

5 Aiding the recovery of agriculture and farmer livelihoods

Key points

Communication and coordination

- In emergency planning protocols, clearly allocate responsibilities and activities in agricultural areas among national, provincial and local government research and extension agencies, non-government organisations (NGOs) and farmer groups.
- Develop links and coordination between governments and NGOs.
- Coordinate urban recovery and agricultural rehabilitation to minimise impacts on agricultural land.

Capacity building

- Build the capacity of local agricultural extension staff, NGO workers and farmer groups:
 - by involving farmers in field trials and monitoring activities
 - by providing training in what to expect and how to overcome production problems due to seawater inundation and sediment.
- Rebuild technical and quality assurance capacity (especially laboratory facilities).

Social recovery

- Re-establish farmer and community groups, including groups for women.
 - Encourage productive activity.
 - Facilitate the establishment of food gardens in refugee camps, especially in rural areas where the majority of residents will be farmers.
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Communication and coordination

The magnitude of the humanitarian effort required after the 2004 tsunami inevitably led to duplications and gaps in rehabilitation activities in agricultural areas. Good communication is needed between all groups providing agricultural aid so that they can share successes and problems, and learn from each others' experiences.

In the state of Tamil Nadu, India, a coordinating body was established for the post-tsunami recovery activities of some 500 non-government organisations (NGOs). The NGO Coordination and Resource Centre (NCRC) assessed damage to agricultural land and established a package of rehabilitation activities (Mohan 2008). The roles of the NCRC were to:

- facilitate communication between planners and affected communities
- inform NGOs about the importance of agriculture and the need for assistance
- link local NGOs with donors
- use a participatory process to allocate NGOs to affected communities
- develop a common vision for the post-tsunami recovery in Tamil Nadu.

The NCRC response was divided into three categories:

- immediate—desalinisation
- short term—restoration of soil fertility
- long term—ensuring the viability of agriculture.

Although a similar body was established in Aceh by the Indonesian Government, many NGOs involved in agricultural recovery operated in isolation and for short-term projects only, and communication and collaboration among organisations was limited. NGOs were required to document their projects and progress on a web-based registry of the Bureau of Rehabilitation and Reconstruction. This provided NGOs with an opportunity to make contact with other organisations working in a similar sector; however, progress reports provided limited information on post-tsunami soil and crop conditions, and re-establishment of farming.

Forums to share post-tsunami or post-disaster experiences can improve agricultural restoration processes. This was demonstrated by a regional

forum convened by the Food and Agriculture Organization of the United Nations in 2006 (FAO 2006) and a workshop in Indonesia in 2008 (Agus and Tinning 2008).

The experience in Aceh showed a need for a clear allocation of responsibilities and activities in agricultural areas among national, provincial and local government agricultural research and extension agencies, NGOs and farmer groups. These responsibilities and activities are best defined in emergency planning protocols that can be implemented immediately after a tsunami. This is particularly important in regions such as Aceh where most of the coastal rural population relies on agriculture for livelihoods and employment.

Non-government organisations

After the tsunami hit, many NGO aid groups worked in Aceh's rural areas. Most of them worked independently and were not familiar with local agricultural practices, crops and seasons, and this led to some inappropriate plantings and failed crops. When farmers encountered problems and asked government advisers for help, the advisers were not familiar with the NGO programs. It is vital that NGOs work with local agricultural services to ensure the long-term sustainability of their agricultural work once the aid program finishes. Aid groups need to understand—by liaising with agricultural departments or local government—how agriculture is managed at a district or local level. They should then build links with local farmer groups, advisers and NGOs, to ensure good communication. Local knowledge of field staff and farmers is crucial to the recovery process.

The Aceh experience has shown that agricultural aid workers and government agricultural extension workers need to work together to:

- build relationships
- exchange knowledge
- plan work programs to ensure that all information provided to farmers is consistent
- share feedback from farmers about their needs.

Governments should treat NGOs as an opportunity, not as competition, and make it easier for them to assist farmers through collaboration with the government extension network.

The projects undertaken by the Australian Centre for International Agricultural Research (ACIAR) have shown that it takes some time to restore soil health in tsunami-affected areas. Consequently, it may be useful for agricultural aid projects to commit to 2–3-year projects, rather than projects that only address the emergency period.

Urban recovery impacts

Coordination between urban planning and agricultural rehabilitation is required to minimise impacts on agricultural land. For instance, drainage from new housing estates near Banda Aceh resulted in nearby agricultural land becoming a flood basin that could no longer be reliably used for crop production.

Capacity building

Building the capacity of extension staff, NGO workers and farmer groups was a crucial component of the ACIAR projects in Aceh. Technical knowledge gained by Aceh extension staff enabled them to diagnose constraints to the re-establishment of crop production and associated income generation after the tsunami, and improved the advice and information available to farmers.

One of the biggest challenges in restoring agriculture in Aceh was encouraging farmers to be independent, rather than dependent on external aid. In Aceh, only one-third of farmers could afford to plant rice three times per year after the tsunami. The rest planted only once per year because of poor infrastructure and lack of capital, and many consumed the profit from aid-assisted crops that was intended to support them for the next planting season. Farm production suffered as a result of lack of capital, which farmers used for restoring other aspects of their farms after the tsunami.

Involving farmers in field trials and monitoring activities was vital to the success of the ACIAR projects. The projects' emphasis on communication and information sharing through meetings, interactive workshops, newsletters and publications enabled rapid exchange of information on practices that could be used to recover from the tsunami and improve productivity. Productive crops motivated others to return to farming. Farmer-to-farmer learning visits enabled farmers to learn techniques of crop production in other areas and apply new ideas to their own farming systems. Aid-assisted farmer training in production management, compost making, crop rotations, soil management and stubble management could be useful in these cases.

Training

Immediately after the tsunami in Aceh, there was a need for training of farmers and agricultural officers in restoring inundated farmland. Major difficulties in delivering this training included lack of local agricultural staff because of the high death toll, and lack of information about post-tsunami agricultural management. Although aid groups were generous with seed, fertiliser and equipment after the tsunami, there was often little follow-up support or advice. This is not surprising, given the lack of knowledge about post-tsunami agronomic problems. Aid groups, local agricultural advisers and farmers need training in what to expect and how to overcome production problems caused by seawater inundation and sediment. If training activities are coordinated and delivered to a wide cross-section of aid and extension staff, a consistent message is distributed, ensuring that farmers and field staff receive the same information and the appropriate support.

The training topics could include:

- soil salinity, including operation of electrical conductivity (EC) meters and electromagnetic field measurement (EM38) equipment
- soil acidity, including operation of pH meters and pH kits
- soil sodicity
- soil texture, including use of the 'ribbon' test (see Section 3)
- soil structure, including visual assessment

- soil organisms, including visual assessment
- the importance of organic matter
- sampling protocols for soils to be used in laboratory analysis
- monitoring and recording of test results
- typical crop responses to salinity, nutrient deficiencies and waterlogging
- assessment of sites and crops for salinity and nutrient impacts, especially visual indicators
- remediation methods to improve crop production.

Demonstration trials to compare varieties and nutrient amendments could form part of the training.

Soil testing facilities

The 2004 tsunami destroyed the Assessment Institute for Agricultural Technology (BPTP) Aceh's soil laboratory. Restoring the laboratory was a high priority to enable rapid testing of tsunami soils for salinity and nutrient levels. Tests required included pH, electrical conductivity, chloride, and the major nutrients nitrogen, phosphorus and potassium. Basic equipment needed for BPTP's soil laboratory in the Banda Aceh laboratory included:

- end-over-end shaker for preparing soil extracts
- glassware
- chemicals for soil and plant analysis
- distilled water for preparing samples
- computer and printer
- power supply regulator.

Rebuilding technical and quality assurance capacity was crucial to ensure that testing and results were reliable. Partnering with an established quality-assured laboratory to analyse replicate samples would enable data checking and build confidence in the laboratory.

Participation

The Aceh projects showed that training sessions needed to include ample time for discussion, interaction and sharing of stories. Practical demonstrations of new practices or technologies were also needed, coupled with hands-on experience of techniques until participants were confident.

Social recovery

Rural communities faced significant challenges after the tsunami. Many villagers were killed, which fractured leadership and social structures, and resulted in loss of coordination and motivation among remaining villagers. People were severely traumatised by the loss of family members, villages and their way of life. There were fewer people to work on the land; initially, agricultural workers preferred to work in higher paid reconstruction work rather than agriculture. Many farmers were housed in emergency shelters and temporary housing, often far from their farms, so it was difficult for them to get to their land. As well, loss of agricultural staff made it difficult for farming to resume. As many as 30% of the staff of Dinas Pertanian (the agricultural district administration) in Aceh's west coast centres are reported to have died during the tsunami.

The emergency aid provided after the tsunami created aid dependency, so that survivors expected payment to return to farming. NGOs reported that the biggest hurdle was the lack of motivation of some farmers to return to farming, exacerbated by their personal trauma and the availability of food packages. A solution to this problem would be for the aid organisations to work with the pre-existing agricultural research and extension system, and with farmers who have already taken the initiative to restart cropping.

As a result of the social disruption, many crops were not sown at optimum times. This led to additional problems with pests, availability of irrigation water and waterlogging. In some areas, farmers were ready to go back to farming but were prevented by a thick layer of tsunami sediment on their fields. Overall, farm production suffered as a result of lack of capital,

which was spent on farm equipment while no reliable seed supply was in place to allow planting.

The participation of farmers, including women, in the recovery process is very important. Capacity building and social recovery were particularly important in Aceh because of the impact of a 30-year civil conflict in the province, which led to large loss of life, in addition to the lives lost during the earthquake and tsunami.

Working with established farmer and community groups

In Aceh, rice farmers work in groups. Re-establishing these groups after the tsunami provided personal support, built relationships and networks, and shared the considerable workload involved in preparing land for cropping. Women's farming groups are also important—they offer opportunities for networking, interaction, learning new skills, growing food and making money. Before the tsunami, there were many such groups; afterwards, there were very few because of the collapse of village structures. A dynamic extension officer at Meulaboh trained women's groups in organic farming, including compost making and organic pest control. The women's groups grew fresh crops and made products such as sauces and preserves, which they sold locally to earn an income. One-third of the profit was kept in the group's account, one-third purchased inputs for the next crop, and the remaining third was shared equally between members. Other women asked for similar groups to be formed, as their only activity outside the house was helping their husbands in the fields.

A United Nations Development Fund for Women report on changes to gender attitudes in Aceh (UNIFEM 2009) provided some strategic recommendations from the post-tsunami experience in Aceh for gender-responsive disaster recovery, some of which are particularly relevant to agricultural recovery:

- Develop and strengthen local women's networks and organisations as partners in reconstruction.
- Ensure that disaster-affected women have safe, accessible and culturally positive spaces to meet, and to organise and conduct activities.

- Identify the promotion and realisation of women’s rights—including women’s land rights—as a key platform for long-term recovery.
- Collect and use age-sensitive, sex- and gender-specific data in program evaluation and monitoring.

The need for productive activity

Farmer workshops 2 years after the tsunami indicated that activities such as restoring drainage and irrigation channels, removing debris and replanting crops were important for farmers to regain a sense of control and purpose. Other activities could be sediment and salinity surveys by farmer groups, to assess where to begin planting crops, and the establishment of home garden programs to commence food production at a local level.

Farmers in Aceh stated that being active and focused on their work helped to distract them from trauma, and that it was important to stay optimistic and work together. They also asked for agricultural knowledge and expertise—not just one-off inputs or donations—to help them to continue farming.