

The Role of Seeds in Transforming Agriculture in Nepal

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BACKGROUND

Nepal is a landlocked country with wide diversity of climatic conditions, ranging from temperate to tropical. Agriculture is the largest economic sector, contributing 35 percent to GDP and employing two thirds of the total population. Rice is the major staple crop, followed by maize, wheat, and pulses. These crops are spread across three ecological belts: Hills (42 percent of land area), Mountain (33 percent), and Terai (23 percent). Nepal, once self-sufficient in food, has become a net importer in recent years. Farm size has declined from 1.1 hectares in 1995/1996 to 0.7 hectares in 2010/2011, and 53 percent of households have less than 0.5 hectares. Although the agriculture sector is the most important for the sustainable development of Nepal, its growth rate is low, mainly because of low government investment. Despite the efforts to disseminate improved seeds, national yields of the three main cereal crops remain low: (rice 3.3 t/ha, wheat 2.4 t/ha, and maize 2.5 t/ha).

The food security situation of the country is increasingly becoming more challenging due to political and economic instability as well as climate change. Though national poverty declined from 31 percent in 2004 to 25 percent in 2011, it remains high in rural areas. Only 37 districts are surplus in food production, while the remaining 38 face deficits. Nearly 54 percent of Nepal's population lives on less than US\$1.25 per day, and 3.5 million people are considered moderately to severe food insecure. Investments and policy that can improve the agricultural sector can spur economic growth and improve the food security situation. Improving the seed sector is one important component.

POLICY LANDSCAPE

Formal seed production and distribution in Nepal began in late 1950s with the introduction of new varieties of rice, wheat and maize. Until 1988, the public sector played a key role in the production and distribution of seeds in Nepal with the exception of donor involvement to upgrade the sector. The Seed Act 1988 provisioned mandatory certification of the seeds produced by public institutions, while the private sector was given the option to obtain certification of developed varieties or to use truth-in-labelling. To this day, a large proportion of seeds produced by local seed companies use truthful labels and the respective companies are responsible for quality and performance. While the framework is in place to create a vibrant seed sector, there are still critical issues to be addressed in terms of implementation of seed laws.

KEY PLAYERS

The national seed system involves four different types of players: public institutions, the private sector, international collaborators and farmer communities (Figure 1).¹ The National Seed Board (NSB) under MOAD is the coordinating agency for varietal release and registration. NSB is chaired by the Secretary of MOAD and includes representatives from public and private institutions. NSB has three sub-committees: Variety Approval, Release and Registration Sub-committee (VARRS), Planning and Monitoring Sub-committee (PMS) and Quality Standards Determination and Management Sub-committee (QSDMS).

¹ MOAD = Ministry of Agriculture Development; NARC = Nepal Agricultural Research Council; NSC = National Seed Company; NSB = National Seed Board; DOA = Department of Agriculture; DADO = District Agriculture Development Office; SQCC = Seed Quality Control Centre; UAF = University of Agriculture and Forestry; SEAN = Seed Entrepreneurs' Association of Nepal; FNCCI = Federation of Nepal Chamber of Commerce and Industry; CGIAR = Consultative Group on International Agricultural Research; INGO = international NGO; CSB = community seed bank

The VARRS sub-committee consists of nine members, eight from public sector and one representative of the Seed Entrepreneurs' Association of Nepal (SEAN). The roles of the VARRS are to: (i) prepare policies/guidelines for the submission, evaluation, approval, release, and registration of varieties; (ii) make recommendations to NSB for release and registration; (iii) plan seed multiplication; (iv) promote private sector development of new varieties; and (v) recommend de-notification of outdated varieties.

The PMS sub-committee consists of nine members, eight from the public sector and from one from SEAN. The duties of this committee are to: (i) formulate programs for the supply of seed to meet national requirements; (ii) monitor production and consumption of seed; (iii) arrange production of foundation and certified seed; (iv) coordinate private and government sector production, sales and distribution; and (v) fix seed prices.

The composition of the QSDMS sub-committee is similar to the other sub-committees and its responsibilities are to: (i) recommend quality standards to the seed board; and (ii) publish the minimum quality standards for seeds.

VARIETY APPROVAL, RELEASE AND REGISTRATION PROCESS

In order to release a new variety, proposals are submitted by the breeding institution or company to the SQCC. The proposals include three years of field research data. The data should include a summary of the varietal characteristics, morphological characters, suitability of the crop for different domains, and its cropping patterns. Proposals should be accompanied by enough breeder seed to cover 5 ha to be DUS and VCU testing by the VARRS. In order to be released, the variety must exhibit superiority in some way (yield, disease resistance, etc.) over the control check.

In addition, the market for hybrid rice and maize in Nepal has been growing. Because no hybrids have yet been released from local hybrid breeding centers for rice and maize, there is growing interest of Indian and other multinationals to introduce their products to the Nepalese markets. In order to register a variety, the same information as above is required with a lesser requirement of only one year of field data and additional information on the biotechnological and molecular traits.

SEED PRODUCTION

In Nepal, formal seed production is undertaken by government farms and stations, contract seed production by the National Seed Company (NSC), NGOs, private seed companies, and the District Self Sufficiency Seed Programme (DISSPRO). However, these organizations jointly contribute less than 10 percent of Nepal's seed supply with the rest coming from farmers' preserved seed or informal cross-border trade.

Currently, breeder and foundation seed production is mainly done by NARC, for provision to the National Seed Company and 16 registered private seed companies. Current production of breeder and foundation seed is much higher than seed demands (Table 1). In 2011/12 the demand for breeder seed of rice was 7.4 tons and supply was 27.8 tons; and that for foundation seed was 231 tons and supply was 520 tons. Similar trends were found in wheat and maize.

Seed planning meetings at regional and national levels are coordinated by SQCC. At these meetings, all actors including NSC, DADO, seed companies, farmer groups and cooperatives, agrovets, and donor representatives, place their orders for breeder and foundation seed. However, these discussions are non-binding, and commitments as to quantity, quality and price are not subject to legal contracts. This leads to inefficiency in timely marketing and distribution. A critical review of the methods for estimating seed demand is necessary as the current system is resulting in financial losses with much of the production making its way into food grain markets.

Figure 1—Structure of the national seed system

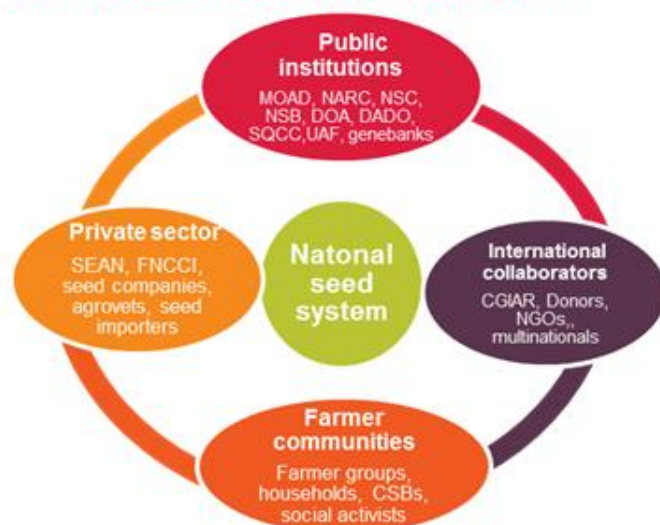


Table 1—NARC source seed production status and SQCC demands

	Breeder seed (tons)			Foundation seed (tons)		
	2010/2011	2011/2012	Demand ^a	2010/2011	2011/2012	Demand ^a
Rice	15.5	27.8	7.4	341.3	520.2	231
Wheat	27.0	45.3	22.6	171.6	276.7	296
Maize	4.0	8.1	7.4	120.8	194.6	38
Lentil	1.1	0.4	0.2	8.8	13.9	8.5
Millet	0.2	0.2	0	2.2	3.9	0.4
Total	47.7	81.8	37.6	644.7	1,009.3	573.9

Source: SSTD/NARC Annual report 2013 and SQCC Seed Balance Sheet 2013.

Notes: ^aDemands are compiled during regional and national seed planning meetings by SQCC.

NATIONAL SEED COMPANY (NSC)

The NSC is a public seed company under MOAD created after separating the Agricultural Input Corporation into two separate companies in 2002, one focusing on seeds (NSC) and the other on fertilizers (AFC). NSC has a storage capacity of approximately 8,700 tons, 10 processing plants, and 4 seed labs that require maintenance, renovation and modernization. NSC receives grant funds annually from MOAD but is required to cover staff costs and logistics with their own revenue. The Joint Secretary of MOAD is the chairman of the Governing Board, and NSC gets policy support in addition to funding. NSC is not able to supply all cereal seed demands due to its institutional, infrastructural, staffing and funding limitations, and lacks real autonomy and operational flexibility.

In addition, the Government of Nepal provides subsidies to NSC (in 2012, a total of 50 million Nepalese rupees – about US\$500,000) to provide quality cereal seeds to farmers who owned less than 2.5 hectares. The program was implemented through district input distribution committees chaired by the chief district officers (CDOs). Thus far, the system has not been very efficient due to lack of timely communication to farmers, explicit guidelines, and adequate funds to cover all farmers.

DISTRICT SEED-SUFFICIENCY PROGRAM (DISSPRO)

DISSPRO is another key player in seed production and is coordinated by the Crop Development Directorate together with the Department of Agriculture. Since 2002, implementation has been the responsibility of the District Agriculture Development Office (DADO) in order to enhance production and access of improved quality seeds at the farm level. The program currently covers 63 of the 75 districts and involves over 300 farmer groups of which 77 have since registered as seed companies or cooperatives. The program provides source seed management, technical backstopping, revolving fund support, training, and small infrastructural support (e.g. storage, processing equipment, seed bins, etc.) The commercial seed production program (CSPP), which started in 2008 in 17 districts, covers 700 ha where similar supports and subsidies are provided in addition to some revolving funds (Rs 60,000/ farmer group).

Table 2—Certified/improved seed production in 2009/2010 (CDD 2011)

	Seed production from different programs (tons)					
	DISSPRO	Government farms	NSCL	Private companies	NGOs and others	Total
Rice	3,761.5	111	958	1641.6	176.01	6,649.37
Maize	788.13	1.4	0.05	307.58	730.1	1,827.28
Wheat	2,419.5	20.3	3,554	2,036.11	743.45	8,773.48
Lentil	41.5	0	6.25	150.48	5.61	203.84
Total	7,010.63	132.7	4518.3	4,135.77	1,655.17	17,453.97
%	40.17	0.76	25.89	23.7	9.48	100

Source: Seed Quality Control Center; Nepal Agriculture Research Council; Department of Agriculture; National Seed Company Limited; Seed Entrepreneurs Association of Nepal, District Seed Program (DISSPRO)

Recent favourable policy shifts towards involvement of the private sector in foundation, certified and improved seed production is beginning to have an effect on private sector seed production which is on the rise though companies still suffer from limited storage, laboratories, technical staff, and funds to manage large-scale business. There are 24 private companies involved in seed production and marketing, and they contribute around 24 percent of the total seed production (Table 2).

SEED MARKETING

The marketing of seeds is conducted through a network of importers and dealers scattered across the country. Distribution of cereal seeds in the Hills and Mountains regions is limited due to high cost transportation and limited market demand. Newly released modern varieties for cereals have limited publicity or promotional events for clients. In order to increase the adoption of newly released varieties, Nepal provides a subsidy to NSC (Rs 50 million in 2012) in order to provide cereal seeds to farmers with less than 2.5 ha. The program is implemented through district inputs distribution committees chaired by the Chief District Officers (CDOs). The system has not been implemented efficiently due to a lack of timely announcement and communication to client farmers, a lack of guidelines for inclusion, and adequate funds to cover all farmers. Subsidized seeds are priced at 25 percent above the prevailing foodgrain price which varies by crop. NSC is paid the difference between their production cost and the subsidized seed price set by the government. Because of the subsidy and policy that supports the NSC, private seed companies have more incentives and interest in hybrids and vegetables crops in which NSC is not active.

KEY CHALLENGES AND POLICY SOLUTIONS

While the new acts and regulations have begun to promote private sector participation in the seed sector, several hurdles must still be overcome to expedite full integration. The public system does not appear to be responsive to the demands of the private sector or farmers, and the seed subsidy and the dominance of the NSC hinders private industries' interest in staple grain seed markets. It would be more encouraging to see this money instead invested in R&D, infrastructure, capacity building, and human resource development. Varietal release and registration processes could also be made more efficient by cutting down testing and processing times.

An effective, efficient and sustainable seed system is vital for agricultural transformation in Nepal. A sound seed system requires varietal development, seed multiplication, processing and storage, and marketing. All these components must be supported by enabling policies, institutional capacity and a strategic vision. The challenge is to provide quality seeds to farmers at affordable prices.

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