

Participatory Action Learning for Freshwater Aquaculture

Competition with US\$ 1,500 in Cash Prizes!

FAO and the international Non Government Organisation CARE have successfully used participatory action learning (PAL) sessions, delivered to farmer field schools, to break rice field ecosystems down into small chunks for the extension of integrated pest management in Asia.

The Support to Freshwater Aquaculture (SUFA) programme in Vietnam, funded by Danida and the Government of Vietnam, and the Development of Sustainable Aquaculture Project (DSAP) in Bangladesh funded by USAID and implemented by WorldFish are now seeking the assistance of farmer extensionists and trainers worldwide to compile collections of participatory action learning (PAL) session plans on the following 4 themes related to freshwater aquaculture:

- 1) Small-scale pond aquaculture,
- 2) Integrated agriculture-aquaculture,
- 3) Group formation and development,
- 4) Monitoring and extension.

SUFA and DSAP will do this by funding a competition with a total of **US\$ 1,500** in cash prizes to stimulate submission of PAL session plans. Thereafter compilations of session plans will be published by SUFA and DSAP after editing.

What is a PAL session?

PALs are designed to provide farmers/trainees with opportunities for self discovery of a phenomenon, an effect, a relationship or a concept, rather than the promotion of practices and the remembering of facts.

A trainer decides what concept s/he wants to demonstrate and then designs the PAL session for that purpose. A PAL might involve an experiment, a trial, a demonstration, role play, a game, modelling, reviewing video or films, simulations, case studies etc. A sample PAL session on “the dangers of herbicides” is attached after this article¹.

Building on the experiential learning cycle

Formal education has traditionally been ‘dustbin’ learning i.e. a passive learning

process, where the learner sits and is ‘filled’ with information, usually from books or lectures, much of which is irrelevant to their daily lives.

PAL sessions encompass the experiential learning cycle (ELC) with the following four steps, where learning and living are integrated together in one process:

- 1: **Experiencing** - concrete experience
- 2: **Processing** - observations and reflections
- 3: **Generalizing** - formation of abstract concepts and generalizations
- 4: **Applying** - testing implications and concepts in new situations

Key elements of the ELC and PALs

In each PAL, the facilitator/trainer guides participants through the 4 ELC steps, with the participants learning from a PAL experience and **not** from the trainer’s knowledge.

The experience and knowledge the farmers/trainees bring to the session is respected and built upon during each PAL session. Equally important is that farmers and the PAL session facilitator are equals, who learn from each other.

Each PAL session builds upon earlier sessions and provides opportunities for self-discovery opening new ‘windows’ for the farmers/trainees. This in turn raises further questions and provides self-direction for further training and new PAL sessions. Both the ELC and PAL’s are iterative (repeated) processes which encourage farmers/trainees to continue learning through experimentation and careful observation.

The roles of a PAL session facilitator

An effective PAL trainer facilitates opportunities for the trainees to gain new experiences first by appropriate PAL design, by choosing an appropriate location perhaps a shaded area near a pond, creating a conducive layout, for example sitting in a small circle on a mat for the PAL session and then through effective questioning.

Effective questioning should include avoiding closed questions which will result in “yes” or “no” answers and use of leading questions which contain the desired answers. Effective PAL session, facilitators demonstrate active listening

and use paraphrasing to check that answers have been correctly understood and to reiterate correct answers given by farmers.

The 5 PAL steps

The topic is introduced without telling the farmers/trainees what conclusions they will draw from the session in PAL step 1. In PAL step 2, the facilitator/trainer checks what the participants already know about the topic, including what they may have learned in previous sessions and from their own experiences.

Describing what the PAL session involves is PAL step 3. In PAL step 4 the facilitator encourages the farmers to discuss what they are doing, seeing and the implications, while they are conducting the PAL.

Through questioning in step 5 the facilitator encourages farmers to summarize what concepts they have learned and relate them to their own fish pond, rice field or relevant farming practices.

SUFA and DSAP will reserve the right to edit and publish all or part of any of the contributions submitted for the competition, though the author(s) of any PAL sessions published by SUFA or DSAP will be acknowledged in all cases.

A PAL selection committee, comprising senior SUFA and DSAP staff, and the competition coordinator will judge the PAL sessions.

The PAL selection committee will award 1 cash prize of US\$ 125 (one hundred and twenty five dollars American only) and 5 cash prizes of US\$ 50 (fifty dollars American only) for the best and most innovative PAL session plans for each of the five themes i.e. a total of four US\$ 125 prizes and twenty US\$ 50 cash prizes.

SUFA has already developed PAL sessions on the topics listed below and will therefore give **preferential** judging treatment to topics not yet covered:

Pond PALs

- 1: The effects of sunlight on plankton growth
- 2: Effects of nutrients on plankton growth
- 3: Natural feeds in ponds
- 4: Grow-out pond preparation

- Fish conditioning before transportation
- Open transportation and stocking
- Fish seed selection
- Oxygen and temperature
- pH and mud clearing
- Grass carp feed rope
- Selecting harvest time

Rice field fish culture PALs

- The dangers of using herbicides and pesticides
- Rice field design for growing fish as a third crop in rice fields
- Choosing fingerling stocking size for rice fields.

The ruling of the PAL selection committee will be final and not subject to appeal or negotiation.

Judging and competition guidelines

PAL sessions in English, in Word format, should be submitted by e-mail to Don Griffiths (competition coordinator), at the following e-mail address:
palcompetition@fastmail.fm

The session plans should also be copied (cc) to both the SUFA programme at palsufa@fspd.com.vn and to the DSAP Project at palcompetition@agni.com.

Sessions should be produced in the same format as the sample PAL “dangers of herbicides” attached with this flyer, to make judging easier. Entrants should submit their full name and postal address with their PAL session and should state which of the 4 themes the PAL should be entered against. The closing date and time for receipt of e-mail submissions will be 17.00 hours (GMT + 7 hours) on Friday February 27th, 2004.

Any questions or queries should be sent to Don Griffiths at the above e-mail address and **not** to SUFA, DSAP, STREAM or the Institute of Aquaculture.

Prizes winners will be announced on the STREAM website and cheques will be posted off to the winners by 17.00 hours (GMT + 7 hours) on Wednesday March 31st, 2004.

1 This session was developed from a CARE Bangladesh PAL, for Vietnamese conditions by SUFA staff.

Sample PAL Session

1. Training topic

The dangers of using herbicides in rice fields and ponds
(This PAL could be done equally well with pesticides)

2. Objectives

At the end of the session farmers will be able to describe the affects of using herbicides on fish, frogs, prawns, crabs, snails, insects and benthic organisms in rice fields and ponds

3. Trainees

Aquaculture group farmers

4. Time, venue

Time: 2003
 Venue: In a group member's house or in a shaded area nearby
 Duration: 1.5 hours

5. PAL summary

Farmers will add herbicide to clear containers with fish, frogs, snails, benthic organisms and insects. Observations on how the fish, frogs, prawns, crabs, snails, benthic organisms and insects react will be related to the situation in rice fields and ponds.

6. Materials needed

- 6 plastic containers (2 litre)
- 6 litres of clean well water
- 8 small fingerlings (5 cm)
- Insects – various
- Benthic organisms, snails, crabs and prawns
(collect before the session from a pond or rice field)
- 4 small frogs
- Herbicide, 1 bottle
(This should be one used locally – bring a sample of others too if possible)
- 1 stick of twig split in one end before the session
- 1 pair of rubber gloves
- 1 surgical face mask
- 2 rice plants
- Can dies, 1 per person
- Stone pebbles (0.5 kg)
(Wash the stones thoroughly before the session)

7. Method

Step 1 – Introduce the training topic
 Today we will conduct some small trials to examine what happens to fish, frogs, snails, prawns, crabs, benthic organisms and insects when herbicides contaminate the water in rice fields and ponds.

Step 2 – Focus farmers' attention and validate their knowledge

Begin the discussion by asking farmers questions such as:

Do any of you apply herbicides and pesticides on your land?

What types do you use?

Pass around the selection of herbicides. Which ones are you familiar with?

Which are most effective at killing weeds?

Show the farmers the bottle of herbicide to be used in the PAL session. What does it say on the bottle (or tin) are the dangers of herbicides and pesticides?

If you mix a herbicide or pesticide with your whiskey and drink it what do you think would happen?

What do you think would happen to your fish if your neighbour washed his sprayer after spraying herbicides or pesticides and the waste water went into your rice field or fish pond?

Have any of you seen dead fish after herbicides or pesticides have been sprayed near your rice field?

Besides fish, what other living organisms live in or near rice fields? (Frogs, crabs, prawns, snails, insects, rats, snakes, birds, mice etc.)

Have you ever found any other dead organisms or animals in your rice fields and wondered what killed them?

Step 3 – Explain the experiment or observations that the farmers will conduct

Trial 1 – pond and frogs

Have 1 farmer put the frogs into a container with 1 litre of water and explain that this is a model of a pond. Ask the farmers to imagine that someone has just washed his crop sprayer and the waste water has flowed into your nearby fish pond.

What do you think will happen to the aquatic organisms in the pond?

Let's test to see if you are right by doing a simple experiment.

Ask another farmer to put on the rubber gloves, to dip the split end of the twig into the herbicide bottle and then to wash the twig in the container of frogs. Dip the split end of the twig into the bottle and wash it in the pond three times. **(Put the lid on the top of the container to stop the frogs from jumping out).** Farmers then observe, discuss and write down the impact of herbicide on the frogs.

Trial 2 – pond, insects, prawns, crabs, benthic organisms and snails

Repeat at trial 2 but use insects, prawns, crabs, benthic organisms and snails instead of frogs. **(Put the lid on the top of the container to stop the insects from jumping out).**

Trial 3 – pond and fish

Repeat the process again with 6 fish. **(Put the lid on the top of the container to stop the fish from jumping out).**

After a minute ask the farmers – What could we do to try to save the sea fish? (Take the fish out and put in fresh water.)

If they suggest this, then ask a farmer to take out 3 fish and put them into a container with fresh water filled to the same level as the other container.

Step 4 – Have the farmers discuss their observations during the experiment

Trial 1 – pond and frogs

How did the frogs react when the herbicide was added?

What do frogs eat?

Are frogs useful or harmful to the ecology of a rice field?

Trial 2 – pond, insects, prawns, crabs, benthic organisms and snails

How did the insects, benthic organisms, prawns, crabs and snails react when the herbicide was added?

If the fish survive herbicide spraying, how much natural food will be available for them to eat?

Trial 3 – pond and fish

How did the fish react when the herbicide was added?

What symptoms of herbicide poisoning did the fish show?

How long did it take for the herbicide to kill the fish?

How did the 3 fish react which were removed from the herbicide contaminated water and placed in fresh water?

Do you think they will survive?

Which were affected the quickest by the herbicide – the snails, frogs, prawns, crabs, benthic organisms, insects or the fish?

Do you have any idea why they were affected more quickly?

If we gave you the dead fish to take home and eat, would any of you eat them?

Step 3 – Explain the experiment or observations that the farmers will conduct

Trial 4 – rice field

Have the farmers split into 2 groups and ask each group to nominate a leader to take notes. Group 1 and 2 should thoroughly wash the roots of one rice plant and then plant the rice into a plastic container. Use a net (after washing them) to make sure that the plants are fixed and will not float. Both groups should then add clean well water to each bottle, so that the levels are the same and about 10 cm above the stones. **Put the water in carefully so that it stays clear.**

Group 1 should add 2 fingerlings to their "rice-fish field".

Group 2 should take the twig and dip the split end into the herbicide bottle and then wash the stick in their "rice field" to simulate spraying. Get group 2 to do this 4 times.

Ask the farmers to imagine that water from group 2's field flows into group 1's rice-fish field.

What do you think it will happen?

Let's test that shall we?

Group 2 should then pour about half of the water from their "rice field" into the "rice-fish field" of group 1. Both groups should observe and record the reaction of the fish and should discuss what happens when water contaminated with herbicides flows into someone's rice-fish field or fish pond. Tell the farmers that in a team with the most correct symptoms of herbicide poisoning will be awarded a prize.

Step 4 – Have the farmers discuss their observations during the experiment

Trial 4 – rice field

How are the fish reacting to the water contaminated by herbicide entering the rice-fish field?

Do you think they will die?

Will it take longer or less time than in pond model? (Less).

Why? (The water is less deep).

Ask each group leader to present to the others what symptoms of herbicide poisoning they observed and have the other members comment on the presentations. Give a candy to each member of the winning group.

What would happen if your neighbour washed his/her herbicide or pesticide sprayer in a water supply canal this morning and you topped up the water in your rice-fish field or fish pond using water from the supply canal shortly afterwards? (Your fish would all die).

What do you think would happen if your neighbour sprayed herbicides or pesticides in his/her rice field next to your rice-fish field and there was a strong wind or the dike was full of rat holes? (Herbicide would blow into your field or water contaminated with pesticide might leak into your rice-fish field and kill all your fish and any aquatic organisms).

Step 5 – Have farmers summarise what they have learned and relate it to practice at farming

What have you learned to day from these trials? (Adding only very small amount of herbicides or pesticides to a rice-fish field or fish pond kills fish, prawns, frogs, snails, benthic organisms and insects).

How can one farmer spraying herbicides or pesticides affect the rice-fish or pond fish farms? (Herbicide or pesticide can be blown into a neighbour's field, leak into a field through holes in the dike or get into other rice fields and ponds if the water supply canal becomes contaminated).

If you have fish in your rice field what will you have to check before adding additional water from a neighbour field or water supply canal? (Have your neighbour recently sprayed herbicides or pesticides in their fields and allowed it to escape into the water supply canal? Are your rice field dikes in good condition?)

What symptoms of herbicide poisoning on fish have you seen to day? (The fish may be gasping, fly to jump out of the water, become inactive and die in the bottom or a change in fish colour).

If fish in your pond or rice field began to show signs of herbicide or pesticide poisoning what would you do? (Immediately add water to the pond or rice field which you knew was not contaminated with herbicides or pesticides; or as quickly as possible catch the fish and move them to another pond or rice field with uncontaminated water).

How can the effects of people using herbicides or pesticides in areas where people are cultivating fish in rice fields or ponds be minimised? (Ask farmers who are going to spray herbicides or pesticides to inform others; paper rice field planning for rice-fish culture i.e. separating areas of rice-fish culture; promoting integrated pest management in rice fields; raising community spirit and interest in the culture of rice-fish; working in groups to do rice-fish culture; land swapping so that all rice-fish activities are in one area; and limiting water drainage out of fields in which herbicides or pesticides have recently been sprayed).

How should we dispose of the dead fish, insects etc. that we have killed to day with herbicide? (Bury them in a deep hole in the ground).

Where and how should we wash the containers we've used? (Somewhere where the waste water will not run into a fish pond, rice field or a water supply).

Are there any additional topics you would like to learn about as a result of today's session?

Thanks for your cooperation. I'll see you in 2 weeks time for the next training session.