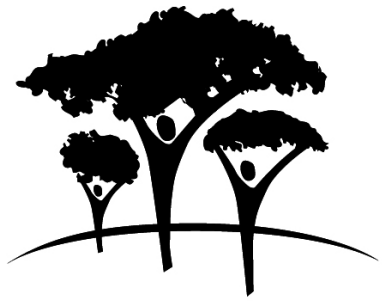
Rehabilitation of Agricultural Systems in Aceh – Developing *Nurseries of Excellence (NOEL)*

Semi-Annual Report

30 November 2007



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SEMI-ANNUAL REPORT

Rehabilitation of Agricultural Systems in Aceh – Developing *Nurseries of Excellence (NOEL)*

I. BACKGROUND

The *Rehabilitation of Agricultural Systems in Aceh – Developing Nurseries of Excellence (NOEL) Program* is implemented by the World Agroforestry Centre (ICRAF) with assistance from Winrock International and local partners, through support from the Government of Canada as represented by the Minister of International Cooperation, acting through the Canadian International Development Agency (CIDA). The Program agreement was signed in January 2007 and NOEL Program activities initiated in April 2007.

This Program is designed to improve agroforestry in the communities most affected by the tsunami that hit a number of countries in the Indian Ocean on 26 December 2004. Indonesia was the country most adversely affected by this natural disaster. Approximately 200,000 people were killed and 500,000 displaced. The damage to local economy was catastrophic. About 60% of the internally displaced people are located in north-eastern district of Aceh. Given the large number of internally displaced people in this region, there are potentially serious environmental impact arising from the substantial increase in population density and increased pressure on agriculture, slopes, and forests. In this context, there is a need to develop a Program for re-establishing and improving agroforestry in all communities and watersheds that have been affected.

The Program approach is to identify and work with motivated farmers and community groups committed to agroforestry systems and market-orientation through the establishment of 'mother nurseries' in the three most affected districts in Aceh; Aceh Barat, Aceh Jaya and Pidie. Several areas of activities have been identified: 1) execute applied research on production and marketing chains; 2) establish effective 'Tree Nurseries of Excellence' at the district levels that produce quality planting material available for affected communities; 3) establish community-based nurseries through community organizations; and 4) design and implement additional training courses addressing priority topics identified by Program communities and other partners – courses might address special nursery-related topics, soil management, agroforestry, arboriculture and harvesting/post-harvesting techniques for priority crops.

The proposed funding of this CAN$1,000,000/1 year project will come from budget set aside for complementary activities under the CAN$6.1 M/2 years Canadian Support to Aceh Emergency Response and Transitional Recovery Project, which aims to contribute to the recovery of community livelihoods and strengthening the capacity of local governments and civil society to ensure sustainable recovery and risk reduction. CIDA's support for the project will be complementary to the Canadian Support to Aceh Emergency Response and Transitional Recovery project in terms of providing opportunities to improve farmers' livelihoods and rehabilitate their land by growing more productive tree crops.

This semi-annual report describes the Program progress during the first eight months of activities (since April 2007). The first section provides a background of the Program, including objective, goal, purpose and rationale of selecting the implementer. The second section summarizes Program preparation and start-up through the district and provincial inception workshops. The third section details Program progress in terms of activities implemented and impacts achieved. The fourth section summaries variances and modifications resulting from unexpected constraints encountered. The final section provides summarizes the Program's success to date and proposes a Program extension to maximize impact. An official request will be submitted in January 2008.

Project Objective, Goal and Purpose

The *objective* of the Project is to empower smallholder farmers (both men and women) to gain access to high quality planting materials and provide them with the skills necessary to establish and operate agroforestry tree nurseries. Participants will range from individual smallholders and community groups wanting to improve their livelihoods and rehabilitate their lands by growing more productive tree crops, to families or small groups who are motivated to establish local commercial nursery operations.

The *goal* of the project is to support post-tsunami rehabilitation and reconstruction efforts in the province of Aceh, Indonesia to improve agroforestry by establishing 'mother nurseries'

The *purpose* of the Project is to rebuild and strengthen farmers' livelihoods and rehabilitate their lands by growing more productive tree crops.

Significance of the Term – *Nurseries of Excellence*

Excellence can be defined as *the quality or state of being outstanding or superior*; synonyms for excellence include *brilliance, superiority, distinction, quality* and *merit*. The name *Nurseries of Excellences* is used to indicate an approach to develop model *quality* community-oriented tree nursery enterprises that produce *superior* seedlings of the species and varieties prioritized by the community and market. These nurseries are not intended to be examples of high-tech, resources-intensive enterprises. *Nurseries of Excellence* use appropriate levels of technology that can be independently operated by communities in a cost-effective manner to produce the *superior quality* seedlings desired for either community use or market sale. By stressing *quality*, nurseries of excellence are *distinct* from typical tree nurseries of community forestry or reforestation programs that usually stress the quantity of seedlings produced.

Rationale of Selecting Implementer

The ICRAF was established in 1977. It is a member of the Consultative Group on International Agricultural Research (CGIAR) and officially accredited by the Government of Indonesia. ICRAF is recognized as the world's leading institution in the areas of agroforestry and the creation of sustainable rural livelihoods, based natural resource management in the tropics. ICRAF's many years of experience in Southeast Asia has provided a wealth of learning in development practices and has achieved results through various initiatives in land rehabilitation in Southeast Asia and throughout the world. ICRAF is well known for integrated approaches that combine policy, biophysical, and socio-economic information/results to meet farm families' expectation for improved land-use systems and enhanced livelihood opportunities. Committed to the concept that research and development are inextricably linked, ICRAF's approach to research is comprehensive, including the development of lesson learned and models of integrated resource management for use by its partners and other interested parties. In addition, ICRAF has a proven ability to establish productive collaboration with a wide range of partners, including other international organizations, national research agencies, government agencies, universities and colleges, development projects, NGOs and community organizations.

Winrock International is ICRAF's main partner in implementing the NOEL Program. Winrock is a non-profit organization that works with people around the world to increase economic opportunity, sustain natural resources, and protect the environment. It has operated various projects, programs, and other activities in Indonesia since the 1950s. ICRAF and Winrock developed a *joint smallholder tree farming program for Southeast Asia* in 1997. The joint program focuses on research and extension of appropriate technical innovations for smallholders

tree production systems; the development of suitable farmer-led mechanism or organizations to implement innovations in an appropriate and sustainable manner; and the production of technical documents appropriate for various partner. Winrock provides co-funding to the NOEL Program through its USAID-funded *John Ogonowski Farmer-to-Farmer (FtF) Program* which provides technical consultation from technical specialists in the area of horticulture, smallholder forestry and agricultural enterprise development. Services provided by specialists and related costs are supported by FtF Program.

II. PROGRAM INCEPTION

NOEL Staff. Staff positions for Deputy Team Leader (1), office staff (2), District Coordinators (3), and Nursery Specialists (6) were advertised in late January through the media in Banda Aceh, Medan, and Jakarta, as well as, over the internet. Over 400 applications were received. A shortlist of promising candidates was compiled and interviews conducted from mid-February through March. Most staff assumed their duties in April. Farmer Nursery Specialists (9) were selected from a pool of candidates known to ICRAF and NOEL staff from previous programs and projects. They assumed their duties in May. Eight of the 21 NOEL positions were filled by Acehnese, providing the NOEL Team with important cultural awareness and language skills.

Office Establishment. ICRAF Bogor staff with assistance of Aceh-based partners surveyed appropriate office locations. Offices were established and provisioned in April. Contact information for each office is provided in Table 1.

Table 1. Contact information for Noel Offices in Banda Aceh and each district.

Banda Aceh Jl. Kapai Keling, Lr.Meutuah No.4, Desa Doi, Kecamatan Ulee Karang, Banda Aceh Contact: Pak Nazar Idris Office: 0653-22364; HP: 08126988590	**Aceh Jaya** Jl.Kejaksaan, Desa Bahagia, Calang Contact: Pak Jusupta Tarigan Office: 0654-7001000; HP: 08126998869
Aceh Barat Malem Diwa No.8, Kelurahan Kuta Padang, Meulaboh (office) Jl. Beringin Jaya No.43, Kelurahan Seuneubok, Meulaboh (staff quarters) Contact: Pak Pratiknyo Purnomosidhi Office: 0655-7551242; HP: 08127954747	**Pidie** Jl.Raya Banda Aceh-Mada, Kelurahan Mns.Peukan, Kota Sigli, Pidie Contact: Pak T. Zulfadhli Office: 0653-22364; HP: 08126947378

Program Partners. The NOEL Partner network includes individual farmers, farmer groups, community organizations, dayahs (community Islamic organizations), local non-government organizations (NGOs), international non-government and development organizations (INGOs), and local government agencies (primarily district and sub-district civil governments and district agriculture and forest agencies). Uniting this diverse collection is a commitment to assist in local livelihood enhancement and land rehabilitation (both public and private lands), and specifically to help local communities to develop tree nurseries. Many of these partners lack technical expertise in germplasm production/procurement and agroforestry system management. They are eager to work together with the NOEL Program to develop synergistic activities that benefit all partners and their beneficiaries.

A summary of key partners in each district are listed in Table 2. These key partners include 20 farmer groups, 5 dayahs, 3 NGOs, 5 INGOs, and 3 local technical agencies. As these partners establish nurseries and implement activities the impact of the NOEL Program will expand through spontaneous adoption by other interested individuals and organizations. This process has already started with the establishment of *susulan* (spontaneous) nurseries (see Table 5). Typically, after observing the success of NOEL activities, neighboring farmers or organizations seek

assistance from NOEL staff or directly from partner groups. Staff provide susulan groups with basic technical support to start nurseries, invite them to attend meetings with partner groups, and developing mentoring relationships with NOEL staff and partner groups. The susulan process has the potential to greatly expand impact. For example, in Nanggung, West Java ICRAF/Winrock helped eight farmer groups established eight tree nurseries. Other interested farmers and groups, with the assistance of ICRAF/Winrock and the original eight farmer groups, then established 38 additional group and individual nurseries.

Table 2. Key NOEL Partners by District.

District – Partner, Location
Aceh Barat - Doa Kamou, Cot Darat (farmer group) - Giat Usaha, Tangkeh (farmer group) - Dua Sepakat, Tangkeh (farmer group) - Makmou Berata, Paya Mageundrang (farmer group) - Darussalamah, Alue Tampak (dayah) - Diniyah Darusalam, Alue Tampak (dayah) - Tunas Baru, Alue Tampak (farmer group) - Ingin Maju-1, Semara (farmer group) - Ingin Maju-2, Semara (farmer group) - ReGrin Project, Meulaboh (international research project) - Mercy Corps, Meulaboh (INGO) - District Forest and Estate Crop Office (government agency)
Aceh Jaya - Bina Bersama (formerly Nilam Wangi), Gunung Mantok (farmer group) - Subur Era Tsunam, Kuta Tuha (farmer group) - Ingin Maju, Gunung Buloh (farmer group) - Kelompok Tani Fajar I, Fajar (farmer group) - Kelompok Tani Fajar II, Fajar (farmer group) - Kelompok Tani Tanoh Manyang, Tanoh Manyang (farmer group) - Kelompok Tani Nabainah Ii, Krueng Tho (farmer group) - Tani Makmur, Krueng Sabee (farmer group) - Dayah Darun Nizam (KOPONTREN), Tanoh Anoe (dayah) - Oxfam, Panga (INGO) - Helping Hand Foundation (HHF), Calang (INGO) - District Forest and Estate Crop Office (government agency)
Pidie - Bina Aneuk Nanggroe, Pante Perak (NGO & farmer group) - Keumang Titeue, Dayah Menara (NGO & dayah) - Keumang Ulim, Naro (NGO & farmer group) - Nurul Fallah Tangse, Blang Jerat (farmer group) - Darul Hidayah Paya Guci, Paya Guci (dayah) - Nurul Fata Geumpang, Bangkeh (farmer group) - Nisbahul Huda Al- Azijiyah, Pucok (farmer group) - Limbah Peut Sagoe (LGPS), Bangkeh and Pucok (farmer group) - Flora and Fauna International, Banda Aceh (international conservation organization) - District Forest and Estate Crop Office (government agency) - District Agriculture Office (government agency)

Program Beneficiaries. Program beneficiaries are individual and groups of farmers motivated and committed to improving their agroforestry systems and livelihoods. Beneficiary selection follows a *first ready, first served* approach. This approach enables the Program to expedite impact and create 'local success stories' for replication (*spontaneous adoption*) by others, an essential conditions as the NOEL Program is limited to one year. To facilitate greater capacity building, some activities are conducted in both the Indonesian and Acehnese languages.

Inception Workshops. District level inception workshops were held the fourth week of May. Dates were set in collaboration with key partners in each district. Each workshop was opened by the District Head (Bupati) or their representative. Overviews of the NOEL Program and district specific activities were given by the Program Leader and District Coordinator, respectively. Key partners also provided presentations on their livelihood, conservation and land rehabilitation activities. Generally the presenters include the district technical agencies, an INGO, and a local NGO or community group. Afternoon sessions focused on working group sessions to identify: i) priority agroforestry topics; ii) marketing problems faced by smallholders; iii) seedling demand (species, quantities, customers, and location); and iv) organizations active in livelihood and land rehabilitation activities. Time was provided for questions and discussion over all topics.

The Provincial Inception Workshop was held June 13-14 in Banda Aceh. The workshop was opened Deputy Head of the Provincial Agriculture Office and a presentation was given by Mr David Fournier, First Secretary Development, Canadian Embassy. Overviews of the Program and each district were provided by the NOEL Team and key partners provided presentations. Working group sessions focused on subjects similar to those of the district inception workshops. Reports from the provincial working groups were more detailed and thorough owing to input from the district level. Key outputs from the working groups are reported below. The provincial workshop was larger than the preceding district workshops and attended by a greater number of organizations, particularly BRR, international organizations active in Aceh, and universities. A summary of inception workshops are provided in Table 3.

Table 3. Summary of Inception Workshops

Location	Date	Participants Individuals/Organizations
Aceh Barat	May 23	43 / 26
Aceh Jaya	May 24	55 / 30
Pidie	May 26	45 / 28
Banda Aceh	June 13-14	85 / 30

Three Important Cross-Cutting Issues:

Women's Involvement. Gender equality is a priority of CIDA, ICRAF/Winrock and the NOEL Program. Women have an important role in rural Acehnese society. During the Program socialization process community leaders, government officers and partner organizations (of both genders) agreed that steps should be taken to engage as many women as possible in activities supported by the Program. The Program proposal states a goal to have women constitute one-third of the people involved in the project. This admirable goal faces the reality that most farmer groups in Aceh are dominated by or exclusively composed of men. In Aceh Barat, the NOEL quickly established a prominent role for women in Program activities by developing partnerships with dynamic local woman leaders. Sharing this successful approach with the NOEL staff in the other districts helped increase the number of women currently involved in NOEL. Women do participate in activities with men and, when appropriate, women-only activities are conducted.

Four NOEL partners are woman farmer groups (some of which allow male members). To date process documentation indicates that 27% of training participants have been women (see Table 5). NOEL staff feel that women's participation is under reported, because some women attend Program activities but are reluctant to sign attendance sheet, which they feel commits them to attend the entire 2-3 day activity. Also, women show higher participation in informal 1-day follow-up activities during which attendance is not always recorded. Efforts will be taken to fully document women's involvement.

Environmental Sustainability. Environmental conservation and sustainability are other priority issues for CIDA, ICRAF/Winrock and NOEL. As mentioned above, ICRAF is a world leader in sustainable natural resources management approaches, which value both rural livelihoods and environmental conservation. These approaches are fully integrated in to NOEL activities. NOEL promotes the establishment of multi-species agroforestry systems, not monocultures. Agroforestry systems diversify farmers' livelihood streams, reduce risk, and improve agrobiodiverstiy by incorporating indigenous species, local varieties (particularly of durian, rambuttan, and mango) and commercial varieties on the same land. These systems are less dependent on chemical inputs to maintain yields and thus avoid being a source of chemical contamination. Agroforestry systems also improve soil-water conservation because woody perennials are maintained on the land and cultivation in minimized.

Aceh contains unique biodiversity of global significance, which is threatened by widespread illegal logging. NOEL has taken specific steps to protect Aceh's biodiversity. All NOEL Program sites are located where fallow agricultural lands, tree gardens and government lands are in need of rehabilitation; additionally rapid appraisals indicate that market demand for quality tree seedling is strong at many Program sites. All partners have agreed that the seedlings produced in NOEL sponsored nurseries will not be used to convert natural forests to other landuse systems; seedlings will be used to rehabilitate lands or sold in local tree seedling markets. These agreements assure that the Program will not inadvertently support forest conversion or resource degradation. Additionally, NOEL activities specifically exclude the promotion or support of oil palm establishment, a main catalyst of forest conversion. NOEL staff actively encourage partners to establish a diversity of species opposed to monocultures of oil palm.

Conflict Sensitivity. The tsunami had a catastrophic effect on communities already traumatized by decades of civil conflict. In many communities the conflict greatly disrupted the social fabric; with neighbors, friends and even families alienated from each other. All NOEL community partners have been affected by both the tsunami and conflict to varying degrees. By focusing on the natural resource rehabilitation and people's self-interest to improve their land management systems, the NOEL Program is supporting community desires to recover from both the tsunami and conflict. The NOEL approach involves community meetings and discussions to identify an interest in land rehabilitation and to define priorities and work plans to achieve related goals. Once participants commit to the NOEL, this consultative process is reiterative. Partner groups meet NOEL staff on a bi-weekly basis to plan and implement activities. Many groups meet between NOEL visits to maintain progress. This type of community cooperation was lost during the conflict. NOEL-supported *collective action* in setting priorities, capacity building, technology transfer, and, tree nursery establishment are rejuvenating community spirit and regaining trust. Some partners have discussed the establishment of collective tree nursery enterprises to serve market demand for tree seedlings. While resolution of the scars left by the conflict is beyond the focus of the Program, NOEL activities are supporting these processes in the communities in which it is involved. NOEL partner groups include *KPA (Komite Peralihan Aceh)* and ex-*GAM (Gerakan Aceh Merdeka)* members. These individuals are committed, cooperative and hard workers. They demonstrate initiative and have assumed leadership roles in some to the groups. They provide positive contribution to NOEL activities.

III. PROGRAM PROGRESS

Species Prioritization and Seedling Production. During Program socialization process, NOEL staff assisted partners conduct prioritization activities to identify the tree species they that would meet household and market needs. NOEL staff stress the importance of species diversification to maintain tree farming systems that minimize economic and biological risk. Partners' species priorities reflect the importance of commodity crops for income generation and fruit crops for home consumption and income generation. The relative seedling production targets of each partner are dynamic – change in response to evolving priorities, market intelligence, and germplasm availability. Table 4 provides an illustrative prioritization of tree species as indicated by seedling demand expressed by partners during the socialization process aggregated by district. Seedling demand is highest for rubber and durian, followed by rambuttan, cacao, and mango. Rubber is the highest priority species in Aceh Barat and Aceh Jaya, accounting for 34% of seedling demand there and 21% overall even thorough it is not widely cultivated in Pidie.

At 6 to 8 months of age seedlings will be grafted, a vegetative propagation practice to attach a small shoot (scion) from a mature high-quality plant of the same or similar species to the seedling. Generally the grafting process reduces the juvenile phase of the plant by half (ex. from 12 to 6 years for durian and from 8 to 4 years for rambuttan and mango) and assures that the fruit produced will be the same high-quality as from the mother plant which provided the scion. In the case of rubber, the quality and quantity of latex production will be the same as the mother tree. Rubber scion material will be sourced from rubber research institutions. Fruit species scion material will be sourced from research institutions, commercial growers, and high-quality local varieties known to NOEL staff and partners.

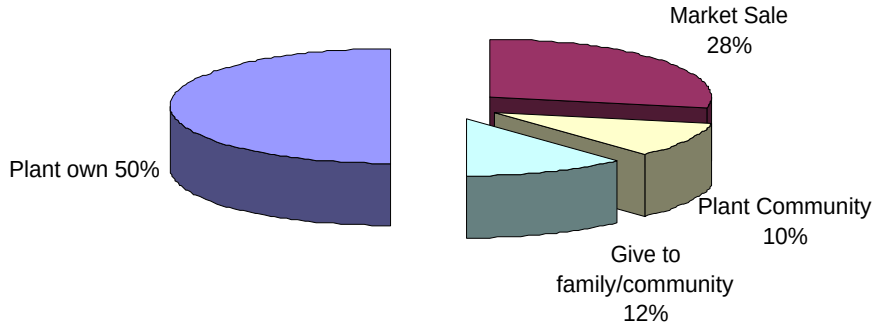
Table 4. Illustrative tree species prioritization as indicated by seedling demand at the district and project levels.

	Species	Aceh Barat	Aceh Jaya	Pidie	TOTAL	% Total
Commodity Species						
1	Rubber (*Hevea brasiliensis*)	35,000	79,200	0	**114,200**	***21***
2	Cacao (*Theobroma cacao*)	12,500	52,800	16,500	**81,800**	***15***
Fruit Species						
3	Durian (*Durio zibethinus*)	14,000	40,800	54,750	**109,550**	***21***
4	Rambuttan (*Nephelium lappaceum*)	9000	24,000	57,500	**90,500**	***17***
5	Mango (*Mangifera indica*)	4,200	28,800	41,000	**74,000**	***14***
6	Duku (*Lansium domesticum*)	1,200	0	18,500	**19,700**	***4***
7	Citrus (*Citrus* spp)	5,400	4,800	5,000	**15,200**	***3***
8	Sawo (*Manikara kauki*)	8,100	9,600	500	**18,200**	***3***
9	Mangosteen (*Garcinia mangostana*)	0	0	6,000	**6,000**	***1***
10	Other species*	2,500	0	2,500	**5,000**	***1***
TOTAL		*91,900*	*240,000*	*202,250*	***534,150***	***100***

***** Other species includes: melinjo (*Gnetum gnemon*), nangka (*Artocarpus heterophyllus*), mindi (*Melia azedarach*), nimba (*Azadirachta indica*), salak (*Salacca zalacca*), coffee (*Coffea robusta*), kwini (*Mangifera odorata*), and pinang (*Areca catechu*).

Intended use of Seedlings. Aggregated across the province, NOEL partners indicate that approximately half the seedlings will be used to rehabilitate their private land, one-third is intended for market sales, ten percent will be used to rehabilitate community land, and the remainder will be distributed to family or community members (Figure 1).

Figure 1. Partners' intended use of seedlings produced in NOEL sponsored nurseries.



Nursery Training and Establishment. Tree nursery establishment and capacity building to operate these enterprises are the key activities of the NOEL Program. Nursery establishment and capacity building is initiated through an introductory training course of 2-3 days. The District Coordinators (DC), Nursery Specialists (NS), and Farmer Nursery Specialists (FS) plan and implement the training course, which are scheduled to fit partners' availability. The training curriculum is based on the experience of ICRAF, Winrock and NS, who operate successful commercial oriented tree nurseries in Java and Aceh. Key topics covered in the introductory training courses include:

- Purpose and objective of tree nursery
- Location selection and nursery construction
- Media and containers
- Seed quality and sowing
- Vegetative propagation (introduction)
- Seedling care and protection
- Nursery management
- Field planting (introduction)

The training approach is strongly participatory, with expectations that all participants (both partners and staff) will actively contribute their experience and clarify their needs. This approach makes it possible to adapt the training to the participants' specific capacity and needs. While some groups may focus on the basics of nursery establishment other groups move quickly to advanced topics, grafting for example. To date 31 formal nursery training activities have been conducted across the three districts, plus four informal training activities with 'spontaneous' (susulan) groups. As a result of these training activities 39 nurseries have been or are in the process of being established. Table 5 proves details regarding nursery training and establishment activities. Over 850 partners have been trained through the training events and nursery establishment process; 27% of the participants were women (varying from 24% to 33% by district). (In the ***Strategic Results Framework Data Sheet*** submitted to CIDA on October 25 it was report 700 partners had been trained. This semi-annual report represents the most recent data.) Current nursery stocking indicates approximately 480,000 seedlings have been produced and another 300,000 are planned. This total exceeds the seedling demand originally projected by partners duration of the Program socialization process (see Table 4). Additional introductory nursery training courses are planned and intensive vegetative propagation courses will be conducted when seedlings are at the appropriate stage of development.

NOEL's nursery training and establishment process has had positive impact on local nursery resources. Previous to the tsunami there were few local tree nurseries and few farmers had been

exposed to vegetative propagation technology. Post-tsunami, but prior to the beginning of the NOEL Program, some relief organizations and INGOs established tree nurseries. Most of these nurseries were '*transit nurseries*' – locations where seedlings purchased from Medan are stored before planting activities are conducted. Generally, workers in those nurseries were not trained in seeedling management. Some relief organizations and INGOs also supported the establishment of 'production nurseries' by providing a one-time training and basic nursery supplies. Farmer groups where expected to establish and operate nursery independently. Sponsor organizations re-visited nursery to monitor progress, but little if any further technical assistance was provided. As a result, the quality and productivity of these transit and production nurseries were limited. Seedling mortality and nursery failure were high. Examples of these nurseries and NOEL nurseries are provided in Figures 2 through 7. The success of the NOEL nurseries is a result of its participatory, reiterative *farmer nursery field school approach.*

Figure 2. Pre-NOEL tree nursery in Aceh Jaya

Figure 3. Pre-NOEL tree nursery in Pidie District.