# ANNEX

## Annex 1 Seed Treatment for Some Species

| Name | Treatment Technique | Duration of Germination (Day) | Number of Seeds per Kilogram |
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| **កកោះ (Kor Koh)** ***Sindora siamensis*** | - Soak in hot water (70-80 °C) then keep cold for 10-12 hours. | 7 - 10 | 300 - 350 |
| **ក្ងោក (Kgork)** *Delonix regia* | a) Soak in hot water (70-80 °C) for ten minutes then soak in normal water overnight. *or* b) Chip the shell off and then soak in normal water for 24 hours. | 12 - 20 | 1600 - 2300 |
| **ក្រញូង (Krar Ngoung)** *Dalbergia cochinchinensis* | - Soak in hot water | | 3,500 |
| **កន្ធំថែត (Kanthom Thet)** *Leucaena leucacephala (Ipil-ipil)* | a) Soak in normal water for 26 hours. *or* b) Dip in hot water then soak in cold water for 24-27 hours | 5 - 12 | 13,000 |
| **ខ្នុរ (Khnol)** *Artocarpus heterophyllus (Jack fruit tree)* | - Remove the shell then soak in normal water for 24 hours | 3 - 5 | 45 - 90 |
| **ខ្វាវ (Kvav)** *Haldina cordifolra* | - Soak in hot water (30-35°C) then keep cold for 8-10 hours | | 1,500 – 1,800 |
| **គគីរ (Kor Ki)** *Hopea odorata* | a) Soak in normal water for 8 hours. *or* b) Immediately sow in the nursery bed. | | 2,500 – 3,000 |
| **ក្រាប់បែក (Krabek)** *Swietenia macrophylla (Mahogany)* | - Soak in hot water (50°C ) for 5 minutes then soak in cold water for 8-10 hours. | 14 - 28 | 2,300 |
| **ចំរៀក (Chamrek)** *Albizia lebbeckoides (Indian walnut siris)* | - Soak in hot water, then keep cold overnight, then clean with water. | 3-4 | |
| **ច្រែស (Chres)** *Albizia lebbeck ( Indian walnut siris)* | - Soak in hot water (50°C ), then keep cold overnight, then clean with water. | 3 - 4 | 6,000 – 16,000 |

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| **ឈើទាលទឹក (Cheu Teal)**<br>*Dipterocarpus alatus* | - Soak in cold water for 8 hours, then clean and store | | 250 - 310 |
| **ដូនចែម (Doun Chem)**<br>*Tarrietia javanica* | - Soak in hot water (35-40°C), then keep cold, then clean with water | | 1,500 – 1,700 |
| **ត្រសេក (Trar Sek)**<br>*Peltophorum dasyrrhachis and*<br>**ត្រាំកង់ (Tram Kang)**<br>*Peltophorum plerocarpum* | - Soak in hot water (60-70°C), then keep cold for 10-15 hours, then clean with water. | | 9,500- 11,000 |
| **ធ្នង់ (Thnong)**<br>*Pterocarpus macrocarpus* | - Soak in hot water (60-70°C), then keep cold overnight, then clean with water. | 4 - 15 | 1,500 – 2,000 |
| **បេង (Beng)**<br>*Afzelia xylocarpa* | a) Soak in hot water (70-80°C) then keep cold overnight.<br>or<br>b) Chip the shell, then soak in normal water, then clean with water. | 7 - 10 | 110 - 160 |
| **ប្រេងខ្យល់ (Preng Kchal)**<br>*Eucalyptus camadulensis* | - Soak in hot water (35-40°C) then keep cold for 6-8 hours. | | 180,000-190,000 |
| **ផ្តៀក (Pteak)**<br>*Anisoptera costata* | - Immediately sow in the nursery bed | | 1,500 – 2,000 |
| **មៃសាក់ (Mai Sak)**<br>*Tectona grandis* | - Soak in flowing water for 24 hours, then dry in the sun, then moisten, then dry and moisten again for three days. | 14 - 68 | 1,000 |
| **លឿងរាជ (Leung Reak)**<br>*Cassia fistula*<br>*(Golden shower)* | - Chip off the shell, then soak in normal water overnight, then clean with water | 5 - 7 | 2,000 – 6,000 |
| **ស្រល់ (Sral)**<br>*Pinus merkusii* | - Soak in hot water (40-45°C), then keep cold for one night, then clean with water. | 14 | 3,000 – 4,000 |
| **ស្វាយចន្ទី (Chanti)**<br>*Anacardium occidentale*<br>*(Cashew nut tree)* | - Chip off the shell to eliminate sap, then soak in hot water (40-45°C), then keep cold for 10-15 hours. | 12 | 200 - 900 |
| **ស្វាយ (Sngav)**<br>*Casuarina equisetifolia* | - Soak in hot water (40-45°C), then keep cold for one night, then clean with water. | 7 - 21 | 650,000-700,000 |
| **ស្តៅ (Sdao)**<br>*Azadirachta indica* | - Sow directly in the nursery bed. | 3 - 5 | 4,000 – 6,000 |

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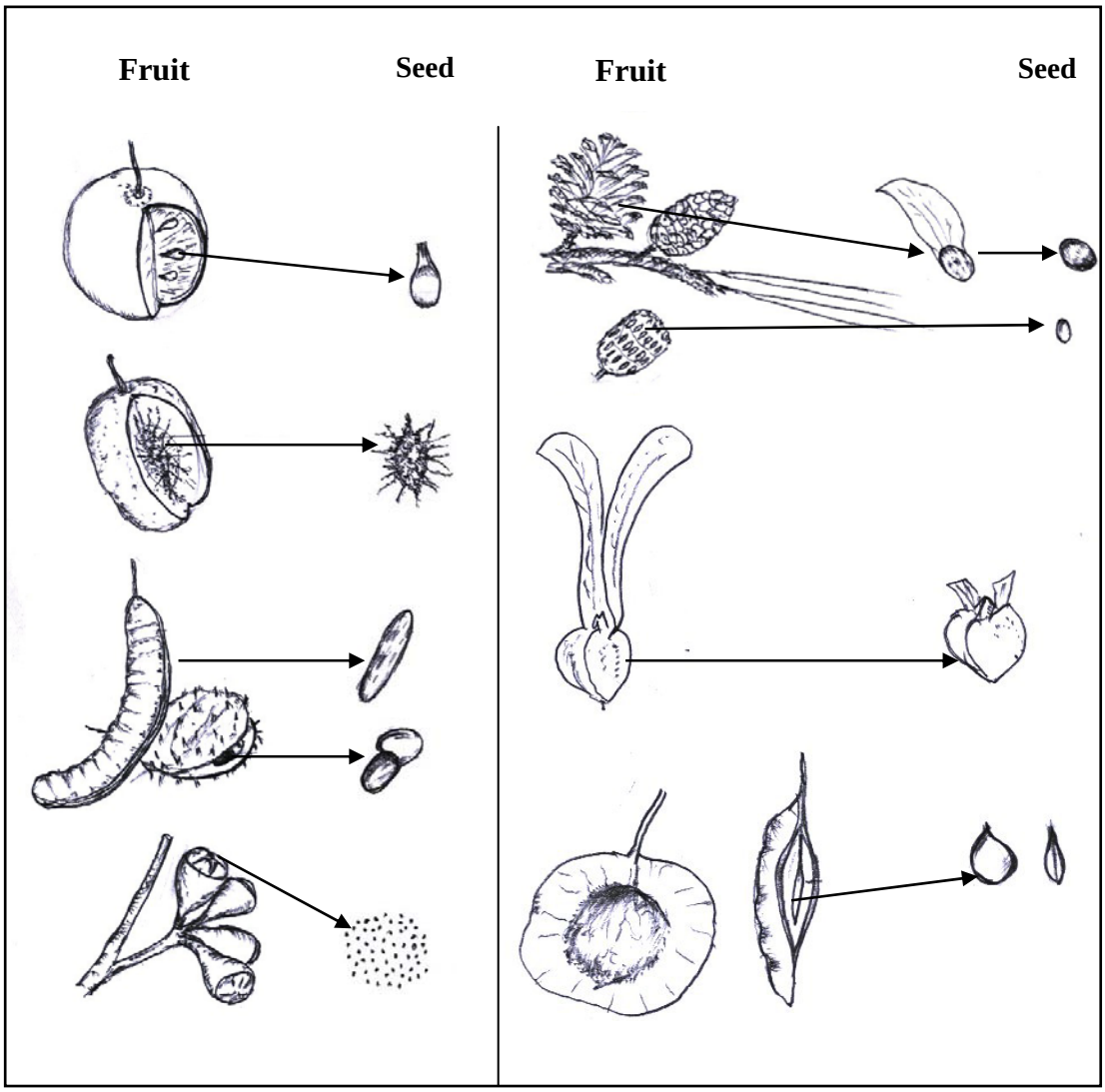
| **សណ្តែកខ្ចឹង (Sandek Kleung)**<br>*Cajanus cajan (Pigeon pea)* | - Soak in normal water for 24 hours | 2 - 3 | 3,500 |
| **ស្វាយ (Svay)**<br>*Mangifera indica (Mango)* | - Remove the shell then germinate directly in the nursery bed. | 6 - 9 | 40 |
| **អង្កាញ់ (Ang Kagn)**<br>*Cassia siamea* | - Soak in hot water (60-70°C), then keep cold for one night, then clean with water. | 3 - 7 | 20,000-25,000 |
| **អង្គារដី (Angker Dey)**<br>*Sesbania bispinosa (Preckly sesban)* | - Soak in normal water for 24 hours. | 5 - 8 | 10,000-15,000 |
| **អាកាស្យាស្លឹកតូច**<br>(Akasa Sleuk Touch)<br>*Acacia auriculiformis* | a) Dip in boiling water for 30 seconds or 1 minute, then soak in normal water, then clean with water.<br>*or*<br>b) Soak in hot water, then keep cold for one night, then clean with water again. | 3 - 8 | 7,400 – 8,000 |
| **អាកាស្យាស្លឹកធំ (Akasa Sleuk Thom)**<br>*Acacia mangium (Sabah acacia)* | - Soak in boiling water for 30 seconds, then soak in normal water for one night, then clean with water. | 3 - 6 | 40,000-70,000 |

## Annex 2 Differences Between Fruits and Seeds



# Annex 3 Donor Profiles

**CAMBODIAN-GERMAN FORESTRY PROJECT**
**DEPARTMENT OF FORESTRY AND WILDLIFE**
**Phnom Penh**
**Cambodia**

German Technical Cooperation

| | |
|---|---|
| **Project Title:** | Support to the Rehabilitation and Development of the Forestry Sector<br>Cambodian-German Forestry Project (CGFP) |
| **Executing Agency:** | Department of Forestry and Wildlife |
| **Duration:** | Phase I November 1996 - April 2000<br>Phase II May 2000 - April 2004 |
| **Commitments in EURO:** | Up to approximately EURO 5.4 Mio. |

**Project Purpose:** Institutions and people engaged in forestry increasingly apply and promote the principles of sustainable forest management.

**Major Results, Strategies and Achievements:**

**1. Advisory services on selected issues related to sustainable forest management are provided according to demand**

The project has the mandate to support its partners in the elaboration and implementation of a national forest policy, of the legal framework for sustainable forest management and conservation, and in particular of the policy and the legal framework for community forestry. The project commits itself to multi-stakeholder approaches and processes and fits itself in the outcomes and processes of Global Structural Policy such as international conventions, agreements and national forest programmes. In order to do so the project is dealing with the following major issues:

- Involvement in the elaboration of a Community-Forestry Sub-Decree based on nation-wide multi-stakeholder consultation processes
- Involvement in the development and implementation of a National Programme on Community Forestry
- Initiation of a consultative multi-stakeholder process on the formulation of a Statement of the Royal Government of Cambodia on Forest Policy
- Initiation of a multi-stakeholder discussion on the design and implementation of a national forest programme for future forest sector reform and development

**2. The education and training system for personnel in the forestry sector is improved**

The project enables forestry staff to take part in a number of capacity building measures focused on the fields of forest policy and forestry extension. It also collaborates with the Forestry Faculty of the Royal University and the Forestry Section of the Agricultural School of Prek Leap in order to develop curricula, upgrade

the knowledge and teaching performance of teachers, develop teaching material, and facilitate BSc thesis writing and student's internships. In particular the project supports the Forestry Faculty of the Royal University for its integration into regional and international university networks.

### 3. A practical concept for a forestry extension system is developed and tested on a pilot scale

In order to support the efforts of the Royal Government of Cambodia to promote and implement the concept of community forestry as a major pillar for sustainable forest management within the overall political framework of poverty reduction and socio-economic development the project supports the development of a functional forestry extension system. In this field the project is collaborating with a wide range of partners not only to jointly develop a forestry extension system but also to enable its practicability. The project is involved in the following major processes:

- Within a wide range of partnerships support of the development of a forestry extension system based on a comprehensive nation-wide assessment of community forestry approaches, the elaboration of a forestry extension concept, and the active participation in community forestry policy processes
- Involvement in the elaboration of an afforestation manual
- Within a partnership approach support of local initiatives to implement participatory land use planning (PLUP) and community forestry.

# Cambodia Tree Seed Project-DANIDA

## 1. Information about Cambodia Tree Seed Project

CTSP is one part of the Regional Tree Seed Program: "**Institutional Capacity Building Support of the National Tree Seed Sector in Indochina**".

CTSP cooperates with the Department of Forestry and Wildlife, of the Ministry of Agriculture Forestry and Fisheries. The Danish Government supports the project through the International Development Assistance of Denmark (DANIDA). The consultation and technical support is provided by DANIDA's Tree Seed Center.

The overall goal of the project is to upgrade the quality of institutional capacity to use good quality seeds throughout Cambodia, particularly the local species, and conservation of forest genetic resources.

The Cambodia Tree Seed Project has four main objectives:

1. Institutional strengthening for the tree seed sector;
2. Training, dissemination and development of human resources;
3. Transferring knowledge and technology of tree seed sector; and
4. Formulating strategies for the conservation of forest genetic resources in Cambodia.

**Cambodia is abundant with biodiversity, which is the potential for developing good quality seed sources. We shall conserve all main and valuable species for our younger generation.**

## 2. Forest in Cambodia

Cambodia's forest cover is around 50%, which is valuable forest such as evergreen forest, deciduous forest, inundated forest and mangrove forest etc. This forest has potential and is abundant with biodiversity.

However, most of the forest is degraded or converted to other uses, due to the practice of shifting cultivation, forest fires, and overwhelming exploitation of the forest. Due to continual, severe forest degradation and exploitation of virgin forest, the forest genetic resources of important economic forest species are endangered to the point that good quality trees and natural species re-growth will unavoidably become extinct.

## 3. Local tree species

Local tree species play important roles. For decades, they have been used to build columns, make doors, windows, construction tools and other furniture, etc. In addition, there are various non-timber forest products such as resins, fruits, and medicinal plants which are very important for the daily life of local communities.

However, local species do not develop as fast as imported species, but they have grown in the area for generations. Yet to date, no local species of Cambodia have been put into tree improvement programs. Therefore, local species have the highest

potential for study as well as quality improvement and growth rate programs. Economic comparisons of local and imported species indicate that local species are of high quality and are valuable despite slow growth rate. The calculation of species value includes biological and social values. In the future, there is a tendency and high requirement for growing local species.

Promotion of increased use of quality seeds requires further study, since knowledge in this field is still limited. Thus, it is very necessary to conduct experiments and surveys using simple and effective methods for seed collection, picking, treatment and germination, to enable seed producers, nursery workers and local people to learn easily.

**4. Source of seeds**

The starting point for seed production and genetic resource conservation is the good selection and maintenance of mother trees. Over-exploitation of trees can surely cause the loss of these valuable genetic resources for future use and loss of quality of local species.

The establishment of a seed resource system for different ecological areas will enable the maintenance of an adequately diversified genetic basic for tree planting programs and tree improvement in the future. Thus, the establishment of high-quality seed production sources for local supply is a compulsory activity.

**The comparison of the seed production site and the seed-planting site is the main factor of success for reforestation programs**

**5. Conservation based on use**

Today, there is increasing recognition that the conservation of forest genre is the main condition for sustainable development.

Some species are endangered due to the degradation of genre as a result of selective woodcutting for exploitation. The conservation of diversified genre is important for tree improvement programs in the future.

Usually, most tree species are very easy to conserve within their natural area, but in some circumstances, the natural forest is disturbed and local people and authorities are unable to provide protection to those areas. Due to such factors we have to establish conservation areas outside natural areas.
At present, the Cambodia Tree Seed Project is collecting data to facilitate the process to prepare the forest genetic conservation strategy of Cambodia.

The conservation of forest with high biodiversity will produce a high quality seed production base for rehabilitating forest resources. In addition, the establishment of sites for seed production sources in the non-exploited natural forest will provide high potential for research activities.

**The current efforts of the Royal Government of Cambodia will be highly appreciated by the younger generation.**

# Capacity Building Program on Forestry - JICA

The Capacity Building Program on Forestry started in December 2001 under technical cooperation between Japan International Cooperation Agency (JICA) and the Department of Forestry and Wildlife (DFW). The project will be completed by December 2004. The main goal is to build capacity of forestry sector including the capacity improvement for DFW's officials as well as institutional officials.

The Capacity Building Project on Forestry has brought about stage-by-stage progress. The achievements so far include:

- Meetings and workshops concerning capacity building;
- Compilation and analysis of data on previous training;
- Analyzing question-answer collected from the city-provincial Forestry Offices;
- Organizing programs related to the required formula;
- General training program for 2003;
- Construction of Forestry and Wildlife Training Center;
- Socio-economic implementation around the center;
- Supply of necessary tools and materials; and
- Forest measurement.

The Capacity Building Project on Forestry has now moved to the Training Center for Forestry and Wildlife. On 6$^{th}$ February 2003, the Center was officially inaugurated by Samdech Hun Sen, Prime Minister of the Royal Government of Cambodia.

During 2003, the project conducted training programs on six topics - Forestry Law, Community Forestry, Seedling Nursery, Silviculture, Forest Management/Forest Plantation and Forest Measurement.

# Agriculture Support Program in Cambodia (PRASAC II)

Cambodia-EU
PRASAC

PRASAC started its operation in 1995 as a program to rehabilitate agriculture in six provinces located around Phnom Penh. At the beginning, rehabilitation was divided into three projects (PRASAC I, PRASAC II, PRASAC III). In 1998, the three projects were integrated and operation between 01/01/1995-30/04/1999, was considered as the first phase, of PRASAC I.

PRASAC II, the second phase, started on 01/05/1999, to be completed by 31/12/2003. For this phase, the project planned to change its strategy from emergency to rural development. The integration of PRASAC I's achievements and the continuation of its activities was the prominent principle for implementation of PRASAC II, which integrates all activities of the project with national partner institutions, and strengthens leadership and civil institutions.

PRASAC is one part of the leadership process of the Royal Government of Cambodia towards its medium-term development strategy in the rural areas of the country. Abundant practical experiences enabled both stages of PRASAC to become keys for future development principles. Continual goals of PRASAC would be mechanisms to support implementation to ensure the most effective management.

The following is the detailed principles for PRASAC's project implementation:

**Objectives**: Continue to implement rural development activities in 6 provinces, of clean water supply, agriculture, community development, credit, small-scale enterprise development and institutional capacity building.

**Location**: Project Management Sector in Phnom Penh

**Components:**

- Clean water supply: Construction and water sanitation (drilling water well, marking water sources, establishing and training water committee) (is one part of activities in section 2)
- Agriculture: Construction (rehabilitating irrigation systems, constructing rural pathways...) (is one part of activities in section 2), agriculture extension (producing and expanding diversified seed crops, training farmers, fingerling hatching...) (is one part of activities in section 3).
- Community Development (Extension and training).