The Joint Research Project of the Thailand Royal Forest Department and the Japan International Research Center for Agricultural Sciences

Development of Techniques for Nurturing Beneficial Indigenous Tree Species and Combined Management of Agriculture and Forestry in Northeast Thailand, Tropical Monsoon Regions

Project Background

As a result of the population explosion in developing countries, the forests have either been completely felled and the land converted for agricultural or oil palm plantation uses, or they have been turned into low-quality secondary forests or devastated grasslands as a result of excessive selective logging or slash-and-burn farming. In Asian countries, forests are being felled at the furious speed of 14 million hectares a year. Thai forests are no exception in these rapidly industrializing Southeast Asian countries. With the growth of a monetary and commodity economy, forested lands have been converted for agriculture, and the forest cover has declined from 53% (27.36 million hectares) of Thailand's total land in 1961 to 26% in 1993. In particular, over the same time period the forests of Northeast Thailand have disappeared at a much faster rate than in other regions: from 42% of the area's land cover to 13%.

In light of this critical forest situation, the Thai Government has recognized national land conservation and stable timber production as extremely important issues and has established a national policy on forest conservation with a targeted value of 40% forest coverage. In 1991 the Government also established a national long-term afforestation plan to promote large-scale afforestation as an urgent issue of national importance, and it aims to afforest 7.18 million hectares by 2020.

In 1991 the Royal Forest Department established a section of private forest within the Department to further promote afforestation projects, and in 1992 it enacted the Reforestation Act to promote industrial afforestation on private land. In 1994 the Department initiated a farmers' forest plantation project to promote the planting of valuable indigenous tree species and an agricultural production improvement project to convert cassava production to eucalyptus forests, and in 1995 it enacted the Reforestation Act to encourage afforestation on private or privatized land. The Thai Government has implemented a series of measures in quick succession to assist private plantation activities. As a result, about 400,000 hectares of land in Northeast Thailand have been afforested by farmers under the two above-mentioned subsidy projects.

In 1977, at the time of implementation of the Fourth National Economic and Social Development Plan, which included the promotion of large-scale afforestation, Thailand became a net timber-importing country owing to the sudden decrease in natural forest resources. In 1989, an absolute ban on deforestation of natural forest was imposed after serious flood damage that occurred in Southern Thailand was attributed to forest destruction. Thailand has become a country no longer self-sufficient in timber and imports timber from neighboring countries: 730,000 tonnes from Malaysia, 400,000 tonnes from Laos, and 140,000 tonnes from Myanmar. The aim is to restore the forests and become self-sufficient in timber by planting useful, high quality indigenous tree species, not fast-growing exotic species such as eucalyptus and acacia.

Project Objectives:

In Northeast Thailand, under a tropical monsoon climate with severe dry seasons, the Project aims to develop silvicultural techniques to convert the artificial forests of exotic fast-growing trees species, such as *Acacia mangium*, which have been used to accomplish the goal of afforesting devastated land, into mixed forests, using economically valuable and beneficial indigenous tree species. It also aims to build a model of the combined management of agriculture and forestry that will be able to forecast future profitability. It proposes a method of implementing this combined management by conducting farmers' afforestation activities based on the model in order to help improve the livelihoods of area residents. These residents will plant beneficial indigenous tree species (mainly teak) through private plantation promotions, such as projects subsidizing afforestation by farmers.

Overall Goal:

The combined management of agriculture and forestry will be practiced when farmers plant beneficial indigenous tree species while continuing their farming activities; as a result, the farmers will improve their livelihoods by selling the harvested timber. The techniques of silviculture of indigenous tree species and the combined management of agriculture and forestry that are developed in the Northeast Thailand, a typical tropical monsoon region, will be disseminated to neighboring countries, including Laos, that supply timber from beneficial indigenous species to Thailand. Such countries belong to the same tropical monsoon region, and these measures will act as a technical link under the south–south cooperation promoted by the Thai Government.

Project Name:

Development of Techniques for Nurturing Beneficial Indigenous Tree Species and Combined Management of Agriculture and Forestry in Northeast Thailand, Tropical Monsoon Regions

Study Subject 1:

Development of Techniques for Changing Forests Consisting of Exotic Fast-growing Tree Species into Mixed Forests by Introducing Beneficial Indigenous Tree Species

Background and Objectives of the Study:

Techniques for developing large-scale forests of exotic, fast-growing tree species, such as *Acacia mangium*, on the barren land that appeared after slash-and-burn farming were developed by Thailand's Research and Training in Re-afforestation (RTR) Project (1981–1993), which was implemented through cooperation between the Royal Forest Department (RFD) and the Japan International Cooperation Agency (JICA). Devastated grasslands were converted into plantations of exotic, fast-growing tree species, and the restoration of forests—the expected objective of the project—was accomplished.

Under this study subject, the aim is to develop silvicultural techniques that will change these plantations of exotic, fast-growing tree species into biodiverse forests of mixed indigenous tree species, with high timber quality and long life, that are expected to be useful for a variety of purposes. The alternative is to convert these exotic forests to those of the same indigenous tree species that can be used effectively for mass production of useful timber, while effectively using the plantations of fast-growing tree species.

Subject Composition:

1-(1) Development of techniques to change a plantation of exotic fast-growing tree species into a mixed forest, by underplanting beneficial indigenous tree species.

1-(2) Development of techniques to change a plantation of exotic, fast-growing tree species into a mixed forest, using natural regenerated seedlings of beneficial indigenous tree species.

1-(3) Development of techniques to accelerate the effective use of the timber produced by the necessary thinning of exotic fast-growing tree species.

Study Subject 2:

Development of Combined Management Techniques of Agriculture and Forestry to Support Farmers who are engaged in Planting Beneficial Indigenous Tree Species

Background and Objectives of the Study:

Almost at the same time as the RTR project ended, RFD and JICA implemented a Reforestation and Extension (REX) Project in Northeast Thailand (1992–2004). Seedling mass-production and free distribution systems were established in Northeast Thailand. The forest management information needed to promote afforestation on private or privatized land was collected and publicized, and forest management techniques were improved and disseminated. In light of measures to subsidize afforestation projects, many farmers planted numerous indigenous tree species, including teak, in Northeast Thailand.

Under this study subject, models will be prepared for evaluating suitable tree species for afforestation; for tree growth forecasting and afforestation planning; and for forecasting the future profits that would be obtained by afforestation. A model will also be prepared for the combined management of agriculture and forestry and its integration into farming practices in order to help improve the livelihoods of farmers who plant beneficial indigenous trees (mainly teak). A practical method of combined management of agriculture and forestry that can be practiced by as many farmers as possible will be developed.

Subject Composition:

2-(1) Development of a Method for Disseminating the Planting of Indigenous Tree Species on the basis of Characteristics of Farmers in Various Areas of Northeast Thailand.

2-(2) Development of New Timber Uses and New Markets on the basis of Analyses of Demand for Beneficial Indigenous Tree Species.

2-(3) Development of a Technique for Evaluating Suitable Planting Sites for Beneficial Indigenous Tree Species on the basis of a Method of Site Index.

2-(4) Development of Combined Management Techniques for Agriculture and Forestry to Optimize Land Use for Forestry and Farming.

Project Period: From 2006 to March 2011

Concerned Field:
Northeast Thailand (including Sakaerat Silvicultural Research Station)

Study-implementing Agencies:
Japan Side: Japan International Research Center for Agricultural Sciences (JIRCAS)
Forest and Forest Products Research Institute (FFPRI)

Thai Side: Royal Forest Department (RFD)

Addendum:

This project will be implemented under the Memorandum of Understanding (MOU) between the Royal Forest Department and the Japan International Research Center for Agricultural Sciences that became effective on 5 August 2004.

This document has been signed by the following two persons, who the nominated representatives of the Royal Forest Department and the Japan International Research Center for Agricultural Sciences.

S. Nakamura

Shozo Nakamura
Director, Forestry Division
JIRCAS

Date: 22 November, 2006

Place: Tsukuba, JAPAN

Visoot Somnuk

Visoot Somnuk
Director, Forest Management and
Forest Products Research Office
RFD

Date: 14 December, 2006

Place: Bangkok, Thailand