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The Rice Seed Industry of Thailand

Makasiri Chaowagul

INTRODUCTION

The implementation of the 2011 Rice Pledging Program, whereby the government promises to purchase all rice at a price that is 40-50 percent greater than export prices, has impacted the rice sector widely affecting both production and the export of rice. Prior to the initiation of the rice pledging scheme, the estimated demanded of rice seed in 2009 was approximately 1 million metric tons. Approximately 55.69 percent was used for the wet season and the remaining 44.31 percent was planted during the dry season (Table 2). Most farmers who transplant rice during the wet season replace seeds every three years and those who broadcast replace seeds every two years. During the dry season farmers generally replace seed every year. The recommended seeding rate specified by the Department of Rice (DOR) is 125 kg/ha while many studies have shown that the actual on-farm seeding rate is between 156.25-218.75 kg/ha or an average of 187.5 kg/ha for broadcasting. Many factors could explain the high rate of seed usage such as the uncertainty of weather conditions, risk of flood and drought, insect damage, or the quality of seeds. Given that the pledging program has expanded the area under rice production, the estimated quantity demanded for rice seed is greater than 1 million MT per year.

Table 2—Seed used by planting system and season, 2012

	Wet season			Dry Season		
	Area (Million Ha)	Quantity of seed used (Kg/Ha)	Estimated quantity demanded* (Tons)	Area (Million Ha)	Quantity of seed used (Kg/Ha)	Estimated quantity demanded* (Tons)
Surveyed Rates[1]						
Transplanted rice	4.6	62.5	95,615.4	0.1	62.5	4,660.7
Sowed rice	5.7	187.5	529,730.6	2.3	187.5	436,017.9
Sub-total	10.2		625,346.0	2.4		440,678.6
Total	12.6					1,066,024.6
Recommended Rates[2]						
Transplanted rice	4.6	43.8	66,930.8	0.1	43.8	3,262.5
Sowed rice	5.7	125.0	353,153.7	2.3	125.0	290,678.6
Sub-total	10.2		420,084.5	2.4		293,941.1
Total	12.6					714,025.6

Source: [1]Chaowagul, 2013; [2]Director of the Rice Department, A Presentation entitled "Rethink the future of rice Thailand", 2013.

TYPES AND AMOUNT OF RICE SEED PRODUCED BY DOR

The Department of Rice was established in 1953 and included 10 experimental stations that were managed by the newly formed Division of Seed Improvement. Field stations have since expanded to 27 Rice Research Centers and 23 experimental stations that are now called Crop Extension Centers covering all regions of the country. The main roles of the Rice Research Center are: research and development, genetic conservation, inspection, certification, and the production of the breeder and foundation seeds. As of 2012, these stations were responsible for the release of 110 registered varieties. Breeder seed is produced in the lab and experimental fields of the 27

Rice Research Centers. This is the first and most basic level of seed generated by DOR which is of the highest purity and genetic integrity. This breeder seed is then grown by contracted farmers and reproduced as foundation seed for broader distribution. These farms operate with the direct assistance of the 27 Rice Research Centers to ensure seed quality. The total quantity of foundation seed produced in 2012 was approximately 3,000 tons. Foundation seed is then transferred to the 23 Crop Extension Centers to produce extension seed. Likewise, the extension seed is produced by farmers or farmer groups selected by each Rice Seed Center and is then bought if the seed passes the criteria established by the 2009 Rice Seed Standard. Certified seed is the last type of seed produced by the public system and is grown with the assistance and monitoring of the Rice Seed Centers and, as such, receives formal certification.

Most certified seed produced by Rice Seed Centers is sold to farmers and private enterprises, especially small local businesses, though some seeds are kept for supporting DOR projects such as the Community Rice Centers project. Generally, the quantity of certified seed produced is not sufficient to meet demand and those who purchase them are left to multiply and sell them without public oversight meaning that the reproduced seeds are not certified and of questionable quality.

RICE SEED PRODUCTION

Farmer usage of saved seeds is still quite common with the total quantity of paddy kept for seeds estimated at 45.5 percent of the total used in 2012. The remaining four groups of commercials producers in rice seed are summarized below (Table 3):

1. **Department of Rice (DOR):** The 23 Rice Seed centers of DOR produce a total of 95,000 tons of extension and certified seeds per year, which is less than 10 percent of the total demand. The varieties are all registered and quality of these seeds is formally certified at both the field level and following postharvest processing. In the future, DOR would like to reduce the amount of seed it distributes and instead rely on Community Rice Centers for production.
2. **Community Rice Centers:** The Community Rice Centers program began in 2007 and were formed through the cooperation of DOR, the Department of Agricultural Extension, and the Ministry of Agriculture and Cooperatives. These centers originated from a select group of farmers with approximately 240-320 ha each that produce extension and certified seeds for the 23 national Rice Seed Centers. The government has since scaled up the project and provides technical expertise and as well as 3 MT of rice seeds in the first year and 2 MT per center in the second, and third year to initiate small community rice seed centers. As of 2012, there were 2160 Community Rice Centers with an estimated total potential production capacity of 100,000-120,000 MT of seeds. The government would like to increase this production to 200,000 MT by 2016.
3. **Private Sector:** It was estimated that the total quantity of seed produced by the private sector in 2012 was approximately 300,000 MT. Approximately two thirds is produced by small local enterprises which can be single large farmers or a collection of small farmers that are contracted by an enterprise and whose production is aggregated. These small enterprises source seeds either from the Rice Seed Center or, what is more likely, through provision by the contractor given the limited quantity of seeds produced by the Rice Seed Center. Quality is inspected by the contractor usually one week before harvesting and remains an informal process with little uniformity between producers potentially calling into question the quality. The remaining third of private sector production comes from large enterprises. The major large enterprises in Thailand producing seeds include Charoen Pokaphan (CP) Seed, Monsanto, Al Martha, Byer, Syngenta, and Thai Beverage Company, the producer of Chang beer who recently entered into the rice seed market in 2011.
4. **Agricultural Cooperatives:** Agricultural Cooperatives make up a small portion of the total seed production and exist primarily for their members. Their production only amounts to approx. 30,000 MT per year and their quality suffers from a lack of high quality DOR extension seed which is generally reserved for Community Rice Centers.

Table 3—Estimation of rice seed produced and marketed in the year 2012

Organization	Production (MT)[1]	Rice Seed Type[2]	Quality Certification[2]
1. Department of Rice (DOR)	95,000	Registered seeds	Seed formally certified by DOR
2. Community rice centers	120,000	Registered seeds	informal certification
3. Private sector	300,000*	Registered seeds and nonregistered seeds	informal certification
4. Agricultural Cooperatives	30,000	Registered seeds	informal certification
Saved Seeds	455,000	Noncertified seeds	No formal certification
Total	1,000,000	10.0% certified seeds (produced by DOR) 45.0% informal certified seeds (produced by private sector, 45.0% non-certified seeds)	

Source: [1]Department of Rice, 2012; [2]Makasiri Chaowagul, 2011; [3]Manit Loercha, 2010
Notes: *200,000 (66.7%) produced by local small enterprises; *100,000 (33.3%) produced by large enterprises

RICE SEED STANDARDS, CERTIFICATION AND PRICING

Only rice seed produced by the 23 Rice Seed Centers is formally certified by personnel of DOR (Table 4). Rice seeds produced by seed associations or private business, including multinationals, are not certified by the state and therefore must develop their own means of quality control. These standards must be affixed to the package label should they be tested by inspection agents in the event of random testing or complaints by farmers.

Table 4: Rice Seed Standards

Type	% Purity by weight	Max. number of other varieties in 500 grams	Max. number of Red Kernel in 500 grams	Minimum % of Sprout	Maximum % of Moisture
Breeder	100	0	0	100	14
Foundation	98	5	0	80	14
Extension	98	15	5	80	14
Commercial or Certified seed	98	20	10	80	14

Source: Department of Rice, 2009

The selling prices of rice seeds depends on many factors including quality of seeds, degree of competition among enterprises and the reference price level. Because most rice seed sold in the market is based on the varieties developed by DOR, the prices of DOR certified seeds sold by the Rice Seed Centers are the reference price. Given that the Rice Seed Center seeds are certified and of high quality, they represent the upper bound for local seed retailers who produce their own seed. Large enterprises and multi-nationals have more independence in their pricing because their varieties are proprietary and their quality standards are higher than those of DOR. For example, CP Company's variety CP 111 sold for US$2,000 per MT during the 2013 wet season, approximately 160 percent higher than DOR seed prices and 200 percent higher than seeds prices of local enterprises.

IMPROVING THE PERFORMANCE OF THE RICE SEED INDUSTRY

The inability to certify seeds outside of the formal government research system remains an issue and limits the amount of certified quality rice seeds available in the market in Thailand. Currently the rice seed production of the Community Rice Centers demands most of the attention of the DOR but the production out of this program still lags far behind the production of other private sector actors. The government has begun the process of trying to inspect and certify rice seed fields of local enterprises since 2012 under the "Rice seed field certification of the private sector" project but insufficient human resources limit the projects effectiveness and reach. In addition, as written in the law, the information regarding the qualification rice seed must be provided on every package and are subject to inspection. Again, given the capacity and resource shortages, inspections do not regularly occur, allowing for poor quality seeds to be sold in the market.

The Thai government is attempting to certify both the "process" of rice seed production (i.e. farm and field inspections) and the "product" (seed package verification) but with limited resources. Increasing the number of professional inspectors should allow to government to better meet both needs. However, greater resources and focus must be on certifying the "process" of seed production through both field certification and post-harvest certification. If the production process is certified, the quality of the product is more likely to conform to the certification standards.

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About the Author

Makasiri Chaowagul is an Associate Professor at the Naresuan University, Thailand.

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INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
A member of the CGIAR Consortium | A world free of hunger and malnutrition
2033 K Street, NW | Washington, DC 20006-1002 USA
T: +1.202.862.5600 | F: +1.202.467.4439
Email: ifpri@cgiar.org | www.ifpri.org
www.ReSAKSS-Asia.org

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