

Fish pond construction workshop held in Fiji

In the first half of December, extension officers and aquaculture farm development teams from Fiji's Ministry of Fisheries and Forests (MoFF) took a week-long hands-on refresher training course on fish pond site selection and construction techniques.



Fisheries extension officers experience pond construction first-hand, doing it the old-fashioned way with spades and wheelbarrows.

We say 'solid' because the ground was solid – solid clay. The workshop emphasised experiential learning, or 'learning by doing', as participants were taken through all of the steps involved in designing, marking-out and constructing both a machine-dug commercial tilapia pond and a hand-dug subsistence tilapia pond. The ground was hard, the sun was hot, and body hydration was a challenge. Participants could enviously watch the speed of construction for a machine-dug pond, while we toiled nearby to dig by hand using spades the type of pond used by household-scale tilapia farmers. The hard work was worthwhile, because it is easy to think you understand how to do something by watching someone else, but when you have to do it all by yourself, then you really know it!

Pond construction was identified by MoFF as a training need for 2015 because new staff extension officers were being hired. The job of these officers will be to advise and supervise fish pond construction throughout Fiji, and help farmers to avoid common and costly mistakes such as constructing ponds in leaky soil. A hole in the

ground seems like such a simple thing, but there is a right way and a wrong way to dig it if its purpose is to grow fish.

Facilitated by the Aquaculture Section of the Pacific Community (SPC), Tim Pickering, SPC Inland Aquaculture Advisor, and Avinash Singh, SPC IACT (Increasing Agriculture Commodity Trade) Aquaculture Officer, were joined by Prof. Peter Edwards of the Asian Institute of Technology, Bangkok, Thailand, as a resource person. Prof. Edwards led participants through classroom work on the underlying principles of fish ponds, and presented global case studies of good and bad pond situations.

The workshop was attended by 27 enthusiastic participants, including aquaculture farm development team officers or fisheries extension officers from throughout Fiji, two commercial fish farmers and two tilapia entrepreneurs. The workshop was opened by Fiji Fisheries Department's Acting Director, Suresh Chand, whose opening remarks reminded officers of the importance of their role to advise farmers correctly.

A real farm was selected as the site for the practical aspects of the workshop, by arrangement with Chandra Sen who owns a commercial tilapia farm at Baulevu on the banks of the Rewa River in Tailevu Province. In addition to digging their own 3 m x 5 m pond by hand, workshop participants witnessed all aspects of machine-dug pond design and construction. They also engaged in some of the steps involved in constructing a large 22 m x 33 m commercial pond, such as laying out the borders of the pond with marker pegs and tapes, setting a level-indicator line for the digger's reference, laying the outlet drain pipe through the dike, and correctly compacting the soil in the critical outlet-drain area.

Because pond construction conditions were, in many ways, perfect at the Chandra Sen farm (i.e. flat topography and excellent clay content in the soil), a field visit was made to see a leaky pond site on hilly topography at Homes of Hope, Wailoku, a rehabilitation centre for disadvantaged single mothers. Because the organisation wanted to farm fish to provide food and to teach female residents about aquaculture as a possible livelihood option, a plastic liner donated by a non-governmental organisation in the USA had been used to seal another pond, although this was recognised as being a very expensive solution to pond water retention. Other options to seal leaky ponds were discussed in detail, such as the heavy application of manure to clog leaky soil, or the use of products such as bentonite clay dam-sealer.

A plenary discussion was held on the final day about costing time, labour and the volume of earth required to



Putting the finishing touches to our hand-dug, household-scale fish pond by planting grasses on the dykes.

dig ponds manually and by machine. The aim of this was to equip participants with skills to negotiate future pond construction contracts based on realistic appraisal of the volume of earth to be moved, and the time expected for a digger or hand-spades to move it. This was a revealing exercise because it showed that a machine-dug pond cost only about USD 2.50 per cubic metre to construct, whereas a hand-dug pond cost much more, about USD 12.5 per cubic metre. The conclusion was that, wherever possible, fish farmers in Fiji should employ machines to dig ponds if access roads allow for it.

For more information:

Tim Pickering
Inland Aquaculture Advisor, SPC
TimP@spc.int



Extension officers also gained experience in the new way, supervising pond digging by machine (all images by Tim Pickering).