Ministry of Agriculture and Forestry

National Agriculture and Forestry Research Institute

Field trip report on progress in on-farm research in Phonsay & Nam Mo Districts, October 22 – 29

Farming Systems Research Component

Lao-Swedish Upland Agriculture and Forestry Research Programme
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Field trip report on progress in on-farm research in Phonsay & Nam Mo Districts, October 22 – 29

1. INTRODUCTION

This report covers the activities carried during a field trip to the two target districts of LSUAFRP from October 22 – November 1st. Participants from the Farming System Core group, Larrec, Horticulture Research Centre, NAFRC as well as DAFO staff from the two districts participated (Table 1).

Table 1. List of participants field work

	Name	Research centre/ station	Remarks
From the centre			
1	Bounhom	Research Management Division; Farming Systems Core	
2	Paivan	Horticulture Research Centre	
3	Visone	Living Aquatic Resource Research Centre	
4	*Paul*	*Farming Systems Research Advisor*	
From the provinces			
5	Buavan	Lowland rice, NAFRC	
From the districts			
6	Khamsonpeng	Crops, DAFO Phonsay	Only in Phonsay
7	Vongsith	Livestock, DAFO, Phonsay	Only in Phonsay
8	Bunma	Crops, DAFO Nam Mo	Only in Namo
9	Bounchan	Livestock, DAFO, Nam Mo	Only in Namo
GRAND TOTAL			

Objectives. The objectives of the trip were the following:

- Monitor ongoing experiments, collect data, decide on making preparations for crop cuts (lowland rice) in Phonsay and Namo
- Assess farmers interest in participation in dry season experiments
- Organize a 1 day field day/local study tour for farmers from Phonsay district
- Provide on-the-job training to staff in participatory monitoring and in organizing farmer field day

Initially a more comprehensive plan was made to (i) include more members of the farming system team both from central and provincial level and to monitor all on-farm trials, (ii) organize a farmer field day in Phonsay as well as to the IUARP site of Pak Ou district in Luang Prabang and (iii) to organize a staff study tour to the Prodessa project in southern Sayaboury. Unfortunately this plan was not approved by NAFRI, as a need was expressed to further work out the involvement and roles of provinces and districts in the programme before sending in large teams to the target districts. Subsequently it was decided to limit the trip to a small team and to monitor only the lowland experiments and to limit the field day to Phonsay district. The adjusted plans were then approved.

Work schedule. An overview of the trip is presented in Table 1 while details on the farmer field day are presented in Annex 3. In each district two days were spent on monitoring experiments with farmers. In Phonsay an additional day was spent on organizing a farmer field day. The methods used and results obtained of the experiment monitoring and the farmer field day will be discussed separately in the following chapters.

Table 1. Work schedule field trip

Date		Activity
Oct 22	Tue	Travel to Luang Prabang
Oct 23 – 24	Wed – Thu	Field work: 2 days (Monitoring trials, data collection, prepare for field day). Overnight in Luang Prabang.
Oct 25	Fri	Organize field day for farmers in target villages Phonsay, travel to Oudomsay
Oct 26	Sat	Travel to Namo district, Field work in B. Namon Neua & B. Mixay
Oct 27	Sun	Continued field work in B. Mixay, Namon Neua and B. Phangthong: (Monitoring trials, data collection, research planning for dry season), travel to Oudomsay
Oct 28	Mon	Return travel Oudomsay – Luang Prabang
Oct 29	Tue	Main team to return to Vientiane. Adviser to continue visiting Prodessa project in Kentao, Sayaboury.

2. ON-FARM EXPERIMENTS

Methods used for monitoring on-farm experiments.

The monitoring of on-farm trials took place by:

(i) discussing and recording with district staff the information collected during previous monitoring visits

(ii) discussing with a group of farmers the performance and daily management of the experiments as well as strengths and constraints identified. Forms and checklists for discussion topics were used. The adviser e.g. prepared a form to assist in the monitoring of frogs experiments which was used by the Larrec researcher (Annex 1).

(iii) visiting all or a few selected experimental sites and taking observations and/or measurements (rice pest score, weight frogs, estimate fish growth, tomato yield).

(iv) making plans for additional data collection to be supported by district and NAFRC staff (harvesting rice, frogs etc.)

The monitoring took place in small groups consisting in general of one farming systems core team member, one researcher from a research centre and one district crop or livestock staff. Each team monitored then their own trials (wet season tomato, frogs, lowland rice) with the participating villages.

Results on-farm experiments.

Details on the experiments are provided in annexes 1 and 2. In total 78 farmers are participating in the on-farm experiments, 39 in each of the districts, most farmers took part in the lowland rice and frog trials. The details of the monitoring exercise were noted by each of the individual researchers. A summary of the findings is presented in tables 2 and 3.

Table 2. Results of on-farm experiments, started in the 2002 wet season - Phonsay district

No	Trial topic	Initial results & remarks
1	Lowland rice yield trial - variety – high management	Farmer ranking: 1.K Leua Yia, 2. NT 1, TDK 5; 3. TDK 1, IR 8. Also do 3 * (2 * 2 m) crop cuts of K. Do Kao = local early control variety as looks a promising variety. Less rice gall midge damage in local than improved varieties but no serious infestation.
2	Lowland rice yield trial - variety – local management	Xie Se: yield TDK 5: 2.65 t/ha (530 kg from 10 kg seed). Plan crop cuts of participating farmers (3 HH's?. No meeting with participating farmers yet. Next year need to match varieties with farmers needs: both long & medium duration varieties preferred. Hmong like ordinary rice
3	Cabbage variety	Cabbage planted in field but not on elevated beds Continue monitoring farmer experiences with varieties.
4	Evaluation fruit tree species & varieties	Litchi has a better survival than longan according to farmers. Litchi shows new flush of leaves. Longan has a somewhat higher but acceptable mortality (? %)
5	Wet season tomato - variety + management	Farmer likes treatment with improved mngt package + hybrid. Fertilizer maybe not needed in high dose as soil is fertile. So far harvested (2 pickings): 24 baskets @ 13 kg/basket * 30,000 K = 720,000 K. Estimated labor input improved package: 50 % over traditional. More work for seedbed preparation, transplanting, staking, less for weeding Not possible to get production data per treatment as harvesting is done jointly and as a number of plants are staked and tied together. Each plot needs to be harvested during 6 pickings. Will try to harvest remaining plants separately per treatment and record sales. Farmer bought truck, daily transport to LP market! Good income and interest farmer(s)
6	Frog raising – feed	Farmers can't follow different feed treatments as want to feed frogs as best as they can. Main <u>feed</u>: earthworms + little concentrate feed later in season + some cooked rice and/or corn after worm collection became difficult <u>Strengths</u>: • lot of farmer interest by participating farmers and wider community • can generate some income, raising not very complicated, farmers think 20,000 K/kg would be a good price <u>Farmer problems</u>: • collection of worms later in season (after sept) is labor intensive • stealing of frogs (B. Huay Man) • different sizes of frogs at start trial, larger frogs also eat smaller ones <u>Production:</u> • largest frog size: 4 – 5 pc/kg; medium size: 8 - 9 pc/kg; small size: 16 – 18 pc/kg <u>Mortality</u>: • varying from 10 – 80 %, mainly high in first weeks, on average 35 %. Higher mortality of medium/large frogs from VTE? <u>Farmer adaptation</u>: • integrated and productive raising of catfish + frog + morning glory under shade of jujube tree • good snake control by use of bamboo • try raising wild frogs <u>Lessons learnt for next season</u>: • raise earlier in season and match raising with supply of earth worms • integrated with catfish • increased size pond • separate frogs by size during season

Table 2. (cont'd) Results of on-farm experiments, started in the 2002 wet season - Phonsay district

No	Trial topic	Initial results & remarks
7	Cattle raising - feed (treated straw + cassava leaves)	Farmer- experimentor on family visit to USA! Cassava availability: 3000 plants. Raise cattle in uplands in 3 grazing areas of old village. Just before visit of team bring cattle to village and stall feed 4 cattle + 2-3 calves by feeding fresh cassava leaves + cut & carry Ruzi and natural Ya Nyung grass. Decide not to continue experiment as still enough grazing area for this farmer. Farmer main motivation is interest in bio-gass production from manure but on its own this might not be economical. Will need to find alternative use for cattle stable e.g goat or pig raising.
8	Chicken raising – feed	Objective of experiment has changed from testing feed to testing effects of management x breed on production. Chicken raising in uplands gives more offspring. Uplands: 8 chicks/mother; Raising in confined area: 5 chicks/mother Problem: Raising method and chicken breed are tested in combination, thus not sure if increased offspring is due to different breed or management system
9	Sloping land technologies - demo banana/pine apple hedgerows	Not visited, but apparently quite high mortality due to late planting and high rainfall
10	Sloping land agro-forestry technologies – fruit & annuals	Not visited.

Table 3. Results of on-farm experiments, started in the 2002 wet season - Namo district

No	Trial topic	Initial results and remarks
1a	Lowland rice yield trial - variety - high management	B. Namon Neua. Farmer ranking prior to harvest: 1 K. Meuj. 2. NT 1, TDK 5; 3. TDK 3; 4. TDK 1. Local early variety K Do Khok also looks promising, decide to take crop cuts. Rest of plots to harvest whole plot. Main problem rice gall midge. Lot of infestation due to high humidity and lot of rain. Improved varieties more damaged than local check and of shorter duration. Farmers mainly prefer long duration, (pest resistant), sticky rice varieties. Effects of fertilizer not yet monitored.
1b	Lowland rice yield trial - variety - high management	B. Pang Thong. Farmer ranking 1. K . Yao. 2. TDK 5; 3. TDK 3; 4. TDK 1. Local medium variety K Tung Yo also looks promising. Decide to take crop cuts 3 x 3 m per plot. Main problem rice gall midge. Lot of infestation due to high humidity and lot of rain. Improved varieties more damaged than local check. Farmers mainly prefer medium duration, (pest resistant), ordinary rice varieties. Effects of fertilizer not yet monitored.
2a	Lowland rice yield trial - variety - local mngt	B. Namon Neua. Results as in 1a. Take harvest data by 3 x 3 m crop cuts
2b	Lowland rice yield trial - variety - local mngt	B. Pang Thong. Results as in 1b. Take harvest data by 3 x 3 m crop cuts. Plot Lao Loua also add crop cuts of K. Tung Yo (chinese ordinary var.) and K. Pa Ho (chinese hybrid).
2c	Lowland rice yield trial - variety - local mngt	B. Pang Thong. Each of 8 hh gets 1 – 2 improved varieties. Results as in 1b. B. Mixay. Each of 9 hh gets 3 improved varieties. Not yet monitored. Get some crop cut harvest data.
3	Integrated fish pond - pig system – stocking rate mixture of fish	Growth rates of fish species: 1. common carp, 2. tilapia, 3. Puntias sp.. Estimated weight 3-4 pc/kg. Pig feed used: pumpkin vines, corn, rice bran & sometimes rice stems (?). Pig pens are well built and provide for good manure. Farmers show good interest and same farmers have expanded 3 more ponds in area. Other farmers should get opportunity as well to start fish pond cultivation. Not clear what effect is of treatment differences and if this was monitored.
4	Cattle raising – feed (treated straw + cassava leaves)	Pang Dou: very well constructed cattle stable was built with use of good wood, floor not yet completed. No cattle at stable yet. Reportedly about 1000 cassava plants available at 10 min walk. Need to consider adjusting or changing trial as stall feeding will be too labor intensive as natural grazing area is still available. Stable might be used for pig or goat raising
5	Cardamom variety x spacing trial	No real monitoring done but just a quick visit. The cardamom seems to do fine and new shoots have re- sprouted from mother stems

In general the experiments have shown a lot of farmer interest and most of them are considered promising and successful by farmers. Especially the wet season tomato, frog raising, integrated fish pond production and to a lesser extent the fruit tree production have met farmer's expectations (Annex 4).

Only the lowland rice variety trial has not been successful yet in identification of varieties which are considered superior to the local cultivars used by farmers. Especially in Namo district the improved varieties showed more susceptibility to a rice pest (rice gall midge). During the monitoring exercise it became clear that the experiments are generating a lot of new knowledge and experiences both for farmers as well as researchers.

Interest in dry season experiments

In June 2002 a tentative plan was made to support experiments with dry season watermelon production in B. Namon Neua with a group of five farmers. Most farmers of this village however expressed a preference for growing a second crop of rice as their wet season rice yields were lower then normal due to high rainfall and pest damage. Also there was some overproduction of watermelon last season which resulted in low final prices and limited profit.

Upon return in Vientiane it was decided not to start any dry season experiments this year as researchers would not have enough time to prepare and implement research plans/proposals. In addition for dry season rice cultivation, no suitable varieties or technologies have been identified yet for the low temperature conditions like in Namo district, which could be easily tested with minimal researcher supervision.

Follow-up

The following plans were made with the district staff and farmers to continue with further trial monitoring:

- Lowland rice: marking plots for taking rice crop cuts, harvesting and weighing rice from the experimental plots and crop cuts
- Select frog parent broodstock for each farmer, count number of frogs and measure weight of sample frogs by end November if Larrec staff cannot make another visit before this date
- Tomato: note tomato production of each treatment by farmer and income obtained from sale tomato and intercropped vegetables

3. FARMER FIELD DAY

Schedule farmer field day to target villages in Phonsay, Oct 25

8 .00 – 9.00 Pick up villagers by truck, gather at B. Nam Bo, register names of farmers

9.00 – 12.00 Half day visit of various ongoing experiments, split into two groups of about 30 farmers each: Group 1: B. Tha Pho & B. Huay Maha and Group 2: B. Nam Bo & B. Huay Man.

Group 1: Start in Tha Pho (lowland rice & fruit) then Nam Bo (frogs),
Group 2: Start in Nam Bo (frogs), then Tha Pho (lowland rice & fruit).
Group 1 & 2: Final joint visit in B. Huay Man (tomato & cabbage) :

Details on sites visited:

- Frog experiments at B. Nam Bo (3 farmers; examples of good earthworm raising practises, integrated catfish + frog raising, high production & good management)
- Lowland rice experiment of Nam Bo farmers at B. Tha Pho (Mr. Sie Poh)
- Fruit tree experiment, B. Tha Pho
- Tomato & cabbage trial of Nam Bo farmers in B. Huay Man (Mr. Tong koo, Vathoh & Cheunoo)

12.00 – 13.30 Joint lunch in field of Nam Bo tomato farmers in B. Huay Man
13.30 – 14.30 Joint discussion on field days by farmers

Methods. The field day took place by**:**

(i) requesting village committees to select male and female farmers of each village. Selection criteria for farmers: interested in one of following topics: wet season tomato, cabbage production, frogs, lowland rice and/or fruit trees Participants to be 50 % male and 50 % female and belong both to poor, medium and well-off farmers.
(ii) visiting on-farm research sites of four different research topics by small groups of farmers
(iii) explanation by farmer on experiment and lessons learnt, facilitated and supported by researchers & district staff
(iv) joint lunch with all participants at on-farm experimental site
(v) joint discussion on experiences gained and ideas for next year.

Results. In total 60 farmers participated in the field day. All of the 4 villages were represented and women participation was 35 % (Table 4).

Table 4. Village participants in Phonsay field day

Village	Total		
	Male	Female	**Total**
B. Huay Man	8	5	**13**
B. Nam Bo	9	9	**18**
B. Tha Pho	10	4	**14**
B. Huay Maha	12	3	**15**
TOTAL	**39**	**21**	**60**

Farmers were pleased to have an opportunity to see on-farm experiments and new technologies carried out by their fellow or neighboring villagers. The discussion with participants at the end of the field day provided feedback on the technologies and experiments that they observed. Frog raising, frog + catfish production and fruit tree planting, followed by tomato production were the most popular technologies mentioned by farmers of all four villages (Table 5). Evaluation of lowland rice varieties was only mentioned in one village as an interesting option, as paddy land is limited in the target villages.

The impression is that farmers are interested in vegetable (tomato) and fruit production but on smaller areas than what was tested this year. These technologies could thus be refined in the coming years to fit with the needs of farmers with more limited available land and labor resources.

Table 5. Preferred technologies or experiments suitable for testing in their villages/farms next year expressed by men and women of each village at group discussions.

Name village	Sex	Preferred technologies and comments
Huay Man	M & F	Fruit trees, frog + catfish,
Huay Man	F	Also tomato
Nam Bo	M & F	Frog, fish (catfish, already practiced): improved techniques + mixed raising , crops, chicken, some fruit
Tha Pho	M	Frog & catfish: as lack of land, fruit trees: jujube & others
Tha Pho	F	Fruit trees, pine apples, lowland rice: TDK-3, NT – 1, lack water in paddy
Huay Maha	M	No paddy & riverbed gardens; frogs: think it's possible, vegetables: some farmers, some interested in catfish
Huay Maha	F	Also interested in frogs and some fruit

ANNEXES

Annex 1. Details on on-farm experiments started in the 2002 wet season - Phonsay district

No	Trial topic	Centre	Treatments	Details	Rep	Vill	Farms
1	Lowland rice yield trial - variety - high management	ARC	6 varieties (4 improved TDK1,TDK 3, TDK 5, NT-1, local IR 8, local K. Leua Yia) at high management (NPK , use 46-0-0 at 25 & 45 DAT)	3 rep/farmer	3	1	1
2	Lowland rice yield trial - variety - local management	ARC	6 varieties (4 improved TDK1,TDK 3, TDK 5, NT-1, 2 local) at local management	1 rep/farmer (take crop cuts, each farmer gets set of 4 varieties)	3	1	3
3	Cabbage variety	HDK	3 varieties: T1 : Local, T2: KK, T3: KY. Farmers to test themselves	Trng & input supply	3	1	3
4	Evaluation fruit tree species & varieties	HDK	4 treatments: jujube, sapota, litchi & longan at intermediate mngt; 2 farms 2 treatments, 1 farm: 4 treatments (suitable spacing, dig plant hole, use manure, NPK)	1 rep/farmer	6	2	6
5	Wet season tomato – variety + management	HDK	7 treatments: T1: improved mngt + hybrid T2: improved mngt + local T3: improved mngt, no NPK +hybrid T4: improved mngt, no stake + local T5: transplant at raised bed + hybrid T6: transplant at raised bed + local T7: local management, broadcast + intercropped w. leaf mustard & kale (improved mngt: polybag+raised bed+plastic cover+ NPK+ stake+ pesticides)	1 rep/group of 3 farmers	3	1	3
6	Frog raising – feed	Larrec	Planned: 4 feeding treatments: T1: 100 % conc feed, T2: 75/25 % conc/local feed T3: 50/50 % conc./local feed, T4: 25/75 % conc./local feed. Conc feed = cat fish feed, local feed = raised earth worms Extra: 1 farmer exp: local frog + local frog pond + earth worms Actual : Every farmer raises frogs using mainly local collected earth worms, quantities based on labor input Some purchase of concentrate feed in addition to what they were provided as well	1-2 treatm/farm	5	2	15
7	Cattle raising - feed (treated straw + cassava leaves)	LRC	Planned: 2 raising/feeding treatments; T1: free-range + local grazing, T2 stall feeding in improved stable + treated straw + extra feed + fresh cassava leaves	1 rep/farm 4 cattle/entry	1	1	1

Annex 1 (cont'd). Details on on-farm experiments started in the 2002 wet season - Phonsay district

8	Chicken raising – feed	LRC	Planned: 2 raising/feeding treatments; T1: free-range+ local feed, T2: half fenced/free-range + 50 % feeding Actual: T1: free range + additional feed at smaller area on island, Local (Khai lat) x Improved (Khai sam saypan from Vietnam) T2: free range + additional feed in uplands, Local (Khai Lat) x Local (Khai Tee)	1 rep/farmer, 11 chick/entry	1	1	1
9	Sloping land technologies - demo banana/pine apple hedgerows	Soil	1; Demonstration: 2 rows pine apple & banana along contour 4 – 8 m apart according to slope, job's tears in between	1 rep/farmer	3	1	3
10	Sloping land agro-forestry technologies – fruit & annuals	FRC - TK	3 wide spacings of strips of mixed fruit tree/banana/pine apple rows along contour, job's tears w. legumes in between strips	1 rep/farmer	3	1	3
	TOTAL						**39**

Annex 2. Details on on-farm experiments started in the 2002 wet season – Namo district

No	Trial topic	Centre	Treatments	Details	Rep	Vill	Farms
1a	Lowland rice yield trial - variety - high management	ARC	4-6 varieties varieties (3-4 improved TDK1,TDK 3,TDK 5, NT-1, local K. Meuj) at high management (+NPK)	1 rep/farmer	3	1	3
1b	Lowland rice yield trial - variety - high management	ARC	4-6 varieties varieties (3 improved TDK1,TDK 3,TDK 5, local K. Yao) at high management (+NPK)	1 rep/farmer	2	1	2
2a	Lowland rice yield trial - variety - local management	ARC	4-6 varieties (3 - 4 improved var TDK1,TDK 3,TDK 5, NT-1, local K. Meuj) at local management	1 rep/farmer	3	1	3
2b	Lowland rice yield trial - variety - local management	ARC	4-6 varieties (3 - 4 improved var TDK1,TDK 3,TDK 5, local K. Yao) at local management	1 rep/farmer	3	1	3
2c	Lowland rice yield trial - variety - local management	ARC	4-6 varieties (3 - 4 improved var TDK1,TDK 3,TDK 5,local K. Yao) at local management	1 rep or treatment/ farmer		1 1	8 11
3	Integrated fish pond - pig system – stocking rate mixture of fish	Larrec	3 stocking rates of mixture of 3 fish species (common carp, tilapia & Puntias sp) T1: 2pc/m2, T2: 3 pc/m2, T3: 4 pc/m2; All treatments have 1 pig/100 m2.	1 treatm/farm	1	1	3
4	Cattle raising - feed (treated straw + cassava leaves)	LRC	2 raising/feeding treatments; T1: free-range + local grazing, T2: stall feeding +treated straw+extra feed+fresh cassava leaves,	1 rep/farm 4 cattle/entry	3	3	3
5	Cardamom variety x spacing trial	FRC	9 variety – spacing treatments, 3 varieties (2 local, 1 improved): Red local, green local, Kwang Tung, 3 spacings: 2 x 3 m, 3 x 3 m, 3 x 4 m. Planted in secundary forest.	1 rep/farmer	3	1	3
	TOTAL						**39**

Annex 3. Example of monitoring

Frog experiment monitoring activity:

1. Meeting with group
2. Discuss experiences. Survey roughly how much feed each of the farmers have provided to the frogs (concentrate & earth worms) by interviewing & visiting frog ponds
3. Decide if it is feasible to regroup the farmer treatments based on their feeding pattern or just keep recording what each individual farmer does.
4. Weekly/bi-weekly collect information on frogs by use of the following form
5. Provide advise and agree on follow-up activity with farmer and district staff

Tentative monitoring form for frog experiment (for use by district staff with help of farmer)

Name farmer	
Village name	
Amount frogs received	
Size frogs	
Number of .pond	
Intended treatment	

Period	Mortality frogs	Feed provided (cups or mini-buckets/day)		Labor input * (manhrs/day)	Renew water (times/week)
		Concentrate	Earth worms		
July 15 – 30					
Aug 1 – 15					
Aug 16 – 30					
Sept 1 – 15					
Sept 16 – 30					
Oct 1 – 15					
Oct 16 – 30					
Nov 1 – 15					
Nov 16 – 30					
Dec 1 – 15					

* for collecting worms, cleaning & feeding, (e.g. 0.5 hr/day for collecting worms)

Annex 4 PHOTOS

Photo 2. Ripening of improved tomato variety, B. Nam Bo. Photo 3. Monitoring frog trial with farmer, B. Huay Man

Photo 4. Fast growth of frogs in farmer experiment, B. Nam Bo

Photo 5. Farmer adaptation: mixed raising of frogs + catfish + morning glory under shade of jujube, B. Nam Bo

Photo 6. Replicated lowland rice variety experiment with 6 entries, B. Nam Bo

Photo 7. Farmers discuss fruit tree planting during farmer field day, B. Tha Pho

Photo 8. Monitoring of integrated pig – fish experiment, B. Mixay

Photo 9. Evaluation of litchi, B. Tha Pho

Photo 10. Stall-fed cattle feeding on cassava leaves, B. Nam Bo