once rubber plantations have increased will there be any income or need for foreign labour? How should this be enforced?	1. Study the possibility of negative effects on society after rubber. 2. Study the changes in lifestyles of the farmers after the growing of rubber. 3. Study the possibility of foreign labour immigrants.	**5**
Environment		9. The use of chemicals in the rubber plantations. 10. Degraded environment (rotting rubber trees/ processing factories)		9. Which methods, enforcements or factors can be used for environmental conservation/protection after rubber harvesting and processing? 9.1. What materials are most successful in environmental conservation/protection after rubber harvesting and processing?	1. Study the environmental impact of rubber plantations and processing factories. 2. Study the loss of water around the rubber plantations. 3. Study the impact on the biodiversity of the rubber plantations. 4. Study the impact of the chemicals used in the cultivation of rubber.	**2**

06_fishsummary

Fish Research Topics

1. Wild fish (establish aquatic conservation areas)

Places: Nalae district,-Luang Namtha province

1. To survey the feasibility of using natural water sources as conservation areas (ecology, life and species in water sources)
2. To survey the potential of the social system in those areas for establishing groups (tradition, customs and livelihoods)-.
3. To study the potential of coordinating sectors to cooperate in being the lead, sectors to assist in implementation and follow- up the aquatic conservation management.
4. To survey the potential for cooperation at the level of the village, methods of implementation (awareness, (organise study tours), manage aquatic conservation, management of aquatic conservation control groups, protection methods, and methods for the use of living aquatic resources, by way of improving the level of natural fish production, establishment of the Regulations for the Management of Fisheries)

2. Experiments in Fish Rearing

To experiment with feeding "*Phanigh-eatgrass*" (ปาใบกินหยัา) with locally available food

Place: Viengkham district, Luang Prabang Province

1. The district sections to act as coordinators for experimenting with cooperation with individual private sector villagers.
2. To learn the results of experiments in fish growth when fed on cassava and their leaves- as used in the northern regions of the country.
3. To survey the feasibility of growing cassava in the district, -province- -and also of importing cassava from other provinces and districts.-
4. To survey the use of cassava feeding other species (raising pigs and cattle, -feeding people and so on).
5. To survey the price of cassava used as fish food and so to balance the investment against the return.
6. Must produce a handbook on raising fish fed on grass in order to disseminate these techniques to a wide range of people.
7. How does the usual market price of fish compare to that of our experimental fish and do the results show that our experimental could become a food supply?

Benefits, cheap fish:

1. Formulate a plan to make sure that this fish species is available to the farmers and the villagers.
2. To study if raising this species of grass eating fish will replace the raising of other species and provide food for a relatively small number of people.
3. To study the promotion of raising grass eating fish in relation to the raw material supply.

Unsuccessful, expensive fish:

1. To carry out research to find by experimentation methods of raising other living aquatic resources like other species of fish or frogs**.**

Livestock rearing, pasture growing and fishing groups

	Current situation	**Research Questions**
Techniques	* natural livestock rearing. *supporting government policies	* How do improved varieties of cattle varieties effect production? * Does articicial insemination produce more meat?
	* natural feeding of livestock (in the forests throughout the year). * Reduction of the size of pastures is resulting in a decrease in the number of livestock because of the increase n the area of the rubber plantations, production of cassava and maize and other crops.	
	Natural feeding system	How to change the feeding system in the north? Which technique?
Market	There is no balance between the supply and demand of animal fodder seeds	* How can the animal feeding system in the north be changed? How can one system be changed into another? In order to increase the quality of the feeding of animals?
Mechanism	The expansion of the pasture lands because of the increase in the number of animals to supply meat for the province The integration of foraging and farm feeding	How to bring about a change in the animal feeding system? And so raise the quality? How can the farmers be persuaded to accept the technique?
Society		
Environment	Foraging (natural)	How can animal feeding be improved? In order to get the greatest benefit from the manure?
		Will the techniques be acceptable to the farmers?
		What will be the impact on the farmers' livelihoods?

Research Topics	Priority	place/target district								Comments
		VK	HH	NL	VPK	POD	MM	PX	NM	
* Study the improvement of cattle in the mountainous northern regions of the Lao PDR	Level 1. (2008-2009)									NAFReC
Study models of feeding cattle and goats with 3 kinds of fodder (Guinea?, Lucerne? and Stylo)	Level 1. (2008-2009)	x		x	x	x				
Study the marketing of the seeds of animal fodder crops	Level 1. (2008-2009)							x		
Study the feeding of native pigs with cassava leaves	Level 2. (2009-2010)	x								
Cultivation of stylo in rubber plantations in order to feed pigs	Level 1. (2008-2009)			x		x				
Study and research the potential in the 6 new districts for animal husbandry	Level 1. (2008-2009)	x	x	x	x	x	x			
Study the organisation of animal husbandry groups	Level 1. (2008-2009)							x		
Experiment in test plots in the mountainous regions through growing varieties of animal fodder crops and other food crops (maize, cassava and others	Level 2. (2009-2010)		x		x					
Experiment with producing methane from animal manure	Level 2. (2009-2010)									NAFReC

Livestock rearing, fodder producing and fishing groups

	Current situation	Research Questions	Research Topics	Priority
Technique	1. Natural systems of feeding animals 2. Government support policies	1. How could the improvement of the cattle species help to raise the quality of production? 2. Would artificial insemination result in a greater meat yield? 3. Would the farmers be willing or unwilling to accept this technique?	1. To study the improvement of cattle species in the mountainous regions in the north of the Lao PDR.	**Level 1** (2008-2009)
	1. Natural feeding (bulrushes, live in forests throughout the year) 2. Restricted pasture lands are reducing the livestock numbers.	1. What impact does the method of feeding livestock have? And on the growing of fodder? 2. How can the pastures be extended and improved when more livestock are reared?	2. To study cattle pasture growing models.	**Level 1** (2008-2009)
	1. There is a lack of good quality feed for livestock.	1. How can the growing of livestock feed be increased and in such a way as to be acceptable to the farmers?	3. To study the growing of 3 varieties of livestock fodder (guinea pea? ກີນີ, lucerne? ຢູຊີ, Stylo) in the different research stations in the mountainous regions.	**Level 1** (2008-2009)
	1. Natural feeding (bulrushes, live in forests throughout the year) 4. Restricted pasture lands are reducing the livestock numbers	1. What impact does the method of feeding livestock have? And on the growing of fodder? 2. How can the pastures be extended and improved when more livestock are reared? 5. What impact does the method of feeding of livestock have? And on upland rice fields?	4. To study the feeding of goats in pastures with 3 varieties (guinea pea? ກີນີ, lucerne? ຢູຊີ, Stylo)	**Level 1** (2008-2009)
Market	1. The demand and supply of livestock feed varieties is not balanced.	1. How can the varieties of livestock feed be improved? And the marketing?	1. To study the marketing of the seeds of the varieties of livestock feed	**Level 1** (2008-2009)
		2. How is a particular variety of livestock feed converted into meat?	2. To experiment with test plots of animal feed crops in the mountainous regions.	**Level 2** (2009-2010)
Mechanism	1. Increase the pasture areas for livestock rearing 2. The introduction of aquaculture of native species of fish	1. How can livestock rearing group model assist in livestock rearing and at what level?	1. Study systems for the organization of cattle raising groups	**Level 1** (2008-2009)

Society	1. There is conflict over the use of land (livestock rearing and crop production)	1. Is it possible to have large rubber plantations linked to livestock rearing? 2. Is there any negative impact? Is it possible to grow Stylo interspersed with rubber? 3. Is it possible to cultivate Stylo as pig feed and which method should be used? And with what result? 4. Must there be models/factors? How to make it easy for the farmers to use and manage the investments in pig farming? 5. Are there methods or conditions? How to establish pig farming groups at the level of the families taking part in pig farming through the cultivation of Stylo. 6. Are there any methods? For the cultivation of Stylo in rubber plantations to enable the expansion of the production of pig feed?	1. Growing Stylo for feeding pigs in rubber plantations	**Level 1.** (2008-2009)
Environment	1. Animals allowed to forage (natural)	1. How can livestock rearing be improved? And how can the manure be used to the best advantage? 2. Will these methods be acceptable to the farmers? 3. How will these impact on the livelihoods of the farmers?	1. Study the use of manure to produce methane gas	**Level 2.** (2009-2010)

- **The overall situation of Lac in the Lao PDR**

Over a long period of time the production of Lac has gradually spread from the north to the south and now is widespread throughout the country. However it has remained a family based activity in which the sticklac is collected, cut up, mixed and then used as a dye. The trading price of the Lac is low.

A survey of specific provinces in the north demonstrated the cultivation of Lac producing trees and the spread of many varieties in the natural forests was still taking place in many provinces and districts. Collection of the sticklac takes place in two seasons (twice a year), but this is still done in keeping with the customary practices of the Lao ethnic minority groups. The harvesting of the sticklac and the collection of seeds depends on natural processes. If people intend to continue with sticklac production, then after harvesting part of the collected sticklac is used to infect other trees (in the natural forests) and part kept for sale.

Many villages still use pigeon peas for the cultivation of Lac but the results are neither reliable nor sustainable because of the lack of technical knowledge in the care of the insects and their reproduction. Sticklac can be harvested throughout the year. If there are no trees suitable for infection near at hand then a tree in the forest is infected. Pigeon pea trees are used and the sticklac for infection should be used on the day of collection or on the following day to ensure that the insects don't migrate to an alternative habitat and to avoid a reduction in the size of the insects.

The system for the cultivation of Lac producing trees has been used in the northern regions where the villagers cultivate pigeon peas between other trees. This is particularly true for Luang Prabang province and the districts of Ngoi and Viengkham.

In the past the government made Luang Prabang province the focus and the target area for the shift from slash-and-burn only for upland rice to the cultivation of trees for sticklac production together with upland rice and so providing the poor with the occupation of Lac production and so help to gradually alleviate poverty.

In the identification of a sustainable means for the alleviation of the poverty of farmers it is necessary to consider the commercial possibilities of the production of lac in the target districts looking at where the product will come from, when and who will actually produce it, and how much will be harvested and what quality is needed to satisfy the market demand.

Research into the agricultural systems of Lac production will cover the following:

- Which places are good at producing lac? And how do they do it? (ecology, climate and elevation)
- The quality of the pigeon peas (species), and the quality and quantity of sticklac, and what will happen when there are no insects? (before selling)
- What management techniques are there for managing and improving the quality of lac?

- Insect disease and problems in selling
- What do the farmers need to be able to change in the places where the trees are growing to encourage the production of lac, investment and benefit
- Research how market sustainability can be maintained:
- How much lac is there in the agricultural system?
- How much investment is needed to increase the production of lac?
- The management system of commerce in the provinces or in the Lao PDR
- Who are the people who are dependent on the collection of NTFPs (Lac), harvesting, and marketing?
- Who are the beneficiaries and who are the losers?
- What are the possibilities of increasing the value of the lac (appearance and storage)

- **Problems:**

Issues relevant to lac which have not yet been studied or researched

- The reason for infecting trees of the wrong age
- The reason for using the wrong system of infection
- Cutting off the branches which are suitable for lac insect infestation but not those which are have already produced lac
- The person responsible for the collection lac failing to check the presence and number of insects in the branches after introducing them in the net
- If there are only a small number of insects infecting the branches the lac production will be low ; however if there are too many insects infecting the branches the branches will die and no lac will be produced
- Attention should be paid to the care of the lac producing site at the time of infection and constantly thereafter:
    1. Damage by ants, field rats and hornets
    2. Cutting branches to ensure that the infected branches are or are not in the sunlight
    3. Clearing around and under the trees infected with lac insects
- The reason for the lack of technique for cultivating trees and poor infecting methods
- The reason for using the wrong harvesting techniques and harvesting in the wrong season and so producing poor quality and low amounts of lac
- In the past lac was not a commercial product, the demand was insufficient
- The production is scattered
- There is a lack of a market for trading in lac
- The establishment of lac producing tree groups

Amended Information

	Current Situation	Research Questions	Research Topics	Priority
Techniques	- The desire to improve the quality of cultivation of lac producing trees in order to alleviate the poverty of the people	- How to get methods for the long-term continuous cultivation trees for the production of lac by the people and which give the best income from the same piece of land–	- Research study into the villagers' – knowledge and the good lesson learnt about the cultivation of trees which are already producing in the country - Study techniques for tree cultivation and lac production to be introduced into the system for the farmers to get the greatest benefit from the same piece of land - Follow up the previous research topics	**1** **2** **2008 Plan**
Marketing	- Establish management systems for the trade in the provinces and in the Lao PDR - Research study into the market sustainability	- How to integrate the lac producing groups in order to be able to export	- Study methods of harvesting and storing the products before export	**3**
Mechanism	- Relevant sectors should promote the cultivation of trees producing lac - Banks have credit policies - Government priority	- Study information from the actual producers in each family in the target area	- Open training courses on implementation management methods (other techniques, study tours, exchange of knowledge between experienced villagers)	**4**
Society	- The people still lack the motivation to make their own investments - The change of occupation from clearing forests to other work is difficult	- How to ensure that information is widely disseminated (establish an information centre in order to provide information)	- Encourage the people to shift occupations based on the clearing of forests for the cultivation of upland rice to those based on the commercial cultivating trees producing lac in order to raise production	**5**
Environment	- Agricultural land has increased	- Appropriate management for sustainable agricultural production and for cultivation of trees for the production of lac	- Study the varieties of trees which can provide for the constant production of lac and so to reduce forest clearing in the long-term	**6**

The Proposal before the Amendments to the Branch Activities

	Current situation	Research Questions	Research Topics (Activities)	Comments
Techniques	- Farmers lack methods and lessons in lac production - Low production - Lac quality - Land study - Selection of the variety - The correct infection season - Care	- Study information on the sources about species of insects and good varieties of pigeon pea - Study the spacing of planting - Study the season - Study the Lac storage techniques - Land use	- Establish experimental plots to gather information - Establish –a lac production schedule - Study –species(lac insects and trees) - Study –the pests - Review the information on the –technology from other countries which has been successful	1
Marketing	- There is only a single market, no real price	- Study marketing - Increase product prices	- Increasing the product prices - Study marketing - Study –the way and the possibility of joining a trading group - - Study enforcement and different factors in cooperation agreements	2
Mechanism	- Relevant sectors promote the cultivation of trees producing lac - Banks have credit policies - Government priority	- Study information from–actual producers	- Open a training course on different implementation management methods (other techniques) - Study the possibility of establishing producer groups	3
Society	- The level of knowledge and understanding of the people is still –low - No one is brave enough to invest their own capital - No possibility of change of occupation	- Establish information centres	- Promote direct and indirect training - Study the changes in the farmers' lifestyles after the process of the cultivation of trees producing lac	4
Environment	- Climate change - High sloping land	- Study the suitability of the land and the degree of the slope - Study climate and survival of the insects	- Study suitability of the insects and the trees - Study the impact of Lac cultivation	5

Research Topics (Lac)

I. Study the villagers' knowledge of and the lessons learnt about the places in the country where there are already good systems for the cultivation of trees producing lac.

Activities:

1.1 Survey the following information in each province from the villagers who are already working in the cultivation of trees producing lac:

- the growing area
- the method of tree cultivation and lac production
- varieties of trees, species of insect
- the suitability of the land
- the previous yields
- Lac trade domestically and for export
- income from lac production (–over 6 –months and over 12 months)
- the quality of the lac
- unresolved problems of the people

1.2 Include groups of villagers from the target villages in study tours and exchange of lessons learnt with other village groups

- organise producer groups
- marketing (buying - selling)
- establish trade between production groups
- increase the product prices
- existing techniques and expertise of the villagers

II. Study the techniques used in tree cultivation and in lac production to become part of the farmers' system and so increase their incomes from the same area

Activities:

2.1. Study the ecology of the Lac producing trees

- Appropriate species
    - Cultivation areas
    - Climate
    - Season

2.2. Study the spacing of the different varieties of trees

- the growth of the trees
- the growth of the insects
- the yield of lac per tree /per ha/per season
- establish demonstration plots
- establish a seasonal schedule (infection and harvesting)
- mixed cultivation of short-lived crops with trees producing lac

2.3 Study the pests:

- the variety of insect pests (Kerria lacca, Lac producing trees)
- the season in which insects pests appear (dry, wet)
- the method of exterminating pests
- the method of exterminating each variety of pests

2.4. Study the age of the Lac producing trees

- At 6 months
- At one year
- At 18 months

2.5. Study the cutting of the branches with insect infestation

- collecting pigeon pea leaves for other purposes
- collecting pigeon pea seeds for other purposes
- cutting the branches in order to examine the production (gain and loss)

2.6. Study the model of mixed crop rotation

- maize cultivation
- rice cultivation
- ground nut cultivation

2.7. Review the information on the successful technology used in other countries

- Review the information available in-country (varieties of trees, species of insects, tree cultivation, infestation, harvesting and trade)
- Review the information from other countries: (varieties of trees, species of insects, tree cultivation, infestation, harvesting and trade)

III. Follow up the previous research topics (2008 Plan)

08_ntfps_tea

Group: NTFP (native tea, *maktaow* (ໝາກຕາອ), *makneurng* (ໝາກແໜ່ງ), rattan, buerkmuerk (ເປືອກເມືອກ), medicinal plants and others)

Main points of the current situation relevant to the research area in Research Stations 1 and 2

Research Station	Research areas	Problems	Challenges	Opportunities	Research Topics
1/2	The use of NTFPs which are the main source of a sustainable income for the people living in the mountainous areas	- Clear cutting - Reduced forest area - Weak regulations for management - No fixed prices for NTFPs	- Changes in land use without impact assessment (rubber plantations, maize..) - Rapidly increasing population - Export quotas exceed the existing supply of NTFPs	- forest cover is still present - a market demand exists - people know the traditional ways of management and care - - the areas of established forests can produce for export	- Survey NTFP management - Research regulations for the management of the natural NTFPs - Study the marketing chain - Study the methods for expanding the cultivation - Formulate a land use plan - Research techniques of clearing and after harvesting for sustainability and fixed pricing