Food Security and Sustainable Seed Supply in Timor-Leste: Formal and Informal Seed Systems (Part 1)

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This In Brief is the first in a two-part series on seed systems in Timor-Leste and research carried out for the Seeds of Life program. It describes the context of seed supply in Timor-Leste. The second part will detail recent developments and explore the findings of the research.

Seeds of Life was a program designed to improve food security through the supply of improved germplasm for staple food crops. It involved the collaboration of the Australian and Timor-Leste governments — through the Australian Centre for International Agriculture Research and the Ministry of Agriculture and Fisheries — and NGOs and international research bodies. Phase 1 of Seeds of Life started in 2000 with work on variety selection. This was extended in Phase 2 in 2005 with work on seed production and distribution. Phase 3 operated in all districts of Timor-Leste including the Special Administrative Region of Oequesse and built on the scientific results and technical capacity of the first two phases. The program was concluded in June 2016 with the establishment of 70 commercial seed producers to produce quality seed for domestic needs. Seeds of Life maintained a core focus on increasing yields by selecting and distributing improved varieties of superior genetic quality (see ACIAR 2016).

Formal and informal seed systems

Agriculture is a major component of Timor-Leste’s economy, accounting for more than 30% of non-oil GDP (ADB 2012:237). About 70% of the population live in rural areas and is largely dependent on agriculture (Templeton 2012:12). However, food security is a national issue due to lack of access to seed or reproductive material that is of good quality and from high-yielding varieties. Staple food crops in Timor-Leste include maize, rice, sweet potato, cassava and beans (plus other tubers and vegetables). More than 80% of the seed for these crops comes from the ‘traditional’ or informal system, where farmers produce, store, exchange or sell their surplus seed within and outside their community.

The formal seed system involves government agencies that identify, develop and officially release improved plant varieties, and produce and distribute quality seed. These can be inputs to an integrated seed system in which registered commercial seed producers supply large quantities of quality-assured seed for widespread subsidised or commercial distribution to farmers. Commercial seed production and distribution are increasingly important components of the National Seed System in which informal and formal seed sectors are integrated and complementary.

Formal seed supply systems

Formal seed supply systems are characterised by a clear chain of events, usually starting with a plant breeding program led by researchers. New genetic materials are released and maintained through official channels (Monyo et al. 2004:4). Government agencies ensure high purity and quality, sufficient quantity, and often provide seed certification. However, the formal method of seed multiplication is time consuming and expensive. There may also be untimely deliveries to farmers as government processes may be cumbersome (Guei et al. 2011:92).

According to Monyo et al. (2004:4), two seed-supply system models operate within the formal sector: a state agency model and a private sector model. The state agency model is most common in developing countries but, in many cases, is unable to satisfy the demand of most farmers, especially smallholder and subsistence farmers. The private sector plays a crucial role; breeder seeds are provided by researchers, thence multiplied into foundation seeds and commercial seeds. Seed processing and marketing is done by private companies with specific varieties. Smallholder farmers prefer to have a combination of different varieties to target specific agro-ecological areas and to reduce risk (Jones et al. 2001:2). It is difficult for the formal sector (both public and private) to provide the preferred range of varieties. Formal seed supply systems require large areas to be available for effective seed reproduction.

Government and development partners often support farmer groups to multiply seed production through contract farmers but these cover only small areas, resulting in small
quantities of seed (Guei et al. 2011:92). In developing countries, government, private and commercial companies are able to supply no more than 20% of the required seed supply for most food crops (Bishaw et al. 2008:24).

Informal/community seed supply systems

The informal seed system involves the multiplication of seed by farmers, which is then disseminated directly to, or exchanged with, neighbours, family and friends (Monyo et al. 2004:3). It is important to note that in many developing countries, farmers are already using exchange systems for seed dissemination (Sonia 2003:2). In South Africa, for example, over 90% of farmers continue to rely on the informal farmer-to-farmer exchange channel to obtain high-yielding varieties of seed (Monyo et al. 2004:3). In Ethiopia, the figure is 80% (Bishaw et al. 2008:24). While seed spreads rapidly, this informal system also has weaknesses. For example, farmers often have poor knowledge of maintaining seed purity.

Integrating formal and informal seed supply systems

As mentioned, both informal and formal seed supply systems have strengths and weaknesses, and are complementary. Therefore, for food security, it is important to develop a strategy to integrate both systems. However, a theoretical divide exists between the proponents of formal and informal seed systems. Community groups and other farmer associations in Timor-Leste argue that purely formal seed systems are a threat to crop system resilience and agro-biodiversity, while government and commercial seed companies believe that to increase crop productivity, it is critical to use high-yielding varieties (Bishaw et al. 2008:50).

Utilising both systems would allow the government to support a sustainable seed production system and, at the same time, promote the use of high-yielding varieties in the farming community. To be sustainable, however, it is necessary to improve and strengthen community partnerships. The use of local communities as a vehicle for seed multiplication and dissemination is an ideal strategy for Timor-Leste as well as other developing countries: improved seed varieties would be developed and provided by the formal sector, while multiplication and dissemination would be undertaken by the informal sector. The government would be responsible for ensuring seed development and release as well as quality control, while community groups would take care of and ensure timely production and distribution of these improved varieties within their community.

In this context, Part 2 in this series will describe the development of the National Seed System in Timor-Leste through the National Seed Policy and the National Seed Council, and what has been done by both the government and its development program — namely, the Seeds of Life program.

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Author notes

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