Papussa Project Progress and Planning Meeting 16 -18th January

Venue AIT Centre, Asian Institute of Technology, Bangkok
Comments in blue Action points in red

Lists of participants:

No.	Name	Organization	Country	
1	Dr.David Little	Stirling University	UK	
2	Mr.Will Leschen	Stirling University	UK	
3	Dr.Anders Dalsgaard	KVL	Denmark	
4	Ms.Marielle Dubbeling	ETC	Netherlands	
5	Mr. Vuong Tuan Anh	NIHE	Vietnam	
6	Prof. Phung Dac Cam	NIHE	Vietnam	
7	Dr. Pham Anh Tuan	RIA no.1	Vietnam	
8	Mrs. Nguyen Thi Dieu Phuong	RIA no.1	Vietnam	
9	Ms. Nguyen Thi Hanh Tien	RIA no.1	Vietnam	
10	Mrs. Diep	RIA no.1	Vietnam	
11	Dr. Le Thanh Hung	UAF HCMC	Vietnam	
12	Dr. Luong	UAF HCMC	Vietnam	
13	Mr. Huynh Pham Viet Huy	UAF HCMC	Vietnam	
14	Mr. Kuong Khov	RUA	Cambodia	
15	Dr. Ruangvit Yoonpanth	Kasetsart University	Thailand	-
16	Dr. Varunthat Dulyapurk	Kasetsart University	Thailand	-
17	Mr. Tanason Rakdontee	Kasetsart University	Thailand	
18	Mr. Albert Salamanca	Durham University	UK	
19	Prof. Lin	AIT	Thailand	
20	Ms. Wanwisa Saelee	AIT	Thailand	
21	Dr. Amara Yakupitiyake	AIT	Thailand	
22	Mr. Chumpol Srithong	KU	Thailand	

Monday 16 January Morning Session
Introduction Session

Will Leschen and David Little welcomed the participants to the third and final Progress Meeting of the Papussa project. Introductions were made of new project staff who had joined the project in the last year - Dr Luong from UAF HCMC was responsible for carrying out a comparative study of ornamental fish cultivation in HCMC and Bangkok along with Ms Wanwisa Saelee of AIT. Marielle Dubbeling of ETC Netherlands was also introduced. ETC is one of the sub- contracted partners who have been involved in developing stakeholder dissemination and dialogue strategies within the project.

The main objectives and aims of the meeting were stated as follows:

1 To present and review the project work for the last year (2005)
2 To discuss and identify the remaining project deliverables to be submitted by the end of the project in June 2006 (final reports and deliverables to be submitted to EC by August 31 2006

3 To formulate a workplan with deadlines to complete all project work and submissions to the EC by the aforementioned end of the project

Other issues concerning housekeeping, accommodation, meals etc were discussed and the proposed schedule of the meeting was run through – with the partners being asked if there were any further areas/topics which they wished to be discussed or included in the meeting.

Presentations of 2005 work

There then followed presentations by each of the 4 city partners on their work and research findings in 2005. Electronic versions of these presentations were made available at the meeting to participants to copy – but can be obtained from Will Leschen (WL) on request. AD -One proviso to note from Anders Dalsgaard (AD) was that the presentations should not be published or reproduced (or data within them) without the prior permission of the author(s).

Each of the city partners presentations included sections on completion of the third household monitoring survey, the further cleaning and analysis of the Baseline and Monitoring Survey database and then a summary of the most important, salient points from each of their analyses. Sections were also included on the project interventions carried out in each city, other outputs produced eg aquatic plants cultivation booklet(s) and video, Beung Cheung Ek Lake video in Phnom Penh, SOS reports dissemination, and attendance and presentations given at Dhaka peri-urban aquaculture workshop in November 2005.

Kasetsart University Bangkok – presentation by Dr Varundhat and Dr Ruangvit

(WL) I have described KU presentation in more detail than other city partners in order to show the method by which they have used the data analysis to try and answer specific research hypotheses that were set. This should be the priority of all of the city partners to analyse the data in order to prove or disprove our research hypotheses and then depending on your findings developing the analyses further to explain what you find. Please look through their powerpoint presentation and see how they have presented the data – and how this could be taken and put into different forms of dissemination – eg reports, policy briefs, posters, publications in peer reviewed journals, newspaper or magazine articles etc.

KU gave an informative and well laid out presentation of their years work which clearly showed their main findings from their baseline and monitoring analysis so far. Within their presentation they also used these findings to address and try to answer many of the research hypotheses that had been put forward at the Siem Riep workshop (and earlier) in July 2005. Their main findings from the BL and Mon survey analysis were:

1. Gender was not a significant factor for those household (HH) members working in either the fish or aquatic plant cultivation sites studied.
2. Religion was only significantly different from normal Buddhist beliefs in Suan Prix Thai village for those Islam persons growing water mimosa in the local canal. For the other sites and production systems those working on them were predominantly Buddhist although there were

22% Islam persons involved in catfish culture also in Suan Prix Thai village.

3. The predominant age range for those working in both fish and aquatic plants culture was between 30 -49.
4. Hybrid catfish culture at Lumsai had the highest average annual incomes with water mimosa growers in Suan Prix Thai village the lowest. This was also reflected in their ownership of HH assets

5 Up to primary level education was the commonest for HH members in all 4 study sites, however Lumsai catfish farmers and Suan Prix Thai Village (SPTV) polyculture farmers had much higher levels of secondary and further education than the aquatic plant growers of SPTV and Nonpaongai villages.

In answer to the research hypotheses posed:

- From their study sites catfish farmers in Lumsai village (especially seed producers had the highest average incomes), however the intensive production of MG in Nongpaongai village still produced higher average incomes (3X) than those carrying out fish polyculture in Suan Prix Thai village – **thus confirming that aquatic plants cultivation in Bangkok can produce significantly higher incomes than fish farming**. However it should be noted that these are deemed as gross income figures and do not include production costs to the farmers.

- Not much difference in average number of HH members between fish farmers and aquatic plant growers

- Women are predominantly more involved in aquatic plants cultivation than men compared to fish farming where men are more predominant – Reasons why?? How can this be used positively in our future recommendations and Policy Brief documents to promote aquatic plants cultivation?

- Fish farmers tend to be of a higher education status than aquatic plant growers – yes data shows higher levels in secondary and further education for fish farmers.

- Hypothesis - Aquatic plant growers are more likely not to have been born in their current location? – Not really – In fact the data shows that Suan Prix Thai village (for both fish farmers and aquatic plant growers) has a higher migration level than the other 2 study sites. Why do we think this is – what is special about this village?

- Hypothesis – fish farmers are more likely to be involved in institutions than aquatic plant Growers – well not really – but again data shows that institutional involvement in SPT village higher than other 2 communities – why would this be? Interesting as this community also has higher level of migration than other 2 communities.

- Hypothesis – fish farmers more likely to own land than aq plant growers – not shown in data - rather all groups rent more land than they actually own (except SPT village WM farmers) – Lumsai catfish farmers have highest overall land (own + rent) – does this also relate to their income status?

- Hypothesis: Fish farmers are less likely to have other major income earning activities than aq plant growers – not shown in data – rather trend is that the higher the average income of

the group eg Lumsai catfish farmers and Nongpaongai MG farmers the fewer other sources of income required. Whereas fish polyculture and MG farmers in SPT village are more involved by necessity in other income earning activities.

- Main problems in next 5 yrs for fish farmers were seen as fish diseases and increasing feed costs
- Similarly for aquatic plant growers main problem in next five years was plant diseases and how to treat them. How can Papussa project react/ help with these concerns – aquatic plants booklet – section on plant diseases and treatment – what else can we do in remaining project time – recommendations??
- Hypothesis – aquatic plant growers generally spend more days/hours working than fish farmers – not born out in data –rather the reverse that fish farmers spent more days/hrs working during the MS period than aq plant growers. SPT water mimosa farmers spend least time perhaps explaining why it is still attractive for them to do this despite low income. Also fish farmers need to feed fish on daily basis over 12 months- compared to aq plant growers whose work patterns are more seasonally related to their crops.
- Hypothesis – aq plant growers sell their products closer to home than fish farmers. Not born out in data – actually the reverse – fish farmers tend to sell their produce at the farm gate reflecting transport carried out by other persons- also importance of keeping fish live and fresh for sale. This is re-inforced in data on sales to middlemen or self sell with fish farmers selling much higher % of their produce to middlemen than aquatic plant growers.
- Data not clear but it appears to be cheaper for aq plants farmers to hire outside labour than fish farmers – as in other cities could this (cost and availability of labour) be a limiting factor for fish farmers?

The following hypotheses/ analysis under further investigation:

- Aquatic plants are generally eaten cooked very few households interviewed eat raw fish?
- Of those interviewed most people ate fish which were not produced in WW?
- The most important changes in land uses noticed?
- Seasonal variations in consumption of different aquatic plants or fish species?
- Those involved with working in AFPS in WW are less well off than those who are working in non WW system? – Not really applicable to Bangkok
- Those involved in WW have higher overall prevalence of health problems than AFPS farmers who do not? Same as above

KU team to now think of other research hypotheses they can develop from above analysis or relating to other areas within the BL and Mon survey which they think are important with their knowledge and experience of Bangkok systems.

Remainder of presentation described progress of "organic" Morning glory trial. Trial now finished with data to now be analysed and report written. Initial data shown of gross yields of MG and fish from different systems shown. David Little (DL) asked whether cost benefit analysis of trial to be completed. Answer was data was collected – analysis will follow. Will Leschen (WL) – Rather than just a report would be beneficial to present findings of trial in other formats? – paper for publication , poster, even smaller summary leaflet/poster for markets, farmers and food safety stakeholders.

RUA Presentation – Koung Khov

Kuong summarised the years work at RUA:

- Writing Journal Article "Peri-Urban Aquatic Food Production Systems in Phnom Penh, Cambodia" for UA magazine
- SOS Report dissemination dialogues with100 stakeholders and data entry – Daream produced Access Database of responses to questionnaire
- 3rd Monitoring survey completed followed by data entry and processing
- Morning glory and mimosa growing manual booklets
- BL and Monitoring database training in Siem Reap July 2005

- A case study on skin problem of PP morning glory producers – Seyha and Tuan Anh (NIHE) published on project website

- Phnom Penh Peri-urban Aquatic Production film by BBC – Albert Salamanca (AS) – film to be shown in near future – also DVD of film to be made available to project soon.
- Data analysis and report writing

He then gave summary of BL and Mon Survey Analysis:

Please see presentation for details

Future of Production Systems and more particularly the lake - City plan is to preserve the lake for Biological Waste water treatment plant but lake area will be reduced by 4 times

Discussions/questions

DL - We need more information on this-how can the project influence this recommendation of the City Plan?? Does biological treatment include aquaculture within their plans??

AD - French embassy study-fill in the gaps of our study using this work – use and refer to this document when writing up reports

Kuong Khov (KK) Fish pellets still not manufactured and Government trying to ban snakehead because feeds based on limited quantities of trash fish.

Kwei Lin (KL) Why the differences in ww and non ww pangasius?? KK - Different systems because WW are pen-fed, less intensive culture in Beung Kok..cf with more intensive and growing intensive culture close to river.

UAF presentations - given by Huy and Dr Luong

Huy firstly summarized the objectives of the project and more specifically the HH baseline and Mon surveys then describing the methodology and sampling framework involved

He made the important point that since we sampled only AFPS HHs we could not make comparison with other types of HHs in the same communities.

He then went on to summarise main findings from analysis of HH BL and Mon survey. These can be referred to in his powerpoint presentation.

The intervention of producing a calendar with information on pond management was described – this calendar has been distributed to 70 fish farming HHs in 4 districts and will be followed up with obtaining feedback from each household on its impact and usefulness – this data will then be analysed and a report produced.

Dr Luong then gave a summary of the ornamental fish survey carried out in HCMC in conjunction with Bangkok (Hall, Prof Lin at AIT) – see presentation for reference. In summary it contained:

- History of development of orn fish culture in HCMC
- Areas in and around HCMC where it is practiced, specialization for different species
- Types of production systems
- Findings from PCA meetings in District 8 and Go Vap districts with orn fish growers
- Summary of marketing channels – markets, transport, retail stores etc and most popular fish sold
- Import and export markets
- Proposed outputs from study

RIA1 Presentation – (presented by Phuong)

Phuong gave an outline of the years work within the project which included:

- A summary of theBaseline and Monitoring analysis in Hanoi – this can be referred to in the powerpoint presentation

- SOS report feedback

Have delivered estimated 250 SOS reports

Feedback from 50 people which included 8 farmers: fish and aquatic plants
10 people of commune authorities, health 24 (govt?) people involved in irrigation, vet., agriculture.

8 people in govt fisheries/aquaculture area

Report produced summarizing feedback from these stakeholders

- Intervention - Poster and booklet of Tilapia seed production
- Aquatic plant's booklet
- Aquatic plant's booklet and DVD video intervention

Plan for 2006

Preparing to apply tilapia seed production in 3-5 HHs in each commune by March next year 2006. This will require the HHs to be chosen, co-operation with the farmers, preparation of broodstock, design and modification of rice field layout, etc.

Points raised/questions

Health data and analysis shown should be included in policy Briefs – this is the case for other partners also – Tuan Anh to make available NIHE's initial analysis of BL and Mon Database so partners can be aware of other other health related areas not analysed which they can develop for instance in relations to production systems.

NIHE/KVL presentations given by Tuan Anh and Anders

Presentations were given on the following topics carried out in Phnom Penh and Ha Noi:

1. Ww treatment capacity – microbiological quality
2. Microbiological quality of water spinach/morning glory
3. Toxic metals in water spinach, fish and environment
4. Skin problems among farmers engaged in ww-fed agri-aquaculture
5. Anthropological study of farmers perceptions of ww use and associated health risks
6. Fishborne zoonotic parasites in ww-fed fish in Hanoi and Nam Dinh

Summary of Helle's work

Potentially toxic metals in aquatic production systems receiving urban wastewater in Vietnam and Cambodia

Summary of Findings

- Consumption of water spinach produced with use of wastewater does not seem to constitute a food safety problem with regards to toxic metals in Hanoi and Phnom Penh
- Consumption of fish from Boeng Cheung Ek does not seem to constitute a food safety problem, except for skin of walking catfish
- Consumption of tilapia and common carp grown in ponds in Hanoi can constitute a food safety problem. Especially the liver should not be consumed
- Pollution with Pb and Cd is taking place, but the metals seem mainly deposited in wastewater canals and less so in ponds and fields. However, there is still a need to follow the metal build up in productions systems in the future.

Presentation – Tuan Anh

Microbiological quality of water spinach grown in the Beung Cheung Ek lake in Phnom Penh and in peri-urban aquatic systems in Hanoi

Study sites in PP and Ha Noi

- Phnom Penh: 2 inlets, 1 outlet of BCE lake and the control site (a small pond); all sites sampled four times; with and without ww exposure of plants
- Hanoi: one ww-irrigated site, one rainwater-irrigated site, 6 fields at each site sampled during wet and dry seasons (duplicate samples)

Phnom Penh Study conclusions:

- Thermotolerant coliforms
  - Relatively higher levels (105-106 /g) on water spinach
- Protozoan parasites
  - *Giardia* is most prevalent, particularly in plant samples collected at inlets
- Helminth eggs
  - Very low levels detected at all sampling sites

Ha Noi Study conclusions:

- Thermotolerant coliforms
  - Relatively low levels on water spinach (<104/g)
  - No apparent differences between seasons
- Protozoan parasites

  - Higher prevalences during dry season at WW-site
  - *Giardia* is most prevalent, particularly at WW-site
  - *Cryptosporidium*: high levels during dry season at WW-site
  - *Cyclospora* is less prevalent than *Giardia* and *Cryptosporidium*, but is present at both sites and during both seasons
- Helminth eggs
  - Very low levels detected at both sites, no apparent difference between seasons

Presentation

Skin problems among farmers engaged in Peri-urban Aquatic Production Systems in Hanoi and Phnom Penh.

Results from Phnom Penh

- Data from each of the three cross-sectional studies were entered into individual database files
- However, problems are experienced with merging these databases into one common database. Thus, data is not shown

Overall Results: diagnosis of current skin problems made by the dermatologist

Most common diagnosis was contact dermatitis

Other diagnoses:
- Atopic dermatitis
- Urticaria
- Fungus infection
- Bacterial infection

Conclusions

High prevalence of self-reported skin problems among farmers exposed to wastewater

Contact dermatitis is the most common skin condition but case numbers are small

Better assessment of exposure (specific biologic and physical-chemical factors) is needed

Future work

- Phnom Penh database to be repaired and data cleaned
- Data analysis:
  - Descriptive analyses

  - Multiple logistic regression
- Manuscript submissions (2 x MS to be submitted to international peer-reviewed journals)

Presentation

Fishborne zoonotic parasites in ww-fed fish in Hanoi and Nam Dinh

Study to be repeated just before/after Tet analysing another 400 fish with similar species distribution

Preliminary conclusion: the prevalence of FZPs in ww-fed fish at study sites in Hanoi and Nam Dinh are low with common carp being the only species from which FBT's were found

Anders added that future study was also identifying snail species present within systems in order to verify if they were specific species required by parasites to act as intermediate hosts.

Final Health Presentation

Health risk awareness among farmers engaged in wastewater-fed aquaculture: An anthropological study in Thanh Tri district, Hanoi.

See presentation for details

Summary

- Anthropological study of farmers awareness of health risks associated with wastewater (ww)-fed agri-aquaculture culture to obtain in-dept knowledge on farmers risk perceptions
- Fieldwork in Bang B village in Hoang Liet commune, Thanh Tri district, Hanoi (PAPUSSA site).
- Period: Nov-Dec 2005 – carried out by Danish anthropologist

Importance of Production

- Quality of water:
  - no influence on use of measures to protect health
  - influences decisions on usage of water for plants/fish

Importance of water and plants:

"People can survive three days without food, but vegetables can not survive without water for three days"

No protective health measures to be taken if they slow down work and production

Description of women's and mens protective measures towards working in waste water

Health problems considered not serious

- Health problems from wastewater – cold/flu, itching skin, eroding nails/fungi infections, sore eyes, women's diseases
- Nail and skin problems considered temporary problems - disappear after 3-4 days if treated

Summary

- Not enough information on health risks associated with ww-fed agri-aquaculture
- Skin and nail problems are not considered the most serious health problems
- No ideal protective measures have so far been identified
- Productivity > health concerns in every day work tasks
- Local understandings of gender -> men use protective measures less often than women
- The importance of appearance -> to increased health risks

Comments from above presentation were complimentary about the work done with the findings after further analysis and completion being very beneficial for the project to use in future policy briefs or recommendations – eg normal and past recommendations have always been wear gloves/protective clothing – in reality these recommendations not practical or workable – message can be rather than protection clean up the waste water first??

DL – asked about project work related to pesticides in these systems- AD replied that Phuong and team in Hanoi had collected considerable data on pesticides usage in Hoang Liet and Tran Phu which can be used to produce an associated risk related output by the end of the project.

Lunch

Afternoon Session

Aquatic plants DVD video.

DVD made by Will Leschen and 4 Papussa city staff team shown of aquatic plants production systems through marketing chain to consumer.

Comments AD – DVD useful tool for disseminating findings to stakeholders – Standard of pictures can be higher using professional cameraman - KVL/NIHE interested now in producing short DVD in Thanh Tri district. Costs of hiring cameraman shouldn't be too excessive.
MD – Message of DVD should be simple and concise in order to be most effective with more senior stakeholders

Presentation

Senior stakeholder dissemination and engagement – Marielle Dubelling ETC

See presentation for details

Summary:

Marielle first gave a general background into:

1. Why communicate to senior stakeholders
2. Policy research
3. Strategies for senior stakeholder engagement
4. Packaging the message.

She then went on to describe and discuss the Papussa dissemination strategy in more detail:

1. Urban Agriculture Special edition magazine
2. CD Rom/DVD
3. The website
4. Policy Briefs

Future Activities

- World Urban Forum, 19-23 June 2006, Vancouver-Canada (short, high quality video and accompanying leaflet)
- WHO: review of wastewater guidelines. Any PAPUSSA recommendations?
- Distance learning: how to collaborate

Discussion Points

- Type and target group –spec. for Policy Briefs (who do we want to influence and why, how should their behaviour change?)

- Development process (content, language, lay-out)
  WHO : PAPUSSA (recommendations, visual materials) -> ETC -> PAPUSSA -> targeted stakeholders -> ETC -> second round?
  HOW: questionnaires, workshops, visits…

- What materials are available materials: written, visuals? What materials are needed?

- Dissemination strategies in each locality

Comments and discussion about project web site

It was noted that there had been generally low involvement and participation of partners in contributing to the site ie in the Forum and Noticeboard sections as well as submitting articles, short

pieces for it. Site is one major way in which project can still continue to disseminate, discuss and communicate project findings after project has finished at low/no cost>

It was suggested that a forum page for partners in three local languages would be beneficial as current structure excludes many potential stakeholders. MD to check with Dorine if this is possible. This would involve one Papussa staff from each country being responsible for checking and answering any questions on Forum site on a 2-3 daily basis.

Group Session

The four city partners were then divided into 5 groups and asked to discuss and brainstorm the following questions related to dissemination strategies in their cities of their project outputs

1 Which key stakeholders have been missed or you have been unable to contact so far with your dissemination.

2 What constraints have you faced with disseminating your project findings to the major stakeholders involved?

3. How do you think you can continue to disseminate project outputs and interact with key stakeholders after the project has finished in June 2006

Recommendations from Kasetsart University: **Please refer to the PowerPoint presentation**

Recommendations from RIA1/NIHE: Please refer to the PowerPoint presentation

Recommendations from UAF, HCMC: Dissemination of policy briefs to stakeholders

- Contact to Dept of Agriculture and Rural Development and the Dept of Planning and Investment
- Contact newspaper, television and radio for dissemination
- Direct to contact with local stakeholders
- Conservation plan. Difficult to change plans
- After project termination results/briefs can be posted at the university website
- Project outputs, etc can/will be used for teaching purposes, teaching material

Recommendations from RUA, Phnom Penh:

- SOS reports distributed.
- About 100 stakeholders received the SOS reports and about 33 stakeholders did provide a response.
- Question n 3
    - Difficult to identify the right contact person in each organization
    - Difficult to select the right strategic to reach the key persons who are often very busy and too busy to read the information provided.
    - Lack of updated contact data
    - The information being asked is difficult to provide answers to.
- Question 4
    - Prepare a well laid out policy brief in local language and distribute to major stakeholders
    - Link PAPUSSA website to the RUA website
    - Distribute technical reports to 10-15 major stakeholders
- PP municipality, urban-based NGO´s, are important

DL: Key NGO´s should be identified and targeted in Phnom Penh as such NGO´s play an important role in development.

Day 2 Tuesday 17th January

Morning Session

Presentation by Albert Salamanca on behalf of J. Rigg and UOD

Southeast Asian Aquatic Food Production Systems: How far have we succeeded in muddling through?

Alberts presentation was based on a comparison of the current status of the BL and Mon survey analysis of the 4 cities also through his own PhD work and areas of study. Details can be seen in his presentation. The main part of his presentation was centred on comparative analysis and findings on:

1.Household membership
2.Gender distribution
3.Age ,Gender, occupation and education of HH heads.
4.Age at departure and length of stay of residents
5 Prior work experience in AFPS before residing at current place
6 Involvement in AFPS since taking up residence at current place
7.Source of learning on AFPS
8. Persistence of type AFPS practised
9 Family and hired labour, wage rates
10 Land issues, ownership, proof of ownership, size characteristics of different AFPS
11 Perceived future threats to AFPS

Albert then went on to summarise some of the findings and perceptions from his semi-structured interviews with different (generally older) AFPS HH heads in the 4 cities bringing up issues of perceptions of rurality and urbanity, future of the AFPS systems and the younger members of the HH's – not in AFPS systems!!

Comments – included that presentation was good guide to city partners to further refine their own analyses. Huy – checked HH membership data in HCMC finding differences to presented data – would verify with Albert

.

Water Quality Presentations

1 **WW treatment capacity KVL/NIHE – see presentation**

Summary

Phnom Penh – study site Beung Cheung Ek Lake

- Nos of thermotolerant coliforms lower in samples collected at the control (control was non waste pond) and outlet sampling points
- No of *E. coli* are lower in samples collected at the control and outlet sampling points
- Few samples found to contain helminth eggs (10-400 eggs/L)

Phnom Penh: 3-4 log reduction in nos of thermotolerant coliforms between inlet/outlet

These microbiological parameters measured at outlet of the lake are similar to accepted European standards for batheing water.

Hanoi

Study carried out in both ww aquatic plant and fish pond systems

Results show a 1-3 log reduction in nos of thermotolerant coliforms between inlet/outlet of both types of systems.

Generally findings show

- Phnom Penh: 3-4 log reduction in nos of thermotolerant coliforms between inlet/outlet
- Hanoi: 1-3 log reduction in nos of thermotolerant coliforms between inlet/outlet
- Few samples were found to contain helminth eggs
- No apparant reduction in nos of samples positive for helminth eggs between inlet/outlet

In terms of coliformes this work illustrates that these two systems have potential for treatment of urban waste water.

UAF presentation on water quality

Originally proposed to be carried out in 4 systems:

Morning glory – Thu Duc
- ➨ Unable to take samples during rainy season
- ➨ Still standby

Water mimosa – Thanh Xuan
- ➨ Completed and short report in Vietnamese produced

Fish seed production – Binh Chanh
- ➨ Completed and short report in Vietnamese produced
- ➨ But data surely unreflective

Fish monoculture – District 9
- Rejected due to uncontrollable water exchange method

Comments DL: Weaknesses in water quality work here – limited frequency of sampling also unknown inputs into fish seed production system. Will UAF address this in the time remaining. The rest of the partners are happy to review protocols. Suggest they confer with RIA team

KU-Water Quality Monitoring Presentation

Summary

Objectives 2004 – to monitor the water qualities within the representative aquatic production ponds during the cultivation period and of water supply canals

Parameters- In situ DO, Oh, temperature, conductivity, hardness alkalinity, total Ammonia, Nitrite-N, Nitrate, transparency, turbidity, total phosphate, orthophosphate etc.

Result:

Water quality monitoring was not a major focus which explains why it was not carried out regularly. This was only done on one occasion – 1 sample in time.

<u>Nutrient Budget in Morning Glory Production</u>

- covers Tai Noi District, Nongpaongai, Nonthaburi

Result
- use of fertilizer is higher during summer compared to rainy seasons
- Total production is higher with the use of fertilizer
- More than 90% of nutrients are lost to the sediments

Nutrient budget in hybrid catfish cultivation

- conducted in 2005
- the organic loading in fish ponds results from feed residue, faecal, and metabolic products of fish.

The amount of organic loading is directly related to stocking density .

High stocking density – due to catfish which can strongly tolerate deterioration in water quality

Fresh feed is used for feeds – cheaper than pellet feeds and price of catfish is low.

Feeds – chicken bones, viscera, rice bran

Culturing time

- more than 5 months per crop
- 5000-6250 kg/ha/day of feed was used in the 6th month
- information was collected from Aree's thesis

High feeding rate leads to oxygen depletion
While water quality rapidly deteriorate, the nutrient, N and P are left in the pond

Potential environmental problems of catfish culture

- increased risk of eutrophication
- toxic algal blooms
- water quality has continued to deteriorate in many streams

Time: 2 seasons
Type of water sampled: water inflow and drained water at harvest
Parameter: TN, TP

A lot of TP is lost in the sediment during summer.

The total N in water greatly increased – uneaten feed remained and deposited throughout the culture time

High turbidity

Comments:

Does the gov't monitor water quality in catfish farms?

- There are regulations for discharge from the Department of Fisheries, but enforcement is a problem.
- Nobody can stop them?

How common is ww reuse in nearby carp or tilapia farms?

- Not widely practiced here like other sites

Has the government done anything in relation to chicken flu for the chicken viscera and bones used?

- transport of live chicken is controlled but not when they are already dead.
- In short, there are no controls.

RIA1 Water quality monitoring

See presentation for details.

RUA Water sampling programme
Status unclear – Kuong to check with Borin – and reply to Stirling

KVL responsible for final chemical and microbial water quality to EC:

D3. Report of chemical and microbiological water quality)
Each partner at the four field sites will prepare short maximum 10 pages reports on chemical water quality. The report should contain the following headings/sections:

- Introduction/Background
- Study objectives/hypothesis
- Materials and methods
- Results
- Discussion and conclusion
- Future work –perspectives

Information should also be included, in particular for the site in Thanh Tri district (RIA1) and Phnom Penh (RUA), on pond and field hydrology, i.e. areas and depts of ponds/fields; volume of water pumped into and leaving the ponds/fields; metereological data (rain, temperature, wind; such data will be important in assessing transpiration and rain input to the ponds/fields; and hydrologic retention time.

The four chemical water quality reports will be combined into one report, named "D3a. Report of chemical water quality in PAPUSSA field sites". It was agreed among partners that the individual report was submitted to KVL (Anders Dalsgaard, ad@kvl.dk) before **1 April 2006**.

NIHE/KVL will prepare one report containing the results on water quality analyses done with samples from PP and Hanoi. This report will be named "D3b. Report on microbiological water quality at PAPUSSA field sites in Phnom Penh and Hanoi".

Lunch

Afternoon session

Divided into two groups –

1.Project PI's, Dave Little and Anders Dalsgaard on finalizing project deliverables from original project proposal – assigning responsible partners. List to be circulated after meeting so all partners are clear of their responsibilities.

2.Review of research hypotheses of BL and Mon survey analyses Will Leschen, Albert Salamanca. Some partners have tried to answer research hypotheses set at Siem Riep workshop and earlier – others not
AS – asked why for some these hypotheses had not been included in their analyses.
Reply was that they had stuck to format for report given in Siem Riep with titles for the different sections – eg HHs, production systems etc. Were not sure of how to incorporate other hypotheses into this format.
WL – Because by their nature each city is different it had been explained before that it was also up to city partners to develop their own analyses into areas relevant in their cities. Try to look at research hypotheses the findings from which are important information for policy makers and can be included in Policy Briefs and towards overall recommendations of project.

Discussion on Avian Influenza
David Little, Anders Dalsgaard

Can Papussa produce output related to this by the end of the project – if so can lead to further work and funding opportunities for all of the partners

Due to overall lack of research and information on possible\transmission of the virus through integrated aquaculture systems and widespread use of commercial poultry wastes and being major aquaculture research institutions in 3 countries we have network and people in place to submit further research proposal(s) in this area which can be looked on favourably.

- international press is worried of the potential of bird flu to become a pandemic
- H5N1 is worried that will jump into humans to become a host and become infectious as history has shown which killed more people than WW1
- Direct transmission from humans to humans is where a lot of worries lie
- Rearrangement of the virus in humans is feared to occur as the virus gets into humans and become very infective
- Such scenario is likely to happen according to WHO.
- Integrated farming is being blamed for the spread of the virus.

- Pressure groups such as Birdlife International has issued press statements blaming aquaculture among major things with the spread of bird flu. Their claims suggest that the use of chicken faeces in aquaculture, especially integrated aquaculture such as VAC in Hanoi, spreads the virus. Birdlife's claim refers specifically to HCMC.

- Can we as a group add anything as researchers to the debate on bird flu that is currently going on? There's a need to raise our voice in some ways by putting together a brief concept note of the researchable issues for future funding which Anders can provide contacts.

- Pig-fish, duck-fish, chicken-fish are the specialized farming systems in Thailand, but different in Cambodia and Vietnam.

- Do wild birds transmit the virus? Yes, there's a lot of literature on this (Anders).

- *Document any changes we know or can be easily found in government regulations that led to farming practices among farmers (Kwei Lin).*

- What is the survival rate of waterborne birdflu pathogen (Kwei Lin)?

- There are some work on this, but in relation to the ducks they are just symptom free carriers (Anders).

- If chicken manure is not being used integrated aquaculture, what are its potential implications in other systems?

- What contribution can we make to understand risk factors in bird flu transmission?

- How should we be aware of the issues raised on bird flu (Mariel)?

- Anders has already explored opportunities for future work in Vietnam. What he needs are inputs from the group on risk assessments.

- *Relative risks between direct dropping of manure into ponds or handling….*

- What are the integrated systems (Anders)? Fish-ducks-poultry. Manure is often used fresh.

- How do we deal with the manure produced from chicken (Kwei Lin)?

- There are differences between layer operation and broiler operations. There are more movements of bird in broiler operations. The quality of manure produced are also different.

- In pig production, the amount of nutrients in faeces and urine are different.

- How long can the virus survives in the water?(Dr Tuan).

- Are there evidences that the use of human manure into ponds is harmful to human health? (Amara)

- No evidence whatsoever. (Anders)

All SE Asian partners to check local, national media, their own institutional links, govt authorities, field discussions with farmers keeping livestock for up to date information on status of bird flu in relation to integrated aquaculture systems in their cities/countries. Any information to be forwarded to Will to be collated to be used by Anders and others in preparation of concept note.

Manuscript for peer reviewed Journals

Following PI's discussion on project deliverables DL raised the need for each partner to be able to produce at least one (manuscript) publication from the project findings – this is required as one of the EC project deliverables.

First step for each city partner to identify topic/area where they have the best/most appropriate findings/data eg in case of KU its Morning Glory Trial – try to use topic which they are already having to write a project report for and modify the report into manuscript for publication – in this way less work and time spent.

Partners should come back to Stirling with topics and target journals for their publications by – no deadline set.

Day 3 Wednesday 18 January

Morning Session

Project Recommendations – Will Leschen

One of the objectives of the Papussa project is to produce recommendations relating to and from our findings from three years of the project

These recommendations will be used to be entered into Policy Briefs, Annual and Final Project Reports

After three years of the Papussa project what are each partners recommendations from the project ??

Taken from findings and experiences from
the last three years of the project. Can also supplement with secondary data from other sources

Criteria for recommendations
Recommendations should be:

Specific not generalised statements
Tangible, achievable
Measurable
Within a specified timeframe

Target groups/persons for recommendations?

- Not just policy makers or city planners
- Can be for any of main identified groups of stakeholders, govt or NGO's
- Different levels of stakeholders from City planners, Agriculture/Fisheries, Health depts at municipal level, district level, commune, village level
- Markets, Food Safety,
- Academic/teaching/ research insts
- Water and sewage depts
- Construction/real estate
- Farmers
- Transporters of fish or plants

Divided into 5 groups – 4 city partners + KVL/NIHE Health group and asked to:

Produce a list of 6 specific, achievable, concrete recommendations which can be used in Final Report and Policy Briefs

Specify precisely who each of these recommendations are for

Specify a timeframe within which these are achievable
Specify how they can best be presented/disseminated to stakeholders

Ho Chi Minh City UAF

Specific recommendations	**Specific stakeholders at whom it is aimed**	**Time frame in which this is achievable**	**How best can this be delivered (policy briefs, reports, posters, t-shirts, media..)**
Tilapia seed production is being threatened by urbanisation. City planning should assign a place (WL *where to?)* for relocating the system as the city expands	Department of Agriculture and Rural Development (*who within the Department?)*	Until 2010	Policy Brief
Many of the water mimosa producers are unable to access credit which is really essential to do their business. Local government should provide some way to	Framer Union and Women Union. Local banks	2007	Policy Briefs Direct contact

support them. Farmer Union and Women Union play a role in this process. MD – Gave example of how Project can recommend – getting together senior representatives of Farmers and Womens Groups along with project staff to arrange meetings with each of local credit providers – taking along with them relevant project outputs – policy briefs, reports etc showing importance and financial/commercial opportunities for aq plant and fish producers			
Lots of problems with (abuse of chemical) aquatic plant prevention and treatment. Need for new methods.	Plant protection agency. Extension centre	2007	Policy Briefs Direct contact
Set up service centre to provide information regarding import/export statistics, market trends, policy and tax issues on ornamental fish production.	Department of Agriculture and Rural Development (*who within the Department?)*	1-3 years	Quarterly newsletter: memberships costs to contribute to production and mailing costs Newspaper, Internet TV Radio
Document case study of successful farmers Organise exchange and feedback from farmers	Ornamental fish associations University UAF	1-3	Idea?? Newspaper/website/orn fishkeepers newsletter /magazine
Provide technical information on ornamental fish production	Department of Agriculture and Rural Development (*who within the Department?)* University	1-3	Idem – as above
Service sector set up at Department of Agriculture and Rural Development to provide technical support and training courses	Technicians at departments University UAF	2-4	Training courses Meeting Farmers workshop
Strengthen ornamental fish association (basically made up of small farmers; link/include large commercial export farms).	Ornamental fish association	3-5	

Hanoi

Need to supply water/pumping water for Aquatic Production System (APS) frequency/dry season WL Case study Dong My – pumping water from Red River	Agriculture co-ordinate APS area/farmers	6 months-	Policy brief Meeting
Need for more research and extension on aquatic plants disease prevention and treatment techniques	Plan protection Dep. Agriculture University Institute of Vegetable Aquatic plants producer	6 months	Policy brief
Assure/implement auction (longer user-right agreements) for land use for Fish production	Communes/district level	>5 years	Report Policy brief
Need better co-ordinatione within commune/district to design irrigation in converting area from rice field to aquaculture. Recommend regulatory committee/3-4 persons including commune level and fisheries dept officials to ensure all new aquaculture development is well designed – eg water inlets outlets also allowing for further expansion	Commune/district Fisheries/Irrigation	1 year	Joint meeting with commune level and FD Report Policy brief
Wastewater use/income earning for urban poor - Capacity of APS in WW Treatment	Commune/district	1 year	Report Policy brief TV/meeting
Regulate design of new ponds to avoid competition for water – as above	Commune		
Increase awareness on recreational value water bodies in the city to try to safeguard their existence in the city – Hanoi lakes			

Bangkok

Improve ornamental fish market vendors sanitary conditions	DoF Ornamental fish association District office Manager of the ornamental fish market	6 months	Personal contacts - discuss health issues - improve image of the market with vendors, market manager and health

			inspectors
Improve production system negatively affecting health and environmental impact (contamination) - awareness raising - investigate contamination levels in plant and fish products - identification of measures	Local farmers Ministry of Agriculture Ministry of Natural Resources and Environment Ministry of National Health	6months after June 2006	Arrange community farmers workshop *(WL who would do that, where would the money come from)* Send PAPUSSA reports to policy and planning officers in each of the Ministries
Promote organic production	Local farmer Ministry of Agriculture and agricultural extension office Marketing sector	6months after June 2006	Arrange community farmers workshop Send PAPUSSA reports to policy and planning officers in each of the Ministries.
Organise exchange visits among farmers (*contract farming*) to gain more knowledge on successful production technology and marketing Document case study on successful farmer (translate existing English article in Thai)	Local farmers AIT-KU Bangkok	6months after June 2006	Farmer exchange visits Support farmers network in future Share case report with other PAPUSSA farmers
Add value to consumption	Restaurant and vegetable vendors	Up to June 2006	Pamphlet on how to (alternatively) prepare morning glory

Phnom Penh

Designate an area near the sewage inlets in the BCE lake for wild aquatic plants for the primary treatment before being used for aquatic plant growing *(to be backed up by data from health research)*	Policy makers (Municipality)	Now- 5 years	Policy Briefs
The Department of Fisheries should implement a contact mechanism for fish farmers to inform them on fish culture associated problems and provide them information on treatment methods	DOF Farmers Associations	3 years	Policy Briefs
Raise awareness of	Public health institute	2 years	Media

NGOs and farmers associations' function for improvement of health services through community organisation	Health promotion centre Local authorities RAC		TV Informative leaflets

Health group

To disseminate results to the medical professionals and decision makers to raise awareness about health issues associated with waste water use in aqua - and agriculture	Medicinal professionals State government and province level Administration of Preventive Medicine Food safety Administration, MoH	1-3 years	International and Local journal (Journal of Practical Medicine, Occupational Health) Health and Life magazine published by MoH Electronic newspaper "Vietnam Net" under the section "Science and Health"
To disseminate the results on skin problems, food safety and wastewater quality to local stakeholders in study site in Hanoi	Local farmers (farmer union), woman union local medical staff (health station)		Joint workshop with RIA1 VTV - 2 in "Programme of Health and Sciences" Producing a video-film/used as a teaching material
Put together web-cases on "Health issues in aquatic production" to include in future (distance) learning	KLV-Copenhagen		
Transform materials from PAPUSSA work into formats (heavy metals, parasites) directed at farmers			

Overall summary

Over the coming months:

- Look at steps /contributing towards achieving the recommendation (be specific)
- Identify whom to approach within the mentioned institutions
- Back up recommendations by providing data on number of people involved, amount of money involved
-Add/modify recommendations in the coming period of time

Lunch

Project Planning/Deadlines Jan – June (August 31st)

Discussion session to plan remaining months of project and set deadlines for completion and submission of outputs.

Date for Deadline	Output to be completed
P and P meeting Bangkok Jan 16-18th 2006	**Technical reports + CS 2005** **Invoices X 3 signed and certified copies**
31st Jan	**2005 Annual Technical report (ATR) to Stirling** **2005 Financial Cost Statement (CS) to Stirling** **Draft versions of BL and Mon survey report to Stirling** **BL and Mon survey analysis of Health (NIHE) to Stirling** **Final SOS dissemination reports to be completed** **Aquatic plants booklet overall draft produced and sent to partners for translation** **Kuong to Stirling for completion of all RUA PP project outputs**
30th February	**Deadline for submission to EC of above ATR & CS from Stirling** **Translation of aquatic plants booklet by all 4 partners to completion**
31st March	**Deadline for individual partners to submit to chemical water quality reports to Anders (Max 10 pages)** **Phuong planning to come to Stirling for completion of remaining RIA1 outputs + PhD work**
10th April	**Draft for Bangkok intervention report to Stirling**
31st April	**Final version of BL and Mon survey Report to Stirling** **Draft versions of all ornamental fish outputs to Stirling**

	Born would be available to come to Stirling for finishing KU outputs
10th May	**Final version of Bangkok intervention report to Stirling**
15th May	**Draft version of HCMC intervention report to Stirling** **Final version of Ha Noi intervention report to Stirling**
31st May	**Draft version of Policy Briefs from ETC(RUAF) to partners for revision/comments** **Final report for HCMC intervention** **All inputs for CD Rom reports etc to ETC**
31st June	**Official end date of Project. No further claims can be made for project funds after this date!!** **Return of Revised Policy Briefs to ETC by partners** **CD Rom produced/finalised by ETC**
31st July	
31st August	**All final reports of the project to be submitted to EC by Stirling** **Stirling to forward good example of final report to partners** **Final Policy Briefs to EC**

Financial Cost Statements and partners remaining project budgets

Will Leschen individually with each partner went through individual 2005 cost statements – making amendments where necessary. Also verifying calculation of individual partners remaining budgets – then discussing this in relation to workplan in last 6 months. Partners advised to ensure that they are not underspent for their budgets by June 31 as they will not be able to claim further from the EC after this date.
AD – following suggestion from Anders Stirling to send out guidelines/advice to help partners in the case of EC asking for the project to be audited.

Meeting Closed

- Look at steps /contributing towards achieving the recommendation (be specific)
- Identify whom to approach within the mentioned institutions
- Back up recommendations by providing data on number of people involved, amount of money involved
-Add/modify recommendations in the coming period of time

Phnom Penh Recommendations

No	Recommendation	Specific stakeholders to whom aimed	No of years in which this achievable? 6 months? 5 years?	How it can best be delivered? Policy brief? Report? Media article? TV opportunity? T shirt? Health clinic?
1	- Designate an area near the sewage inlets in the BCE lake for wild aquatic plants for the primary sewage treatment before being used for aquatic plants growing	- Policy makers (Municipality)	5 years	- Policy brief
2	- The DOF should provides the contact mechanism for fish farmers to inform the fish culture associated problems and provides farmers the treatment methods	- DOF - Farmers association	3 years	- Policy brief
3	- Raise awareness of NGOs and association	- Public health institute	2 years	- Media - TV - Policy brief

	function through community organization for improvement of health service	- Health promotion center - RAC - Local Authorities -		

UAF HCMC Recommendations

Recommendations	**Specific stakeholders**	**Time scale**	**How to best delivery? Policy brief/ report/media article/ TV/…?**
1. Tilapia seed production is being threatened by urbanization. So city planning should assign a place for relocation the system as the city expands	Department of Agriculture and Rural development	Until 2010	Policy brief
2. Many of water mimosa is unable to access credit which is really essential for them to do their business. Local government should provide some ways to support them. Farmer Union and Women Union play roles in this process	Farmer Union and Women Union Local banks	2007	Policy briefs Direct contact
3. Methods for aquatic plants prevention and treatments	Plant protection agency Extension Center	2007	Policy brief Direct contact