CAMBODIAN AGRICULTURAL RESEARCH FUND (CARF) PROJECTS

Round 3

Project ID: AFSC 55 Ideal fertilizer rates for soil types in Sre Ambel, Koh Kong Province

Lead Organisation: American Friends Service Committee (AFSC)

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Collaborating Institutions:

- Cambodian Agricultural Research and Development Institute (CARDI)

Project Budget: USD$19,101.00

Project Duration: January 2005 – January 2007

Project Overview:

Communities in Sre Ambel District, Koh Kong Province have traditionally relied on rich forestry and fishery resources as their main source of livelihood, but these resources are facing increased competition and restriction. Although rainfall is high in this coast area, rice production can be quite variable. This project will conduct farmer participatory field experiments in three target villages in the Sre Ambel River watershed, in order to test fertilizer application regimes and identify the most appropriate rates. There are three different soil types in the area: coastal soils affected by salt water, lowland sandy soil, and upland degraded soil in slash and burn areas. In addition to working closely with the farmer volunteers, the project will share information about the experiment with farmers from nearby villages to raise awareness on the importance of appropriate fertilizer regimes for different popular rice varieties. This project will provide local farmers with guidelines for fertilizer management, depending on soil type and crop production patterns.

Project ID: CARDI 53 Fish and rice management system to enable agricultural diversification

Lead Organisation: Cambodian Agricultural Research and Development Institute (CARDI)

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Collaborating Institutions:

- Agriculture Fisheries and Forestry Department, Kandal Province, Cambodia
- Inland Fisheries Research and Development Institute (IFReDI), Cambodia
- International Rice Research Institute (IRRI)

Project Budget: USD$28,203.00

Project Duration: June 2004 – August 2007

Project Overview:

Agricultural diversification and household food security is severely limited in Cambodia, primarily because of low rice yields in unproductive rainfed lowlands. While there have been significant gains in irrigated dry season rice production over the past 10 years, wet season yields remain among the lowest in Asia. Improved land and fertilizer management has the potential to increase wet season rice yield, which would dramatically improve food security. In the past any attempt by farmers to increase rice yield have been paralleled by increases in pesticide use. However, this can cause poisoning of fish, which are the primary source of dietary protein in Cambodia.

The objective of this project is to conduct work on farmers' fields to develop guidelines for intensifying rice production in the rainfed lowlands with minimal pesticide use, without reducing per-unit-area end-of-season rice or fish harvests from paddy fields. This project should contribute to the long term goal of enabling wet season crop diversification by improving rice yields in the rainfed lowlands.

Project ID: CARDI 56 Soybean and mungbean improvement for Cambodian farmers (SMIC)

Lead Organisation: Cambodian Agricultural Research and Development Institution (CARDI)

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Collaborating Institutions:

- Asian Vegetable Research and Development Center (AVRDC)

Project Budget: USD$28,639.00

Project Duration: June 2004 – June 2007

Project Overview:

Cambodia's farmers are subject to increasing competition from imports from neighboring countries. Local growers are finding it more difficult to compete in terms of quality and continuity of product, forcing buyers to look increasingly towards imports. Soybeans and mungbeans are regarded as vegetables with short-growth duration, and they are an important source of protein and minerals. Moreover, they have the characteristic of nitrogen fixation by their root nodules (*Rhizobium*), which improves soil fertility. However, pest insects and disease have impacted on production, causing low yield and leading to excessive pesticide use.

The objective of this project is to investigate a broad range of issues relating to development of soybean and mungbean crops for Cambodian farmers. This will involve testing cultivars under Cambodian field conditions, to determine their yield potential, seed quality, and resistance to diseases and insects. This will also help to identify mungbean and soybean production constraints in Cambodia and determine future breeding objectives.

Project ID: CARDI 57 Crop management for sustainable upland crop farming

Lead Organisation: Cambodian Agricultural Research and Development Institute (CARDI)

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Collaborating Institutions:

- Provincial Department of Agriculture, Fisheries and Forestry and Agricultural Extension, Kg Cham and Battambang
- NSW Department of Primary Industries, Tamworth, Australia
- International Rice Research Institute (IRRI)

Project Budget: USD$25,737.00

Project Duration: June 2004 – September 2007

Project Overview:

In seedbed preparation operations under upland conditions, farmers usually chop, burn and remove crop and weed residue from the field. The cost of the seedbed preparation is high and soil erosion and yield decline are major problems. International research on tillage suggests that the above practices are the main causes of soil erosion, water losses and destruction of soil structure. The adaptation of appropriate crop management under dryland conditions in Australia has shown promising results, and assists to reduce input cost, preserve soil resources and maintain or improve crop yields. This project is looking at transferring, testing and evaluating crop management procedures (reduced tillage, crop establishment and weed control techniques) for sustainable upland crop farming currently used in Australia to the conditions in Cambodia. A key challenge with mechanisation in sloping areas will be to avoid problems with soil erosion.

The development and adaptation of appropriate technology will contribute to poverty alleviation and assurance of food security at household levels, which are the main priority of Cambodian government. The beneficiaries of this project will be farmers in upland areas of Cambodia, technical staff of CARDI and extension workers.

Project ID: MVU 59 Relationship between nitrogen, phosphorus and potassium in production of vegetables on Prey Khmer soils

Lead Organisation: Maharishi Vedic University (MVU)

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Collaborating Institutions:

- University of Adelaide, South Australia
- University of Melbourne, Victoria, Australia
- Partnership for Development in Kampuchea (PADEK)

Project Budget: USD$8,837.00

Project Duration: June 2004 – September 2006

Project Overview:

Many of the farmers in the Kamchai Mear District, Prey Veng Province, are very poor and rely on their rice crop for subsistence and on vegetable and fruit crops for income generation. However, productivity of vegetables and fruit is very low and farmers find it difficult to compete with imports from Vietnam. At present, there is very little known about soil management and nutrient limitations for vegetable production on Prey Khmer soil, and local farmers have no training or knowledge on fertilizer management.

This project aims to refine the knowledge of vegetable crop response to applied fertilizers, such as NPK (nitrogen/phosphorus/potassium), and locally-available organic materials. This will be used to generate fertilizer management strategies for five locally important vegetable crops in the area, with the aim of transferring this knowledge to farmers to improve local vegetable production.

Project ID: RUA 61 Research and extension of *Babodes altus* (Trey Kahe), *Trigogaster pectoralis* (Trey KonThor) and *Barbodes gonionotus* (Trey Chhpin) raising technology

Lead Organisation: Royal University of Agriculture (RUA)

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Collaborating Institutions:

- Fisheries Office, Kampong Thom Province
- Groupe de Recherche et d'Echanges Technologiques (GRET), Kampong Thmar
- Community Economic Development Assistance Corporation (CEDAC), Cambodia

Project Budget: USD$9,027.00

Project Duration: June 2004 – June 2005

Project Overview:

Aquaculture is the primary means of increasing fish production in Cambodia, to improve food security and general health; fish are the primary source of protein in the Cambodian diet. Research on exotic and native species is steadily increasing, with a focus is on smallholder low–input production in ponds and, to some extent, rice fields. However, this is a lack of available technical assistance for farmers. Current research indicates that fish populations are steadily declining, which emphasises the importance of appropriate management strategies for subsistence fisheries and in particular rice field fisheries. Kampong Thmar has adequate water supplies and there are currently approximately 2000 hectares being utilised for rice fish farming. This project is investigating the integration of rice and fish production, to develop management strategies for local farmers. This will include an assessment of socio-economic interests and constraints for families involved in fish production.

Project ID: WV 64 Identification of second alternative crops following rice using zero tillage

Lead Organisation: World Vision Cambodia

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Collaborating Institutions:

- Cambodian Agricultural Research and Development Institution (CARDI)

Project Budget: USD$12,969.00

Project Duration: May 2004 – September 2007

Project Overview:

The Preah Vihear province is one of the most remote and underdeveloped provinces in Cambodia, with a high level of malnutrition and food shortages for estimated period from 3 to 6 months per year. Farmers traditionally produce a single crop of rice a year for family food consumption, and they are unaware of alternative cropping techniques. Traditionally, farmers grow late-maturing rice, which does not allow for a second crop to be cultivated due to the lack of rain and low moisture in the soil post rice harvest. The farmers also prepare the land by hand hoe, which is not appropriate when producing second crops. Experience from other countries demonstrates positive results with zero tillage by saving time as well as soil moisture.

This situation provides an opportunity to research the potential of food crop and farming system diversification specific to the area. Consequently the objective of this project is to identify the most appropriate timing to cultivate rice and alternative crops with zero tillage, and the most suitable varieties of rice to allow a second crop. These management strategies will then be demonstrated to local farmers. The entire province will benefit from this project, through increased food variety and availability, and household income.