

Seed Development Policy in Indonesia

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Introduction

Basically, the Indonesian agricultural development aims to improve agricultural production. It includes achieving food self-sufficiency of food crops, increasing the production of industrial and export crops, achieving domestic agro-industry, creating employment, and improving the income of farmers in the country.

One of essential inputs to pursue the improvement of agricultural production is the propagation of improved seeds. It is attributed to the physical, physiological, genetic, and pathological qualities of seeds.

The management of seed quality consists of three important aspects, namely: (1) establishing the minimum standard of accepted seed quality; (2) formulating and implementing the procedural system toward establishing and maintaining the seed quality standard system and procedure; and (3) approaching systematic standard in identifying the problems and its solution regarding seed quality. The first aspect is related to the external quality control, while the second and third aspects correspond to internal quality controls.

Key features

Formally, the seed sector can be defined as an institutional framework involving the production, processing, and distribution of improved seeds. In this case, there are various relevant agencies at the national and sectoral levels which significantly influence the performance of the seed sector. The Indonesian Ministry of Agriculture (MoA) divides the seed system into four sub-systems, namely: (1) research and development sub-system; (2) seed production and distribution sub-system; (3) quality control sub-system; and (4) information sub-system (Table 1).

Table 1. National seed system of Indonesia

No	Sub-system	Description
1	Research and development (R&D)	Collecting the germplasm, breeding, and plant variety protection as well as registering and releasing the seeds.
2	Production and distribution of seeds	Producing the seeds under public research institution and propagating them through national and local state-owned enterprises (<i>BUMN/BUMD</i>)
3	Quality control	Testing and certifying seed based on OECD scheme and International Seed Testing Association (ISTA) rules
4	Information	Socializing (campaigning) the utilization of improved seeds.

Source: Summarized from Indonesian MoA (2006) in Sayaka, B. (2013)

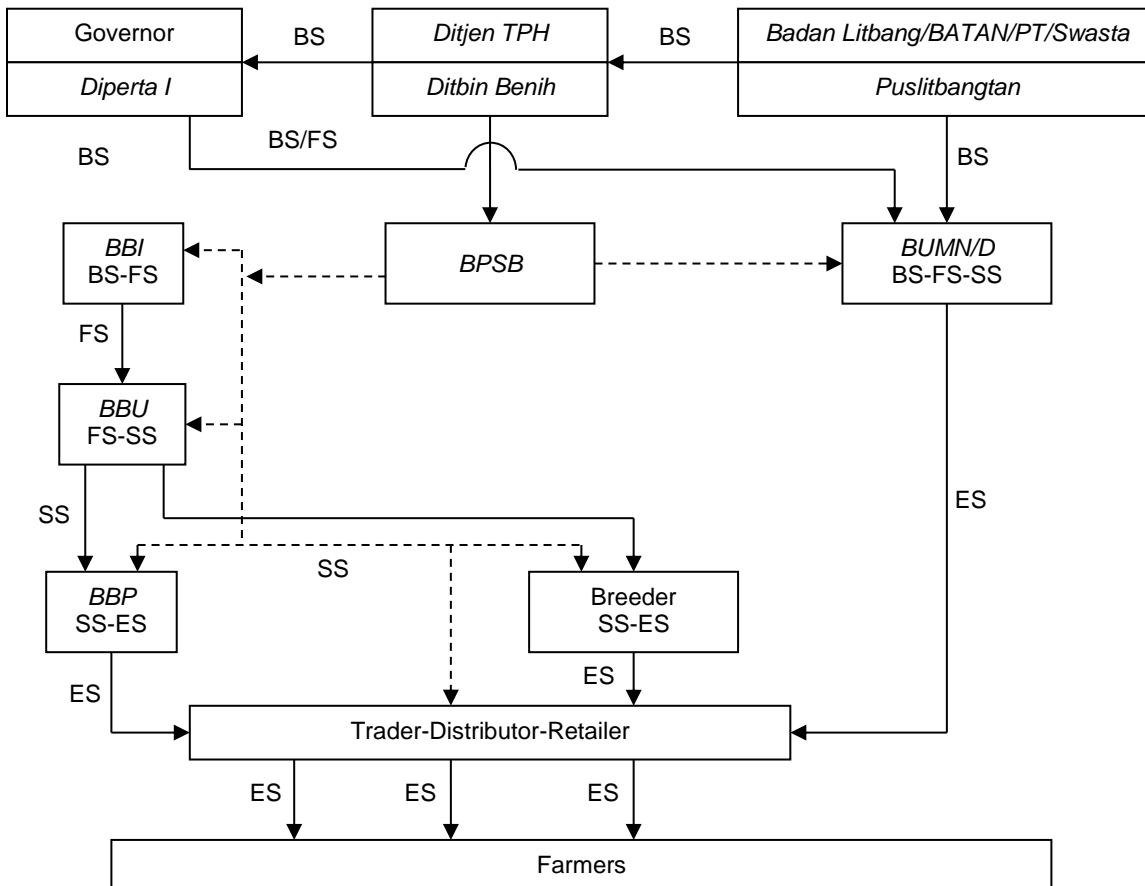
In modern agriculture, seeds play as delivery mechanism of advance technologies to the clients (farmers and other beneficiaries). The propagation of seeds is classified into four (4) types, namely: (1) breeder seeds (BS); (2) foundation seeds (FS); (3) stock seeds (SS); and extension seeds (ES). Detail classification and seed procurement and distribution system in Indonesia are respectively presented in Table 2 and Fig. 1.

Table 2. Seed classification in Indonesia

No	Classification	Description
1	Breeder seeds (BS)	Produced seeds under the supervision of breeders concerning the standard procedures, which meet quality system certification toward the level of genetic purity varieties (true-to-type) perfectly preserved, identified by "yellow label"
2	Foundation seeds (FS)	The first descent of basic seeds, which meet the quality standards of foundation seeds, identified by "white label"
3	Stock seeds (SS)	The first descent of foundation seeds or basic seeds, which meet the quality standard of stock seeds, identified by "purple label".
4	Extension seeds (ES)	The first descent of stock seeds or foundation seeds or basic seeds, which meet the quality standards of extension seeds, identified by "green label"

Source: Indonesian MoA (2006)

Fig. 1. Seed procurement and distribution system in Indonesia



Legend: *Diperta I* (Provincial Agricultural Office); *Ditjen TPH* (Directorate General of Food Crops)
Ditbin Benih (Directorate of Seed Development);
Badan Litbang (Agency for Agricultural Research and Development)
BATAN (National Atomic Energy Agency); *PT* (University); *Swasta* (Private Company)
Puslitbangtan (Center for Food Crops Research and Development)
BBI (Parent Seed Center); *BPSB* (Seed Certification and Inspection Center)
BUMN/D (National/Local State-owned Enterprises); *BBU* (Main Seed Center)
BBP (Seed Support Unit)

Source: Sayaka, *et.al.* (2006)

Policy framework

In general, the Indonesian seed policy framework is summarized in Table 3. It includes policies, strategies, and programs of national seed in the country. It is noted that there are three-types of seed program in Indonesia. They are: (1) official seed program with fully under the government's control; (2) semi-official seed program handled by the state-owned enterprises (*PT Sang Hyang Seri and PT Pertani*); and (3) private seed program such as DuPont, Syngenta, Bayer, and other companies. In order to ensure the continuous availability of improved seeds, the seed policies should be favorable to private investment. It would be considered on the productivity, efficiency, profitability, quality, sustainability, competitiveness, and market orientation of seeds. Fig. 2 shows the role of government and private sector in seed propagation.

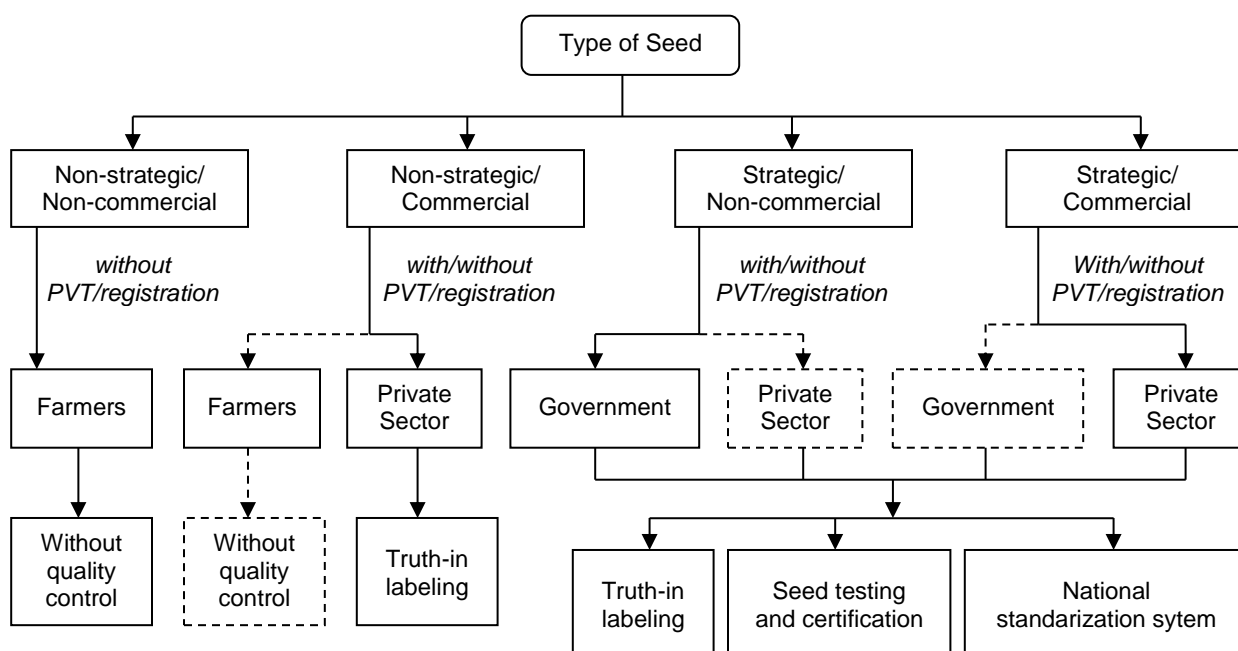
Table 3. Indonesian seed policy framework

No	Item	Description
1	Policies	<ul style="list-style-type: none"> a. Increasing the use of improved seeds; b. Replacing local seeds as well as low and medium productivities to improved seeds; c. Increasing support in breeding and seed propagation; d. Confirming groove seed multiplication; e. Optimizing the quality control in the production and distribution of seeds; f. Strengthening the institutional seed production and quality control; and g. Establishing and developing seed breeder producers and distributors.
2	Strategies	<ul style="list-style-type: none"> a. Finding the new improved seed and identifying the composition of seed propagation through research, breeding, and release activities; b. Improving the availabilities and absorptions of seed production and distribution; c. Optimizing the seed quality, certification, and distribution of seeds; and d. Supporting the institutional, infrastructure, and facilities toward optimizing the performance and capacity of seed institutions.
3	Programs	<ul style="list-style-type: none"> a. Increasing the improved seeds to support the achievement goal of productions b. Optimizing the use of improved seeds; c. Actualizing the data and information through seed information systems d. Optimizing the performance of institutional seed supporting the availability of improved seeds; e. Amending the seed regulations which are not relevant to the current condition; f. Enhancing the propagation of new improved seed-based local agro-ecology and aspiration of farmers;

		<p>g. Encouraging the development of local seed producers.</p> <p>h. Socializing (campaigning) the seed certification refers to the Indonesian National Standard (SNI) and self-reliant certification for accredited seed producers;</p> <p>i. Generating the favorable condition for national seed development; and</p> <p>j. Introducing the hybrid seed to increase production.</p>
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Source: Summarized from Nasution, A. Z. (2013)

Fig. 2. Role of government and private sector in seed propagation



Legend: PVT (Plant Variety Protection)

Source: Rahman, J. R. (2006)

A part from the abovementioned policies, The Indonesian MoA revitalizes the seed system in the country. It covers: (1) restructuring the institutional nationwide seed/seedling, ranging from central to local levels; (2) protecting, maintaining, and utilizing the national genetic resources for the development of improved varieties; (3) encouraging the private sector to participate in the development of seeds/seedlings; (4) strengthening the plant breeders in various domestic and international strata/levels and (7) implementing the regulations of seed/seedling system.

To accelerate the use of good quality seeds by the farmers, the government also provides subsidy, particularly for rice, maize, and soybeans. The seeds is produced by state owned enterprises (*PT Sang Hyang Sri and PT Pertani*) in collaboration with the farmers. In 2014 the government distributed 121,900 mt of subsidized seeds (rice, maize, and soybeans), with total budget of US\$ 131.3 millions. The subsidy is around 75% for open pollinated rice, 90% for hybrid rice, 75% for open pollinated maize, 50% for hybrid maize, and 75 % for soybeans. With that subsidy, the retail price of the seeds are as follows: US\$ 0.18/kg for open pollinated

rice, US\$ 0.42/kg for hybrid rice, US\$ 0.22/kg for open pollinated maize, US\$ 1.12/kg for hybrid maize, and US\$ 0.31/kg for soybeans.

Conclusion

The development of the national seed industry is a fundamental part of agricultural development in Indonesia. It is reasonable since improved seeds play an important role in agricultural productivity improvement in both large and small-scale farms.

The national seed industry covers all activities of producing high productive, quality, and competitive new improved seeds. Nevertheless, it is not only under the responsibility of the government but also involves the private sector, farmers, and other related parties. Thus, it is required the specific policies, legislation, and institutional development as pushing and pulling factors toward seed development in Indonesia. Those should consider on the aspects of productivity, efficiency, profitability, quality, sustainability, competitiveness, and market orientation of seeds.

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