

Timor-Leste Agricultural Rehabilitation,
Economic Growth and Natural Resource
Management Project

Quarterly Report
April to June 2004

University of Hawaii at Manoa
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Executive Summary

Outcomes from the Participatory Rural Appraisal (PRA) held in East Timor in January 2004 continue to guide the Ministry of Agriculture, Forestry and Fisheries (MAFF) and University of Hawaii (UH) team members in providing support to farmers from four villages in the Baucau District. During the PRA, community members from these villages participated with MAFF staff and University of Hawaii faculty in a joint appraisal of constraints and opportunities that typical households would encounter in transforming the current subsistence farming into a more market-oriented economic system.

Through interviews with villagers, MAFF and District Officers were able to learn of the problems facing rural communities, including control of an invasive weed, *chromolaena orodata*, to village grazing and farming areas, income generation, finding new markets for farm produce, adding value to local products such as candle nut and establishing nurseries for trees that villagers prefer rather than those promoted by MAFF. These community priorities have now become MAFF and Project priorities.

Recognizing the benefits of soil tests, MAFF received fifteen additional soil test kits for use in training and demonstration. Having shown how every dollar of fertilizer applied was worth \$5 to \$10 of additional corn produced in Baucau, MAFF established a fertilizer demonstration trial with rice on a farmer's field in the Manatuto District

In collaboration with CCT (Coffee Cooperative Timor) and MAFF, the UH team arranged a training session in both Dili and in Venilale to introduce concepts with practical hands-on exercises to establish tree nurseries. Through this type of activity, CCT and MAFF staff are now apprised of methods to propagate and maintain fast growing, nitrogen fixing, multi-purpose trees to serve as fodder for livestock, fuel wood for household energy and shade tree to replace the diseased and dying albizia. This variety of tree, *Leucaena leucocephala*, developed in Hawaii, is adapted to the cool, coffee growing region of East Timor. A further aim of this effort is to raise rural incomes by establishing village fodder banks to feed beef cattle for processing and marketing by CCT.

In planning, designing and organizing the economics workshop for July, MAFF-Fomento leaders from Crops, Policy & Planning and Research & Extension met with UH team members to determine the capacities and needs for agricultural economics decision making in Timor-Leste and at MAFF. Outputs from that meeting provided the UH team with descriptions of (1) the current state of Timor-Leste's "capacity and needs assessment" in terms of agricultural economic analysis/evaluation in four areas (production economics, analysis of adoption and diffusion, marketing, and risk management), (2) the desired states for each subject matter area (in 5 years), (3) the current capacities towards achieving those desired states, and finally (4) the specific training needs to help MAFF staff towards achieving sufficient capacity to attain those states.

The internship program identified six interns in May. Each of the interns are Timor-Leste student scholars studying at the University of Hawaii under a State Department sponsored scholarship program implemented by the East West Center. The interns will be returning to Timor-Leste during the summer break to explore career opportunities so that they can contribute immediately to their country's development upon graduation. A seminar, where interns make brief presentations on their experiences as East West Center scholars or their own academic program, is being planned for a day in July.

Highlights

Farmer Ingenuity and Choice: Land Use Study in the Seical Watershed

The PRA completed in January 2004 by a team from the UH in collaboration with national and Baucau district's MAFF showed that the presence of *chromolaena orodata* is a major constraint in land use, especially for grazing, and to a lesser extent for crop production. Based on the needs assessment from the PRA, a farming practice was introduced to selected communities to consider as one option to control chromolaena: use it as a green manure. This practice requires holes or trenches of approximately 3 x 1.5 x 0.5 meters to be dug. Chromolaena would then be cut, placed in the trenches and covered with soil to compress the chromolaena to less than 30 percent of the original cut volume. The trenches would then be refilled with more chromolaena and a second layer of soil used to fill the trench. The introduction and acceptance of a new practice will have little or no value if farmers and members of the communities do not take ownership of this methodology. Hence, the community was asked how would they use additional land area for income generation if chromolaena were cut and removed and used as a compost in the **chromolaena land use trials**. These trials would be community based and managed.

Vegetable production on the chromolaena compost trenches was identified as a means to generate income, as were the inclusion of animals, i.e., chickens, pigs and fish. At the time of the PRA, the UH project was focused on improving rice and maize production, which addressed the project's objective to increase the level of subsistence.

The first chromolaena land use trials started with tomatoes. Four varieties of seeds that are freely available in East Timor were planted on top of 20 chromolaena-filled trenches. This tomato nursery was established at the UH office in Baucau tasi ibun, where one Timor-Leste farmer described the soil as "dead soil." Analysis of this nursery soil with the soil test kit indicated soil pH in the excess of 8, low in nitrogen and phosphorus and high in potassium. For local farmers, an indicator of improved fertility status of any soil is the increased activity of earthworms. José Borges, an inhabitant from this part of the watershed stated, "*If you can prove that vegetable production is possible in this dead soil, people will start digging holes all over the place.*"

The following villages are now involved in the chromolaena land use trial: Fatulia and Uaitobonu in Venilale, Uato-ua and Ostico in Gariuai, in Uailili, and in Vermasse. A more complete report by MAFF and UH will become available on the project's URL at <http://tpss.hawaii.edu/tl>. The report describes the framework of the land use program and includes lists of individual farmers and villagers involved in this effort.

Forestry Nursery and Weed Control Workshops in Venilale and in Dili

The nursery and weed control workshops were designed to meet needs expressed by MAFF staff and community members during the PRA. All three nursery workshops were well attended. There were 32 people at the Dili workshops, including staff from MAFF forestry, livestock, and extension, plus students from the National University of Timor-Leste (UNTL) and staff from the CCT forestry program. In Baucau we had 12 MAFF staff, including forestry, livestock, fisheries and irrigation. In Venilale we had again 12 participants, but these were farmers and schoolteachers, plus the liurai (the traditional leader.)

Chromolaena is the major pest and weed for agriculture and pasture management in the Baucau District and many other watersheds in East Timor. During the PRA, farmers and villagers referred to chromolaena as being a major constraint to forestry, pasture and farm management. During the workshops, methods from herbicides to manual cutting to control of chromolaena were considered. MAFF is working with Charles Darwin University in Australia to introduce an insect for biocontrol of *chromolaena orodata*. Laurencio Fontes of MAFF has the entire program mapped out. J.B. Friday of UH has been in contact with Tanya Paul from Australia on this project and a demonstration release site in the Baucau area is a possibility.

The good relationship established with the US Peace Corps in January was further strengthened by the participation of two volunteers in the nursery training activity. The current Peace Corps leadership in East Timor is new since the PRA in January. One assignment of the volunteers who were with us in January was to scope out future sites for volunteers. They and we came up with four possible sites in the Baucau district. The next batch of volunteers (20) will be trained in agriculture, and it would be ideal to have a people link between our projects and the local communities.

USDA Soil Survey in Baucau

Patrick Niemeyer, USDA-NRCS soil scientist, spent two weeks in East Timor at the request of the University of Hawaii at Manoa assessing the utility of the available soils maps. The Portuguese soil survey report with soils map (1978) was determined to be the best map available for representing soils in East Timor. The soils map was completed at the 4th order of USDA soil survey, which makes the map useful for broad countryside planning but of limited use in more site specific planning.

Nine soil pedons were described and sampled by Julio Correia of MAFF/Dili and Niemeyer with Antonio Lopes of MAFF/Baucau. Correia worked one-on-one with

Niemeyer in delineating boundaries within a soil profile and describing each horizon using methods and techniques described in the USDA Soil Survey Handbook No. 20. The nine pedons were collected from Venilale (Uaitobonu-2, Bubu Ana Cala), Gariuai (Watowa (Uato-ua), Fatumaca-2, Watome (Uatome), Ostico), and Seical. In addition, auger holes were drilled from the area of the Baucau airport to Venilale to confirm the presence or absence of common soil features observed in the pedon sampling and to check on the soil map units delineated by ACIAR using the Portuguese soil survey report and maps. Fourteen auger samples were examined in both the Venilale and Gariuai sub districts. Road cuts also offered examination of soils enroute to and at Seical.

Soil samples from the nine pedons were hand carried back to Hawaii for analysis at the University of Hawaii's Agricultural Diagnostic Service Center in Honolulu. Niemeyer will use the analytical data along with his field notes to classify the soils according to Soil Taxonomy.

Internship Program for Timor-Leste Students at the East West Center

The first summer's internship program involved six interns; all students from East Timor currently enrolled at the University of Hawaii through the East West Center under the Department of State administered East Timor Scholarship Program. The six included two MS students, Brigida da Silva and Krispin Fernandez, and four undergraduates, Filipe da Costa, Carlos dos Reis, Flavia da Silva and Matias Gomes.

A seminar is planned in mid-July to allow the interns to report on their experiences as an East West Center scholar, their academic plans and plans of possible employment on their return to Timor-Leste.

The internship program evolved through the recommendation of James Lehman, the senior officer in the USAID Mission in Dili, and was included as part of the project's action plan. Since 2000, the Department of State-administered East Timor Scholarship Program placed 18 East Timor students at the University of Hawaii (UH) for both graduate and undergraduate degree training. The internship program can be viewed as an extension of their education program as it provides an opportunity for selected students to explore the possibility of combining their academic training with practical research and employment-related experiences in their home country.

During the Spring 2004 semester, proposals and work plans were received from eight students, four who are studying for Masters degrees and four who are pursuing undergraduate degrees. Each proposal was approved by the respective student's UH faculty advisor and the East West Center scholarship coordinator. By May 2004 internship placements were confirmed for six students and each was provided with an internship award that included round trip transportation to Dili (if not already being provided under the auspices of the State Department scholarship) plus a stipend of \$600 to cover incidental expenses during the six-week internship period.

The awardees for summer 2004 included:

Krispin Fernandes (MS candidate in Civil and Environmental Engineering)
Proposal Topic: Watershed Hydrology and Water Resources Management in the Seical Basin, East Timor

Brigida da Silva (MS candidate in Urban and Regional Planning)
Proposal Topic: Cross Sectoral Analysis of Key Watershed Management Issues and Trends

Carlos dos Reis (MS candidate in Molecular Bioscience and Bioengineering)
Proposal Topic: Preventing Environmental Degradation in East Timor

Matias Fatima Gomes (BA candidate in Language Learning and Linguistics)
Proposal Topic: Kemak Language Study

Filipe da Costa (BS candidate in Molecular Bioscience and Bioengineering)
Proposal Topic: Assessment of Bioresidue Resources in East Timor

Flavia da Silva (BS candidate in Natural Resources and Environmental Management)
Proposal Topic: Evaluation of the Feasibility and Profitability of Vanilla Farming in East Timor

MAFF/UH Economics Workshop: Alexander Arrives to Organize Planning

Bob Alexander, consultant and economic advisor, was posted in Dili for three months starting in early May.

In his initial meeting with Estanislau da Silva (Minister of Agriculture – MAFF), Alexander presented the proposed format/framework for agricultural economics workshops and solicited input from the Minister. As a result of that meeting, plans were developed for two distinct but integrated workshops – one at the district level for the entire country and the second at the central (director) level. Both will be held at the end of July or early August, as these are the times when people would best be available.

Alexander agreed to tailor the program and content according to proposed attendees and deemed capacities and needs. Lourenco Fontes was appointed as the MAFF counterpart with whom Alexander would coordinate planning of the workshops on a regular basis.

In a meeting to determine capacities and needs for agricultural economics decision making, MAFF–Fomento leaders from Crops, Policy & Planning and Research & Extension were able to: 1) describe the current state in terms of agricultural economic analysis and evaluation in four areas (production economics, analysis of adoption and diffusion, marketing and risk management), 2) delineate desired states for each (in five years), 3) describe current capacities towards achievement of these desired states and 4) cite specific training needs to help propel staff towards sufficient capacities. As

knowledge of current capacities (and thus needs) of district-level staff has often been limited, Alexander augmented this information with discussions in the MAFF district offices of Baucau and Viqueque. All this information was used in consulting with the rest of the UHM agricultural economics team in plans to create appropriate workshop content.

Alexander also consulted with a number of individuals affiliated with organizations in East Timor to discuss a range of topics, including the economics workshop, candlenuts and other potential products, and rural livelihood risk management. These individuals included Filipe Tiago Dias Ximenes (UNTL, Head of Department of Social Economy in Agriculture), Shakib Shahidian (UNTL, Dept. of Agriculture), Rod Nixon (ARD), Fran Ruddick (Peace Corps); Rob Williams (UNTL, Department of Agriculture); Faustino Gomes (UNTL, research council), Rebecca Engle (Columbia University Conflict Resolution Program), David Boyce (CCT/NCBA), Chana Opaskornal (FAO (Food and Agriculture Organization)) and Carrie Deutch (short-term consultant then with Oxfam, formerly UNDP, now with JICA (Japan International Cooperation Agency)).

Prior to his arrival, Alexander's principal duties were to collect, organize and document relevant economic data from the watershed for the forthcoming economics workshop in July. While in Timor-Leste, he also serves the project in two other capacities: 1) liaison for internship participants with organizations or institutions in Timor-Leste and 2) liaison with MAFF, the USAID mission and local NGOs.

Office Staff in Dili

The project office was re-established in Dili at the Fomento Building with the Ministry of Agriculture, Forestry and Fisheries. Fernando Sousa was appointed to serve as associate country coordinator. Francisco Soares is the administrative and technical support person and Nina Amaral is the project's secretary. Both are situated in Dili at the project headquarters.

Video Reports

Two DVDs were produced for reporting project progress and for use as a training medium. Video communication was chosen as an appropriate medium to report progress and to convey concepts for training. With the number of different dialects spoken within Timor-Leste as well as the Tetun, Portuguese and English languages, use of video that could be dubbed in Tetun, in Portuguese, or in any of the dialects was considered preferable to a slide or PowerPoint format. Much of the video used was derived from footage filmed during the PRA in January. Keith Bing, an independent videographer, filmed, edited and produced both DVDs. Copies were distributed to both MAFF and USAID/Dili.

Objectives and Performance Indicators

QUARTERLY REPORT

Apr 01 to Jun 30, 2004

The following is our quarterly progress report of activities related to the three project objectives during the reporting period April 1, 2004 to June 30, 2004.

Objective 1. Increase the agricultural productivity and food security

Estimated performance indicator: maize and rice yields doubled in participating farmer's fields relative to yields in non-participating farmer's fields employing traditional farming practices.

- a. Sixteen farmers in Fatulia and four farmers in Gariuai harvested corn from the demonstration plots in their fields that yielded 3.2 to 4.9 tons per hectare, much higher than the national average of 1 to 2 tons per hectare. From these results MAFF/UH the farmers were shown how variety selection and fertilizer application based on soil testing increases yield.
- b. Twenty farmers in Uaitobonu saw that proper fertilizer application based on soil testing increases rough rice yields from their normal 3.5 tons per hectare to 6.9 tons per hectare. These results were obtained from demonstration plots planted in their paddies.
- c. Soil maps can become effective tools for use by MAFF staff to make predictions of nutrient requirements of any soil grouping in East Timor. The only soil survey of the country was completed by the Portuguese and reported in a published report in 1978. Mapping delineations of soil grouping by the Portuguese followed the geomorphic characteristics of the landscape in a way very similar to soil surveys carried out in the U.S. Patrick Niemeyer of the Natural Resource and Conservation Service, U.S. Department of Agriculture confirmed the mapping units or soil groupings of the Portuguese were consistent with the geomorphic boundaries observed in the field in the Baucau District. Nine locations were selected for sampling to allow Niemeyer to classify them in the U.S. system of soil classification, Soil Taxonomy. This will allow MAFF to correlate the U.S. system with that of the Portuguese system.

Objective 2. Diversify and intensify crop production to generate new income and employment opportunities.

Estimated performance indicator: Income of participating households increase relative to non-participating households.

- a. With technical support from UH/MAFF, 15 male and 2 female farmers from Vermasse initiated a self-supporting fish farm that currently generates \$1000 per month gross revenue. The fish are sold to buyers from Dili.
- b. In Fatulia, UH/MAFF assisted 22 male and 2 female farmers start a self-supporting vegetable production system that grosses \$1 per square meter per four-month crop cycle. The vegetables are sold to local buyers. The vegetable production area has the potential to expand to 2 hectares.
- c. Eight male farmers from Ostico established a self-supporting chicken farm with assistance from UH/MAFF. They made four deliveries of 10 chickens each to restaurants in Vermasse generating a total of \$80 gross revenue.
- d. Additional self-supporting enterprises were established in Uailili, Uato-ua, Uatulia and Uaitobonu producing fish, shrimp, pigs and vegetables.
- e. The 16 corn farmers in Fatulia and four in Gariuai were shown that their increased yield translates into an increase in net economic return of at least \$116 to \$205 per hectare.
- f. In Uaitobonu, the 20 rice farmers were shown that their net economic return increased by \$318 per hectare when proper soil nutrients were applied.

Objective 3. Improved watershed productivity and sustainability through the adoption of sound natural resource management practice.

Estimated performance indicator: Fodder and fuel wood banks established in three villages in Seical watershed.

- a. Twelve district MAFF personnel including the Baucau office were trained in establishing a tree nursery and weed control. The workshop was held in Baucau on June 4, 2004. An evaluation of the workshop showed that 100 percent of the participants would use the information presented.
- b. Twelve farmers and school teachers in Venilale were trained in establishing a tree nursery and weed control. The workshop was held in Venilale on June 8, 2004. The evaluation of the workshop indicated that 91 percent of the participants would use the information presented.
- c. MAFF/UH established a 12,000-tree seedling nursery in Triloca.
- d. Thirty-two people from MAFF, UNTL and CCT forestry program attended the workshop on establishing a tree nursery and weed control. The workshop was held in Dili from June 1 to 3, 2004. Evaluation of the workshop showed that 95 percent of participants would use the information presented.

Estimated performance indicator: Local NGO's adopt and spread project methodology throughout the country.

- a. Personnel from CCT were trained on establishing a tree nursery at the workshop in Dili, June 1 to 3, 2004.

Estimated performance indicator: Peace Corps volunteers contribute to attainment of project objectives and voice support for continued participation in project.

- a. Peace Corps volunteers Charles Attarzadeh, Michael Jones, Aracely Leiva, and Teresa Michael translated English into Tetun during the workshop on Establishing a Tree Nursery.

Estimated performance indicator: Participating National University faculty adopts and incorporates lessons learned from project into the University's teaching, research and outreach programs.

Six UNTL students attended the workshop on establishing a tree nursery held in Dili, June 1 to 3, 2004.

Written Reports, News Articles or Other Material

- Travel reports of UH faculty and staff are available at the project's URL, <http://tpss.hawaii.edu/tl>.
- Three video reports were prepared. The first is a progress report narrated in English, the second is an overview of methods employed in the PRA with narration tracks in English, Tetun and Portuguese, and the third is a general video of communities involved in the PRA without narration. The latter was produced for distribution to the respective communities involved in the PRA. The 3 DVDs were distributed to both MAFF and USAID/Dili for their record and information.

Implementation Issues/Constraints

Transmittal of documents remains an issue. Essential documents and project receipts continue to be exchanged through courier, i.e., DHL. Other materials are mailed to the PO Box established in Becora. Fax transmissions have been accomplished to the Farol Hotel in Dili. Otherwise, documents are scanned and transmitted as attached files.