

Role of Improved Seed on Agricultural Transformation in Cambodia

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BACKGROUND

Due to internal conflicts and civil war, the green revolution largely passed by Cambodia without having a significant effect on rice production. With an estimated population of 14.7 million, 80 percent of which are rural and most dependent on agriculture as their main source of income, rice productivity is of critical importance in a country where more than 30 percent of the population still lives below the national poverty line. The lift of the economic embargo on Cambodia in 1993 opened the country up to greater integration with the sub-regional, regional and global cooperation networks and has led to significant agricultural and economic progress. In addition, peace allowed for an expansion of cultivation area from 1.9 million hectares in 1990 to 3 million hectares today. In the last 20 years due to investments in research and international cooperation, rice yields in Cambodia have increased dramatically from a low of 1.35t/ha in 1990 to 3.1t/ha in 2012. Nevertheless, rice productivity still lags behind many neighboring countries such as Lao PDR, Vietnam, and Indonesia. Greater use of improved seed has the potential to further boost productivity but it is broadly accepted that over 95 percent of rice planting seed is obtained from informal sources, mostly by saving on the farm, or by exchange within the community. The following examines the state of the seed sector in Cambodia and looks at potential ways of improving seed policy in the country.

POLICY LANDSCAPE

The Cambodian Seed Law was adopted by the National Assembly in April 2008. Within the Seed Law, there are 9 chapters and 84 articles, of which approximately half is devoted to plant variety protection. Although the seed law has been adopted for more than five years its implementation has not been fully effective. The National Seed Policy, the implementation framework of the Seed Law, is still in draft form and there is no indication when this policy will be endorsed by the government.

According to the Seed Law, all seeds that are permitted to be marketed in the country must meet a prescribed seed standard. However, no official seed quality standards have been published and there is both little governance of the seed sold in Cambodia and no basis for legal action against suppliers of poor quality seed. The most advanced seed quality standards in the country have been developed by the Cambodian Agricultural Research and Development Institute (CARDI) though some private companies have self-imposed quality standards as well to manage and control their seed production programs.

Granting of property rights to plant breeders who develop new varieties is the responsibility of two ministries. The Ministry of Agriculture, Forestry and Fisheries (MAFF) is responsible for technical aspects of plant variety protection including variety examination for distinctness, uniformity and stability which are coherent with the Union for the Protection of New Varieties of Plants (UPOV) requirements. In order to register intellectual property or to change ownership of property rights, an applicant must approach the Ministry of Industry, Mines and Energy for certification. Certification can be given to plant breeders of any nationality who have a permanent address in Cambodia or to breeders who reside in a country that is a signatory country of UPOV or that has a Memorandum of Understanding with Cambodia.

The law governing breeders' intellectual property is largely in conformity with the rules of UPOV but both the law and the draft seed policy have not, however, set out detailed technical requirements or a roadmap to reduce costs of variety registration through regional collaboration, which is strongly advocated by UPOV.

KEY PLAYERS

The Varietal Recommendation Committee (VRC) is the formal body which is responsible for releasing a variety for commercial production. Generally, the VRC is chosen by the national agricultural research institute CARDI and chaired by its head. Although not governed by a written regulation, committee members generally consist of one individual from the CARDI Breeding Program, one individual from the General Directorate of Agriculture (GDA), one person from the extension service and one representative from a farmers' association or relevant NGO. The VRC approves only those lines which are superior to existing varieties in yield, grain quality or stress tolerance (biotic or abiotic) as well as the line's distinctiveness, uniformity, and stability.

The CARDI is the prime agricultural research institute in the country tasked with the development and transfer of agricultural technologies to farmers and is the main producer and supplier of breeder and foundation seeds. To date, 38 varieties of inbred rice have been approved for release by the VRC and most of these varieties are now under commercial production around the country. Nineteen varieties were released for rainfed lowland conditions, three for deepwater rice environments where water depth ranges from 1 meter to 2 meter, and two for rainfed upland conditions. In 2010, in response to the rice export goals set by the government, the Ministry of Agriculture, Forestry and Fisheries declared the use of 10 varieties, out of these 38 varieties, a priority for cultivation by rice farmers in the country.

More than 80 percent of Cambodian rice production is grown in rainfed conditions. Developing hybrid rice for this environment has been widely discussed, but due to finance constraints, CARDI has not engaged in this type of rice breeding program. Nevertheless, hybrid rice varieties developed in other countries, mostly in China, have been evaluated and marketed in the country.

SEED PRODUCTION

In 2012, CARDI produced and supplied about 6 tons of foundation seed, 12 tons of registered seed and 28 tons of graded (commercial) seed to seed production companies. Graded or commercial seed (GS) is produced by using registered seed and is generally produced by most seed producers before further distribution to farmers for commercial contract seed production. The General Directorate of Agriculture also maintains research farms and was responsible for the production of 1400 tons of graded seed.

The major seed distributors in Cambodia are those under the government operated Agriculture Quality Improvement Project (AQIP) as well as smaller private producers such as Damnak Teuk (DNT), Aphivat Bandanh Kasekar (ABK), and various community seed projects. These seed distributors obtain FS and/or RS or GS from CARDI, multiply them for one or two years before distribute to farmers either through contract farming or wholesale. Currently, their operation is at a minimal base due to limitation in operational capital, lack of reliable credit system, and policy support. The largest, AQIP Seed Company was established in 2007 by merging four provincial seed centers (Takeo, Kandal, Prey Veng and Svay Rieng) that had been operated by an AusAID funded Agriculture Quality Improvement Project (AQIP). The company is now a public-private seed production company with three main shareholders includes MAFF, AQIP Association, and the Seed Grower Association. The company uses contract farming in the areas it works to produce seed which it buys back through their provincial/district branches following harvest. In 2012, the company supplied 2300 tons of rice seeds to farmers and some development agencies or projects.

KEY CHALLENGES AND POLICY SOLUTIONS

At present there is political urgency to increase the quantity and the quality of rice available for domestic consumption and export yet, the Seed Law has not been fully implemented and the country's seed policy, drafted with the technical and financial support from its developmental partners seed policy has not been formally adopted. This policy document calls for a National Seed Council to lead a division under the Cambodian Ministry of Agriculture responsible for overseeing the seed sector; strengthening research institutions responsible for variety development and the production of breeder, foundation and registered seeds; and encouraging private sector investment in the distribution of seed.

CARDI is recognized as the main national research organization but has received declining funding from the government compromising its ability to operate effectively. In the last 13 years (2000 to 2013), only four varieties have been presented for release and there are few new breeding lines with the potential for future release. Additionally, a well-equipped seed laboratory at the national level, and lacking of well trained personnel in the sector have further worsened the situation. Due to a poor financial support from the government, operation of the institute in developing new crop varieties responding to the fast growing markets is heavily constrained.

There is also a need to develop a list/database for all important crop varieties grown in the country. This list, which will be reviewed regularly, should include some key information such as adaptability of the variety to specific environment, growing characteristics and the owner of the variety. Foreign seed suppliers can bring in the country new variety or seed from overseas for testing but needs to get a prior approval. Testing of hybrid crop such as maize is also encouraged.

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