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## Building a Rice Seed Network

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Md. Khairul Bashar  
Ahmed Salahuddin  
Paul Van Mele

### SUMMARY

Since the signing of the national seed act (Amendment) in 1997 and national seed rules in 1998, NGOs and private agencies have been able to purchase breeder seed from the Bangladesh Rice Research Institute (BRRI); they plant breeder seed to raise quality seed for farmers. Until recently, only 5% of the rice seed was supplied to farmers by a few government and private agencies. A more efficient national seed system would have to supply farmers with timely, adequate quality, modern variety seeds at affordable prices. With this in mind, BRRI developed a public-private network to ensure a continuous supply of breeder seed under the PETRRA project. We trained and technically supported a wide range of partners to produce foundation and quality seed. Over four years, the supply of quality seed to farmers has increased from 5% to an estimated 15%, while the number of organisations involved increased from three in 1998 to 54 in 2003. Apart from a better-coordinated demand assessment, decentralised production and dissemination of seed, the network enables a quick response to sudden seed shortages due to natural disasters. As its coordinator is also head of the national rice gene bank, the network also helps partner NGOs conserve rice biodiversity by collecting and evaluating local varieties.

## ACTORS AND NETWORK

BRRI is responsible for producing breeder seed of the varieties they develop and recommend. BRRI produces and supplies breeder seed to the government's Bangladesh Agricultural Development Corporation (BADC) which multiplies the seed and distributes it nationwide.

In the old model, only BADC produced foundation seed on its farms (Figure 17.1). Certified or truthfully labelled seed (TLS) was produced from foundation seed through their contract growers in 15 zones of the country.

Under the new model, BADC is no longer the sole producer of foundation seed. They now share their physical plant, such as processing centres and stores, with other players in the seed business, and so gradually become a service provider. The governmental Seed Certification Agency is not directly involved in the network, but plays a vital role by providing quality control services from breeder seed to foundation seed to certified seed.

By 2003, quite a few private seed producers had become involved in the seed network, mostly operating at about the same scale as the local NGOs, but selling their seed on the open market. Throughout the country, an increasing number of NGOs have embarked on agriculture and now distribute quality seed to the poor. Although it is difficult to classify the wide range of seed producers, an overview is given in Table 17.1.

## EVOLUTION OF RICE SEED NETWORK

**Before PETRRA.** Until the late 1990s, the private seed sector was not interested in

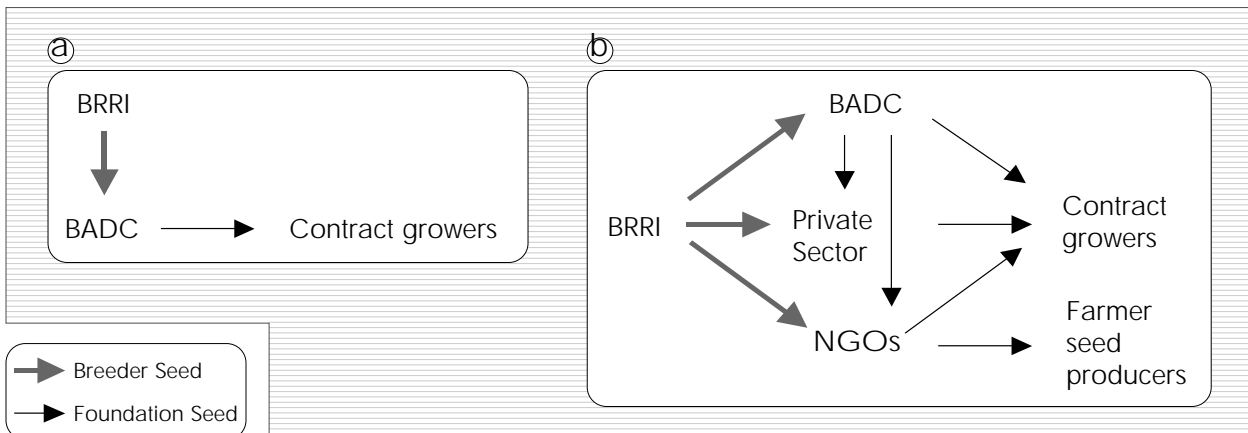


Figure 17.1 Old (a) and new (b) seed systems in Bangladesh

Table 17.1 Comparison between seed producers under the rice seed net

	LOCAL NGO	NATIONAL NGO	PRIVATE SECTOR (PS)	BADC	BRRRI
Mandate(s)	Improve livelihood by forming groups and providing microcredit	Enterprise development for sustainability	They have no mandate to benefit poor farmers Provide service through business	To provide service to the nation by producing and distributing quality seed	To develop modern rice varieties and sustainable rice production technologies adapted to different seasons and ecosystems To provide breeder seed to multiple actors upon request To maintain rice gene bank
Focus on resource-poor	Yes	Yes	No	No	Yes under PETRRA
Motivation to participate in network	Highly self-motivated and feel privileged to be part of value-based seed network	Motivated to expand their work	Highly motivated and feel privileged to be partner of network To become established as seed entrepreneur	Motivated To sell their products and service to the network partners	Highly motivated Leading the network is part of BRRRI's mandate
Pre-1998 experience of seed production	No	No	No	Yes	Yes
Strong points	A lot of scope to work with poor farmers locally Work with groups Can assess demand and distribute seed efficiently	Have fixed, nationwide clientele groups Push seed sales to their clients through credit support Have skilled manpower and physical facilities.	Similar to local NGO except Syngenta, but sell seed through dealers in open market	Highly skilled manpower Enough physical facilities and logistics throughout the country Have own processing centres and marketing channel	All kinds of technical support (demand-led variety development, training, monitoring etc.) Maintain seed network throughout the country
Competitive advantage	Enjoys the trust of the community	Have well-established nationwide customer base	Small seed producers/sellers already know their customer base Syngenta has good marketing network and attractive packaging	Due to government subsidies, they can sell seed at low price through a well-established marketing channel	Not applicable
Weaknesses	Little experience with seed, less trained manpower and facilities Low market coverage	Work with people irrespective of poverty levels Higher price of seed than BADC Inadequate demand assessment resulting in unsold seed being sold the following year	Price higher than BADC For small entrepreneurs, human resources and physical facilities are insufficient	Sale of produce is not ensured No control over variety and quantity selection as it is decided by Seed Promotion Committee of Ministry of Agriculture	Limited physical facilities Insufficient skilled manpower in breeder seed production activities

growing or selling rice seed. NGOs lacked the equipment and skills, resulting in questionable seed quality. Of the large volume of seed needed by farmers, BADC was able to provide only about 5% of it, suggesting that there was a nationwide scarcity of good, formal seed. After the national seed rules took effect in 1998, NGOs and private sector agencies started approaching BIRRI for breeder seed. This was on a first-come, first-served basis, and without any screening of partners as to their capacity to produce foundation and quality seed.

**Phase 1. Increasing breeder seed production.** In 1999, the Genetic Resources and Seed Division of BIRRI launched the first phase of this PETRRA sub-project to increase the supply of breeder seed and to help all categories of seed producers to improve their knowledge.

**Phase 2. A network emerges.** In the second phase of the project, it became clear that BIRRI had to screen for the most suitable partners. A memorandum of understanding was signed between BIRRI and several NGOs and private seed companies with enough technical capacity and land to grow foundation seed. This gave them a guaranteed supply of breeder seed, and a legal framework for producing foundation or quality seed under BIRRI's supervision. In 2004, several other organisations were about to sign a memorandum of understanding. BADC is no longer the sole producer of foundation seed. For an overview of the major differences between the old and new seed system see Figure 17.1 and Table 17.2.

PETRRA provided an environment for its different sub-projects to regularly exchange experiences at the uptake forum and laid the groundwork for a rice seed network. All organisations that were involved in the nine seed uptake sub-projects increasingly requested breeder seed from BIRRI and automatically became members of the seed network.

**Phase 3. Local leadership leads to regional networks.** This decentralisation into focal area forums (see Box 21.1) should lead to fewer direct requests for breeder seed from BIRRI headquarters, as the networks coordinate local demand and as BIRRI regional stations produce more seed.

Farmers sell their rice at the weekly haat or market. Increasingly farmer seed producers develop a business mentality and compete with commercial seed dealers. Until 1997 quality seed was only sold through the government system, but policy changes have opened up the market to NGOs, private sector and farmers.



## HOW DOES THE RICE SEED NETWORK OPERATE?

### Identify partners and establish network

BIRRI established a rice seed network at the national and regional levels to get quality seed easier and faster to poor farmers. It allows for local demand to determine which varieties will be produced and how much.

At the national level, we initially chose partners based on their existing capacity and nationwide coverage, either directly or through strategic networks with local organisations. So far, BIRRI has signed a memorandum of understanding with three

Table 17.2 Comparison of old and new seed distribution systems

	OLD SYSTEM	NEW SYSTEM
Demand		
• Planning	Narrower	Wider
• Quantity	Based on sales records of the previous season.	Seed producers within the network take stock of needs and place their demands for amounts of breeder seed directly to BIRRI.
• Variety	No knowledge about farmers' preferences. Appropriate varieties demanded by farmers were not available in all locations.	Based on preference surveys, quality seed of locally requested varieties is produced and distributed easier and quicker.
Quality	Quality of seed was questionable.	Capacity of NGO and private sector is built and monitored by BIRRI scientists to ensure quality of foundation seed production.
Availability	Not ensured. Only 5% of the national seed demand could be supplied.	Seed supply has increased to meet 15% of the national demand.
Dissemination	Slow. Network of dealers was weakly developed within districts.	Quicker. Farmers have timely access to quality seed.

NGOs (BRAC, GKF and Podakhep), and one private company (Syngenta). The NGOs have their own foundation seed farms, and to some extent their own processing and storage facilities. Other NGOs such as AAS, Proshika, RDRS and Shushilan along with some private companies like Supreme Seed and Alpha Agro Seeds are still in the process of signing a memorandum of understanding, but they are already allowed to buy breeder seed (Figure 17.2).

The number of partners in the network grew from three in 1998 to 54 in 2003, of which about 35 are small-scale agribusiness dealers. They easily build on their existing customer base and respond well to demand. Unlike the private companies, local NGOs have not started mass-producing rice seed (Figure 17.3), because they perceive it as risky and lack the expertise. Nevertheless, those who have started on a small scale are now expanding; because they now know they can get a fair price and easily sell all their seed.

Small seed entrepreneurs and local NGOs use breeder seed directly to produce truthfully labelled seed. Most of them use BADC processing and storage facilities, so that both genetic and physical purity is guaranteed. It is a waste to use breeder seed to produce truthfully labelled seed, but it is how the network is experimenting, learning and developing. Over time, these seed producers will need to rely on foundation seed suppliers in their area rather than on breeder seed from BRRI.

To respond better to location-specific demands, focal area forums have been created in Northwest and Northeast Bangladesh, where regional BRRI stations already

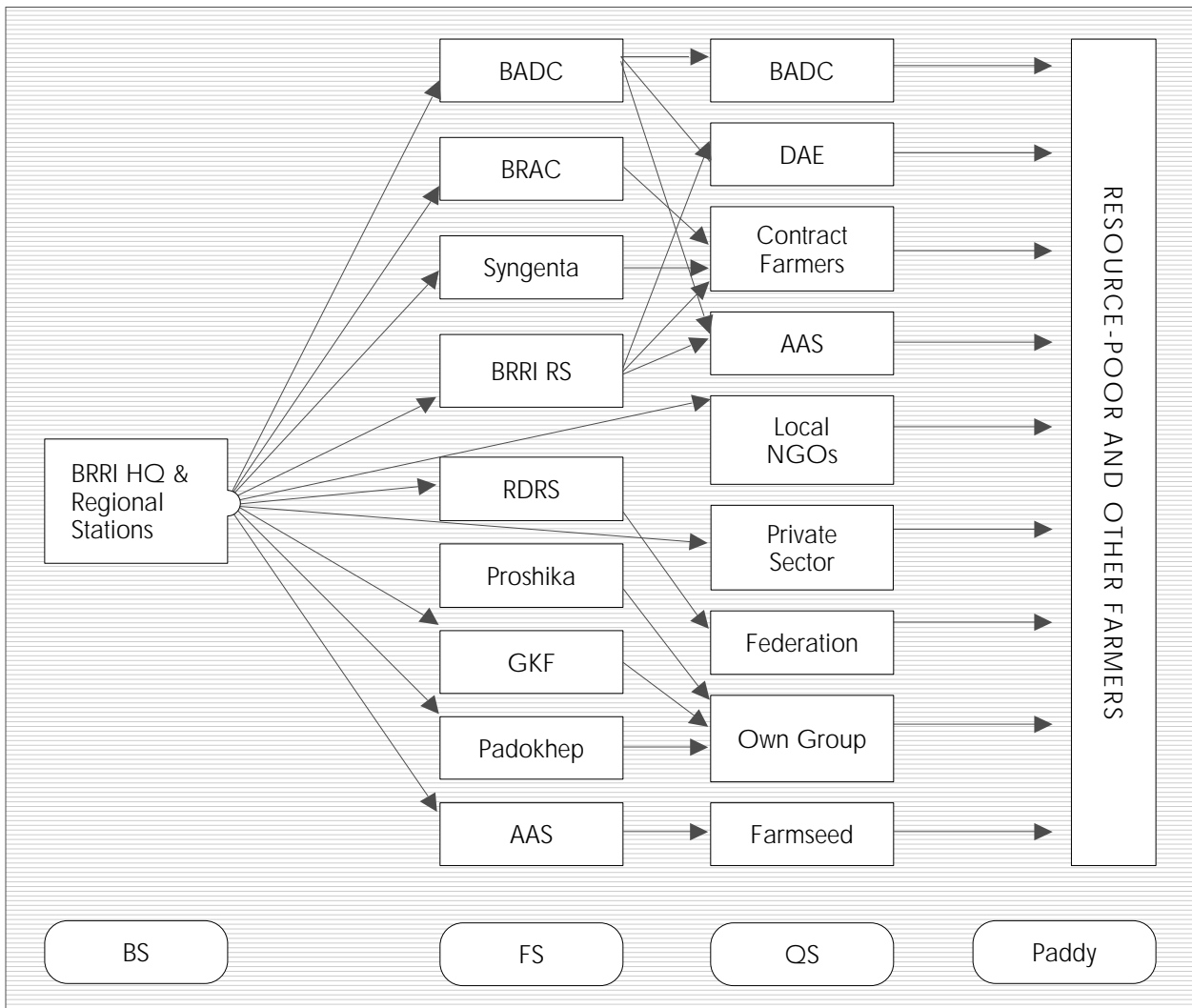


Figure 17.2 Flows of breeder (BS), foundation (FS) and quality seed (QS) through the rice seed network, 2003

produced and distributed seed (see Box 21.1). Although first set up to talk about regional issues on rice and to explore ways to deliver information consistently to farmers, seed came up as issue no. 1 in both areas. Partners were selected who have a license from the Ministry of Agriculture and who are specifically working with resource-poor farmers in that focal area. In the Northwest, RDRS has taken the lead, while in the Northeast, albeit a bit slower, AAS is emerging as leader. The national and regional networks have been strengthened through formal agreements, training, regular monitoring of foundation seed production plots by BIRRI and interactions of all partners in planning workshops.

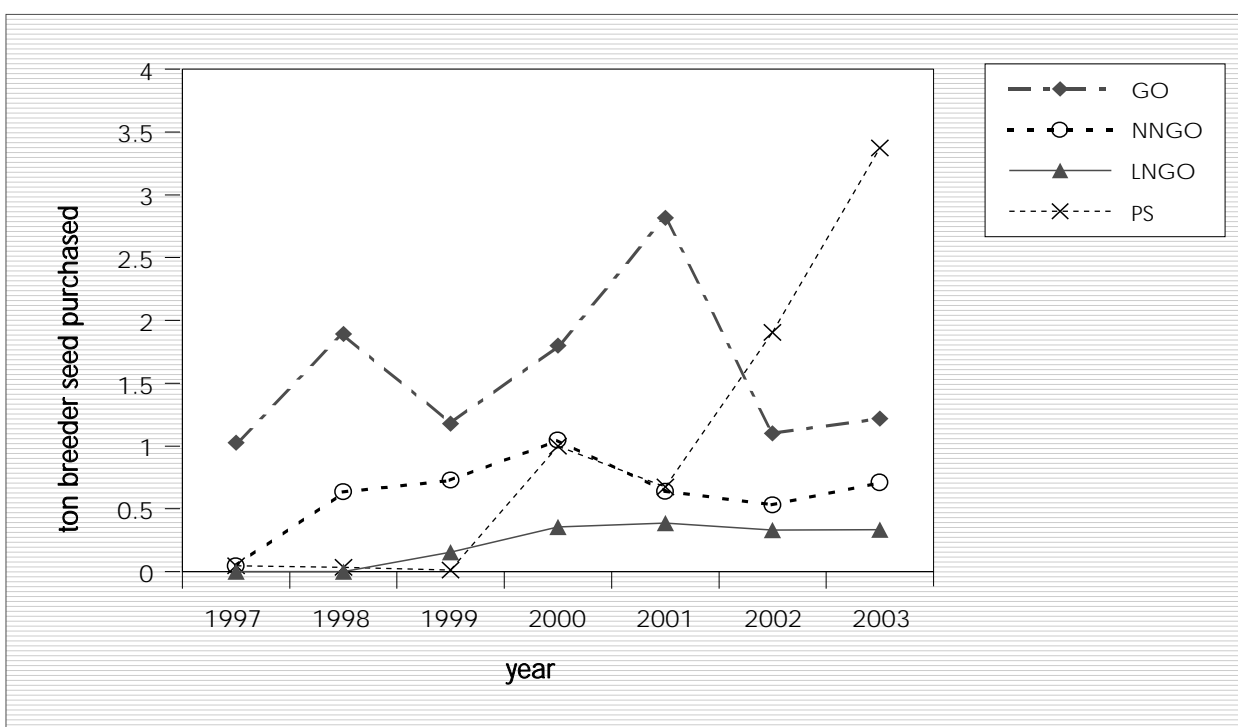


Figure 17.3 Evolution of breeder seed purchase by government, national and local NGOs and private sector

#### Assess quantity of breeder seed required to meet demand of specific varieties

The demand for breeder seed gauged at the national and focal area level. At the national level, the demand analysis, planning of production and distribution, and policies are discussed at the seed promotion committee under the Ministry of Agriculture. To better assess local needs, the Adaptive Research Division of BIRRI

has adopted a pro-poor partnership and bottom-up approach, as described in the previous chapter.

Planning workshops for the focal area forums are organised at the BRRRI regional stations, or at any of the partner organisations.

#### Supply breeder seed to partners

BRRRI has the sole responsibility to produce and distribute breeder seed, which is supplied to network partners in 10-kg bags. Personnel of the Seed Certification Agency monitor the distribution of breeder seed and seal the bags with a tag. Apart from BRRRI headquarters, now two of the nine regional BRRRI stations produce breeder seed of certain varieties as well.

In 2003, demand for and production of breeder seed was double compared to the previous years, despite BRRRI having raised the price per kg by 400%. Even after this price hike, some small-scale private seed producers still buy breeder seed to produce truthfully labelled seed. This waste of resources is hard to avoid at this stage of development, as mentioned earlier and illustrated in Box 17.1.

Ideally, a national strategy should be developed to decide who should produce foundation seed and where. BADC, BRRRI regional stations, experienced NGOs and large companies could cover the whole country.

#### Box 17.1 A Telephone Request for Breeder Seed

After introducing himself, Mr. Basith Salim, at the other end of the line asks: "Would it be possible to get five kg of BR19 breeder seed? I need to produce about 50 tons of truthfully labelled seed to satisfy my customers." He is the owner of the private agro business AB Krishi Prakalpa and started producing seed about three years ago.

"Have you tried the local BADC office to ask for foundation seed?" replies Dr. Bashar over his mobile, the rice seed net coordinator and head of the Genetic Resources and Seed Division, at his office in BRRRI, Gazipur.

Salim continues, "Sure I have, but you know very well that this is not a popular variety in Bangladesh apart from my district (Sunamgonj), so it is not available from BADC. What can I do?"

Bashar knows that the seed network is still in its infancy and that more efforts are needed to ensure appropriate foundation seed is available everywhere in Bangladesh.

"I will get my staff to prepare a bag. This time you are lucky, you don't have to come yourself because my staff is travelling to the region next week. They will bring it," assures Bashar.

"Thank you so much, Bashar, you are really very helpful. Oh and by the way, I got to know in my shop that some farmers from Moulvibazar and Sylhet districts like Akhnisail, a local variety. Shall I go and collect some for the rice gene bank?"



### Train the trainers

For years, the senior author (Bashar) was regularly invited as speaker in training programmes organised by BADC. Since PETRRA, the techniques used for maintaining purity of breeder seed are taught equally to the network partners through training, monitoring and visiting their foundation seed production farms. On-the-job training courses on seed production and preservation are organised by the Genetic Resources and Seed Division at BRRI. The training also helped develop an esprit de corps. Trained personnel then teach quality control to groups of smallholder seed producers. Various mechanisms to work with poor seed producers are described in the following three chapters.

### Monitor seed quality regularly

Personnel from the Seed Certification Agency monitor breeder seed production at BRRI headquarters in Gazipur and the regional stations (Table 17.3). At the same time, BRRI scientists help to solve technical problems in the field.

The first monitoring takes place in the field, the second during drying and processing and the last one during storage, when samples are taken for laboratory testing. During supervision, the Seed Certification Agency recommends several techniques to improve breeder seed production, such as leaving a one line gap after each six lines during transplanting, drying one variety at a time on the drying floor and threshing only one variety at a time.

Table 17.3 Actors involved in quality control under rice seed network, 2004

SEED CLASS	PRODUCER	ACTORS FOR QUALITY CONTROL
Breeder seed	BRRI	Breeders and staff of Seed Certification Agency
Foundation seed	BADC, private sector and NGOs	Producer, BRRI scientists and staff of Seed Certification Agency
Certified and TLS seed	BADC, private sector and NGOs	Producer (optional Seed Certification Agency and BRRI)

Per request, BRRI scientists monitor the foundation seed production plots of the partner organisations so that they can maintain the required field and seed standards set by the Seed Certification Agency. Although certifiers are limited, they also visit the foundation and certified seed plots of partner organisations to give them tags after satisfactory results. But what will happen with quality control of foundation seed after the project ends? Considering that the incentives for BRRI staff to visit



Honest Neighbour. When driving to Moulvibazar district on April 27, 2004 to interview a group of farmers trained as seed producers by AAS, Paul Van Mele wonders how over the past years they have ensured quality control. Obviously the national Seed Certification Agency will not have visited their 2,500 seed producers.

Before Paul can raise the question, Nikesh Gop, a 26-year old seed producer in Uttar Baruara village illustrates what is at stake: "In Boro 2003, my BR28 seed showed poor germination when I tested it, so I decided not to sell any seed that season. It is better to sell nothing than to lose my reputation in the village."

every foundation seed farm upon request of a partner will diminish, policy support is needed to strengthen the Seed Certification Agency.

### Conserve rice biodiversity

PETRRA has stimulated synergies between her sub-projects. The head of the national rice gene bank (Bashar) and coordinator of the national seed network is also the principal investigator of another PETRRA sub-project on rice biodiversity. As such, the rice seed network started to become a hub for local varieties or landraces to enter the formal system. BRRI dhan 34, for instance, was the first local aromatic variety that became registered, and now the network has opened up opportunities for a broader range of local varieties to be collected, screened, registered and become legally protected by intellectual property rights.

Some NGOs are currently playing an innovative role in securing rice biodiversity. In Khulna in Southwest Bangladesh, about 16 NGOs have been engaged in germplasm collection of local varieties. Through the rice seed network, we identified a few suitable NGOs who help to evaluate these local varieties with farmers in a wide range of different agroecosystems and to multiply the most important ones.

### KEYS FOR SUCCESS

- Changed seed policy helps seed producers to get access to breeder seed.
- A well-equipped breeder seed unit has been established at BRRI.
- Ensured access to breeder seed motivates partners.
- Increasing demand of quality seed ensures that all seed is sold.
- Partners share information and resources.
- Partners get technical knowledge through training and monitoring.
- Quality control is emphasised.
- The rice seed network developed in a flexible, learning by doing environment provided by PETRRA.

### DIFFICULTIES, RISKS AND ASSUMPTIONS

A favourable natural environment is essential for growing good seed. Natural disasters can disrupt the seed flow. Proper field selection is essential.

Although it seems risky that the quality of seeds produced by smaller partners scattered throughout the country cannot be monitored by an official

agency, the ultimate quality control happens by pressure of their customers. Of course, this bottom-up quality control only works when farmers have sufficient choice in seed suppliers.

To meet the growing demand for breeder seed in the future it will be necessary to invest in physical and human resources. Increasing the price of breeder seed from Tk 25 (US\$ 0.45) per kg to Tk 100 (US\$ 1.75) reduced the misuse of seed and increased the revenue for BRRI. However, the breeder seed unit at BRRI cannot use this money for its self-sustainability and to accommodate the growing demand. Policy changes are required to make this happen.

The nine regional stations of BRRI have enough land to grow more breeder seed. Also foundation seed could be produced here, but so far BRRI is not officially recognised to do this. Revising the law with regard to BRRI's and BADC's mandate would be recommendable.

Small-scale seed producers generally lack access to bulk processing and storage facilities, which prevents quality seed from reaching poor farmers at a reasonable price. BADC, selling seed at a subsidised rate, distorts the market. To avoid this, seed should become registered as an industry.

Taking stock of existing facilities and developing a framework of who produces what seed nationwide, is something the rice seed network identified as essential, but little time was actually given to bringing this into practice. Delegating responsibilities from BRRI headquarters to other players could reduce the network's management load, freeing energy to spend on further expanding the network and on producing breeder seed.

## SCALING UP

By establishing the network, the supply of quality rice seed to farmers has increased from 5% to about 15%. The network allows BRRI to assess the demand for its breeder seed more accurately, and so to produce the right amounts, but it also enabled partners to quickly help one another at times of acute seed shortages due to natural disasters.

As there are very few seed outlets in Southwest Bangladesh, since 2003 seed production has been promoted in six villages, of which three are under the supervision of the NGO HEED Bangladesh and three are under the NGO Shushilan. In each village, nine farmers were trained to grow foundation and quality seed. They received breeder seed of BR23 and BRRI dhan 40, the most popular varieties in the region (see Box 17.2). The smallholder seed producers are now keenly aware of the demand for seed by clients in the area. In 2004, another seed producer group started producing BRRI dhan 28 and 29.

Box 17.2  
Overcoming  
Local Seed  
Shortages

In Southwest Bangladesh, hardly any agricultural support services exist. Lack of access to quality seed is a major issue. BRRI triggered an innovation by providing breeder seed and training farmers and local NGOs in that region to grow foundation and quality seed. PETRRA, through the rice seed network, has created an environment for people to solve their own problems of quality seed supply.

**Some network partners such as ABCD and BRAC have since developed a memorandum of understanding with the Bangladesh Agricultural Research Institute (BARI) to get breeder seed of other crops. Smallholder seed producers have already applied their skills to other seed crops, including onions, wheat, mustard and potatoes (see Chapters 18 and 20).**

## CONCLUSIONS

**The network now has many partners and is capable of producing quality seed, with profitable businesses emerging. The rice seed network has improved access of quality seed at the grassroots level, resulting in a rapidly growing demand for quality seed. Policy reform is needed to optimise breeder seed production and performance of the rice seed network.**