

# Pigeonpea seed systems in Asia

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**Abstract:** Pigeonpea seed systems consist of the formal and informal seed sector. However, the informal seed sector dominates the seed production system. Majority of rainfed farmers who grow pigeonpea (about 80% - 90%) save a part of their produce as seed requirement. In the formal seed sector, government agencies and private companies are involved in production and distribution of quality seeds of improved varieties and hybrids. Role of private sector diffusion in pigeonpea market is not encouraging owing to lack of commercial perspective in the crop and other factors. The integrated approach that takes into cognizance the formal and informal seed sector in breeding, seed production and distribution has shown to have promising potential for improving seed supply to smallholder farmers. Moreover, any seed system, for that matter, requires a regulatory framework as well as a seed policy that considers regulations of an expanding and diversifying seed sector for the benefit of the farmers engaged in the seed production system.

**Key words:** formal, informal, pigeonpea, seed system

undue price hike has distorted consumption pattern of households. India has lion's share in terms of area and production and pigeonpea dal is source for predominant vegetarian population of the country (7). Production growth has not been able to keep pace with the population growth and, consequently, India's per capita net availability of pigeonpeas is around 2.88 kg year<sup>-1</sup> which is very low (1).

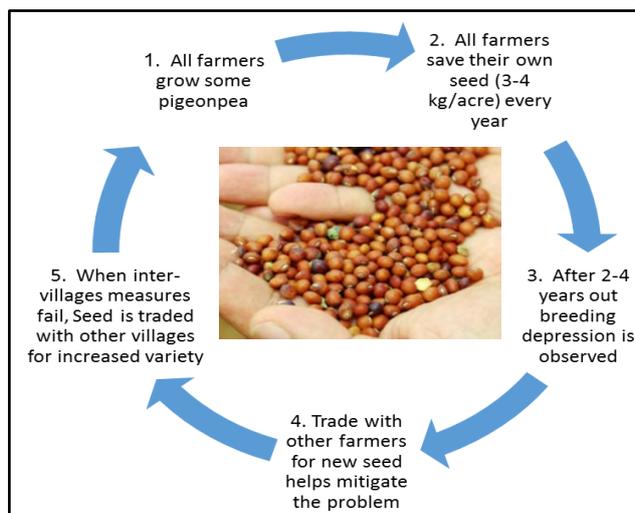
## Current scenario

In spite of improved pigeonpea varieties and hybrids released for cultivation, their impact has not yet been fully realized by the resource-poor farmers in many countries. The accessibility of smallholder farmers to quality seed of improved varieties is hindered by both inadequate demand creation and limited supply (Fig. 1). This situation is also compounded by uncomplimentary and inadequate policy support and regulatory frameworks, inadequate institutional and organizational arrangements, and deficiencies in production and supply infrastructure and farmers' socio-economic situation (6). Numerous constraints limit the performance

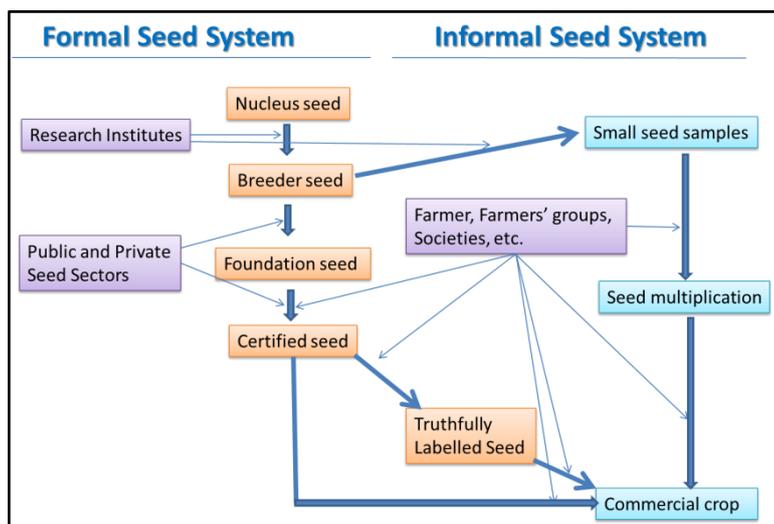
of seed systems including limited access of smallholder farmer to seed of improved varieties; limited supplies of quality (breeder, foundation and certified) seed of farmer and market-preferred varieties; lack of coordination among national seed production organizations and policy making institutions. In seed production chain, pigeonpea seed business generally does not attract large seed companies since profit margins are low (4). The seed replacement rate in India varies from 14% in chickpea (*Cicer arietinum* L.) to 35% in soybean (*Glycine max* (L.) Merr.), as presented at [www.seednet.gov.in](http://www.seednet.gov.in), thus indicating that a majority of the farmers still use their own saved seed. This situation is due to several factors including: the low seed multiplication rate of legumes; the reuse of grains from previous harvest as seeds and; often demand for specific varieties adapted to more narrow agro-ecologies and consumers' needs. Furthermore, when seed production takes place, it is often in higher potential areas, with seed stores being concentrated in zones of higher population density or those with better infrastructure (i.e. not the remote, stress-prone areas).

## Introduction

Pigeonpea (*Cajanus cajan* (L.) Millsp.) plays an important role for sustainable agriculture in rainfed areas of Asia particularly in India, Myanmar, Philippines and Nepal. The increasing population growth and the poor productivity (800 kg ha<sup>-1</sup>) have resulted in the reduction of per capita availability of this important pulse, which together with



**Figure 1. Existing pigeonpea smallholder farmers seed system model**



**Figure 2. Pigeonpea seed production and delivery model in South Asia**

As small and medium seed companies are emerging and gaining strength, they are also creating effective demand for improved varieties and hybrids in pigeonpea. However their capacities are still limited by the inadequate and discontinuous access to foundation seed, inadequate capital investment, and lack of appropriate marketing strategies including delivery systems targeting remote and small scale farmers. Public and private partnership would be the best approach to increase the availability of foundation seed need for subsequent seed classes. In the developing countries such as India, particularly for pigeonpea, the formal seed sector is highly subsidized and evolving at different stages of development. The informal seed sector is and will remain the dominant player in legumes. In recent past, development partners and researchers have realized the importance and significance of quality seed in agriculture and several projects have been implemented or are in progress to improve seed availability of improved farmer-preferred varieties to farmers. The main issue in resolving access to quality seed would be a thorough understanding and critical assessment of the status of existing seed sector (both formal and informal), their bottlenecks and comparative advantages and complementarity (2).

The cultivars under cultivation in pigeonpea used are invariably local landraces, and awareness about improved varieties, seed availability and seed access is poor. Seed is procured off-farm only when necessary as when own seed is not available due to drought, poverty or seed pests and diseases. The main sources of off-farm seed are local markets, relatives, other farmers and government relief agencies. However, these statements about the predominance of the informal seed sector cover significant differences between crops, villages, farmer groups and their socioeconomic conditions. Traditional seed systems are location-specific and vary greatly within farmer communities (2).

### The way forward

Seed system for legumes in South Asia has a long way to go. However, in developing and strengthening formal and informal seed production and delivery systems to ensure quality seed of improved farmer preferred varieties and hybrids, we should do the following (3):

- Improving access to seed for smallholder farmers that focus on subsistence production through the enhancement of local village seed systems by testing a range of seed production and delivery options and searching for options to scale-out and scale-up alternative seed production and delivery schemes;

- Knowledge empowerment of farmers/rural entrepreneurs in seed production, post-harvest and processing, and marketing;
- Exploiting market niches commercial (large scale) production by developing seed markets and identifying seed supply constraints and recommending options to improve its efficiency;
- Developing and/or strengthening seed regulatory framework as well as a seed policy that considers regulations of an expanding and diversifying seed sector for the benefit of the farmers engaged in the seed production system. 

### References

- (1) Commodities Control (2015) Commoditiescontrol.com Premium Services. CC Commodity Info Services LLP, Mumbai, <http://www.commoditiescontrol.com>
- (2) Gowda CLL, Samineni S, Gaur PM, Saxena KB (2013) Enhancing pulses productivity and production in India. Proceedings, Conference on Increasing Food Production for Future, Bengaluru, India, 7-9 January 2013
- (3) Holmesheoran ME, Mula MG, Sameer Kumar CV, Mula RP, Saxena KB (2012) Tropical legumes II. Pigeonpea seed system in India: An analysis. J Food Legum 25:334-339
- (4) Mula MG (2012) Seed delivery system: The key for a sustainable pulse agriculture for smallholder farmers. Green Farming 3:6:1
- (5) Ravinder Reddy Ch, Tonapi VA, Bezkorowajnyj PG, Navi SS, Seetharama N (2007) Seed system innovations in the semi-arid tropics of Andhra Pradesh. International Livestock Research Institute / International Crops Research Institute for the Semi-Arid Tropics, Patancheru, India, Patancheru
- (6) Rubyogo JC, Sperling L, Assefa T (2007) A new approach for facilitating farmers access to bean seed. LEISA Mag 23:27-29
- (7) Sameer Kumar CV, Singh IP, Patil SB, Mula MG, Vijaykumar R, Saxena RK, Varshney RK (2015) Recent advances in pigeonpea [*Cajanus cajan* (L.) Millspaugh] research. Proceedings, II International Conference on Bio-Resource and Stress Management, Hyderabad, India, 7-10 January 2015, 201-205