

A need of farmer-centric marking system for plant varieties in seed market of India

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It is a fact that the Indian economy has grown steadily in the last 10 years, but the low and inconsistent growth in agricultural sector coupled with its continued dependence on monsoon continues. Declining contribution of agriculture sector to the GDP, which is now less than 15% without significant reduction in the dependence of major portion of population on agriculture, has led to a precarious situation of mostly small and marginal farms with low inputs and yield levels generally much lower than world averages. Even with all these factors, the total cultivated area of about 197 million hectares, out of which 40% is being irrigated and introduction of new high-yielding varieties prompted and sustained by Green Revolution since 1970s helped India to gain self sufficiency in food production¹. During the last four decades agricultural production increased from nearly 50 million tonnes to more than 250 million tonnes; however, the growth has been limited or nearly static over the last decade. The ever-increasing population has exerted tremendous pressure to increase agricultural productivity through all possible means and measures, may it be improving soil health, using integrated pest and disease management systems, increasing input use efficiency or the most importantly choosing right variety suitable to a particular macro- or micro-climate.

The success of any variety depends on two major factors, viz. stringent adaptive trials and the quality of seed being produced and marketed. Since the onset of Green Revolution in 1970s, the distribution of seed has increased from 50 thousand tonnes to above 1100 thousand tonnes in 2007–08 (Source: www.seednet.gov.in) and now the Indian seed market is the sixth largest in the world, growing annually by 12% compared to 5% growth of global seed market. With the adoption of Seed Policy of 1988, wherein foreign direct investment in seed sector was promoted and the import of improved varieties and breeding lines was liberalized, there had been a boom in this sector and at present it is estimated that private sector accounts for approxi-

mately 80% turnover in seed market. Moreover, nearly 35% of the companies have either global technology or financial partner and the private seed companies are spending 10–12% of their turnover in R&D which is on an increasing trend year after year². There are more than 40 companies which have government recognized R&D units and are engaged in the development of high-yielding varieties including hybrids. Many of these companies have included genetically modified germplasm into the breeding lines and are investing in innovative biotechnological interventions³.

After the opening of world market under free trade policy along with the associated legal frameworks under WTO and TRIPs, the scenario of varietal development has changed in India. The horizon of crop species under varietal development, variety types being developed and the methods of development of varieties have changed with the adoption of new breeding tools and techniques. Similarly, the seed production of the varieties has also changed to meet the local, national and international requirements. The import and export of seeds is now common and so is the availability of seeds in the market. However, with the advancements in the varietal development regime, the number of varieties being pushed and traded in the seed market has increased to a level where the farmers are usually unable to select the most suitable one. Although there are guidelines and laws to check the quality of seeds being traded in the market, there is no existing system which can help the farmers to decide upon the suitability of the variety for their fields⁴. The farmers are, in general, ignorant about the qualities associated with the variety and purchase the packaged seeds on the advice of the peers, traders or the local extension functionaries. Due to this practice, even though the quality of the seed is legally maintained as per the requirements of the seed certification under Seeds Act, the varieties fail in the farmers field.

Based on these observations, we suggest that the seed packets should also

refer to the certain basic qualities of the varieties along with existing system of reference to the seed quality alone. For this purpose a very simple and 'Farmer Centric Marking System' is being proposed for further discussions at different levels for adoption by the seed industry. The present system refers to the basic requirements which a variety should have and also how a farmer can identify the presence or absence of these qualities in the variety with the help of markings given on the packet. The proposed Marking System includes five basic requirements, as detailed below, each of it being represented by either Star Mark (★) or Dot Mark (●) for its presence or absence in the variety. Thus, the best suited variety will have 5 star marks (★★★★★) on the seed packet, while others can be graded on the basis of the combination of star and dot marks (e.g. ★●★★●, ●●●●●, etc.). The five basic requirements of the variety, which need attention are:

1. *Year of release:* It is a common practice in the seed industry to continue the trade of varieties, which are sometimes even 30–35 years old and have become susceptible to many diseases and pests. Under the new IPR regime, which promotes the development of new varieties at a much faster pace, any variety which is more than 15 years old needs replacement to provide new and better varieties. Thus, any variety which is new, i.e. it is not older than 15 years should get star mark (★), while those which have crossed 15 years should be represented by dot mark (●).

2. *Registration of variety under PPV&FR Act, 2001:* A powerful tool for keeping a check on the quality of a variety has been provided under the section 39(2) of the Protection of Plant Varieties and Farmers Rights Act, 2001. The section states 'Where any propagating material of a variety registered under this Act has been sold to a farmer or a group of farmers or any organization of farmers, the breeder of such variety shall disclose to the farmer or the group of farmers or the organization of farmers, as

the case may be, the expected performance under given conditions, and if such propagating material fails to provide such performance under such given conditions, the farmer or the group of farmers or the organization of farmers, as the case may be, may claim compensation in the prescribed manner'. Thus, if a variety is registered for IP rights under this Act, it will be mandatory for its breeder to provide the expected performance also. This declaration will at least assure the minimum expected quality of the variety, which can be claimed as compensation by the farmers in cases of failure. Hence, if a variety is registered it will get star mark (★) and if not, it will be represented by dot mark (●).

3. *Adaptability of the variety:* The seed market trends and the demand for new varieties by the farmers prompts seed industry to push untested varieties into the market. The prevalent procedure of multi-location testing of varieties to ascertain its suitability on a wider/specific stretch of area is many times ignored, and even imported varieties are used for marketing without thorough testing of their value for cultivation and use. This practice has resulted in the failure of varieties when grown in different agro-climates or even in varying crop growth conditions and micro-climates. Thus, those varieties which have undergone multi-location testing, such as testing under the All India Coordinated Research Programme, State level testing programmes, specific testing programmes of different seed industries, etc. will be given star mark (★) and if not, it will be represented by dot mark (●).

4. *Occurrence/reports of disease and/or pests:* The impending or imminent loss to the farmers, on account of the diseases and pests, can be curtailed in advance if the reports of sporadic occurrences of the major diseases and pests are taken-up seriously. The breakdown of resistance to diseases and pests in almost all kinds of varieties is a natural phenomenon based on the struggle for survival, which warrants scientific speculations about the future of the variety. The survey and surveillance of varieties with emphasis on hot spot areas should be taken-up rigorously and accordingly every year, position of the varieties should be marked. If there are no reports of any breakdown of resistance or occurrence of major diseases or pests, the variety will get star mark (★) and if there are reports, it will be represented by dot mark (●).

5. *Presence or absence of any special character:* In the quest for better marketing potential, sometimes breeders try to select a new variety with specific character(s). These characters are usually important for providing the varieties a specific market niche and thus higher value as well. For example, presence of basmati characters in rice, better processing qualities in potato and tomato, quality protein in maize, higher contents of micro-nutrients in grains, etc. are some features which can provide a specific market potential to the varieties. Thus, if a certain variety has proven presence of such features or genes, it will get star mark (★) and if not a dot (●).

With these five representative features shown on a seed packet of different

varieties, a farmer can easily select the most suitable variety for his needs, by simply looking at the star or dot marks on the seed packet. However, the award of these marks and the subsequent monitoring of the varieties year after year for maintenance of the grade will require an independent agency, which can technically co-ordinate with different stakeholders involved in the process of varietal development, as well as seed production and sale. It will require some additional resources. But, considering the ever expanding seed market in India and also the mushrooming of seed companies, many of whom are unable to provide the quality varieties, the marking system, being easy to understand, will help both, educated and uneducated farmers, who can easily count the star marks before purchasing the seed packet, ensuring the marketing of best varieties and weeding out of old and problematic varieties.

1. NAAS, Carrying capacity of Indian Agriculture, Policy paper No. 51, National Academy of Agricultural Sciences, New Delhi, 2011, p. 14.
2. Website of National Seed Association of India, New Delhi; www.nsai.co.in
3. Website of International Seed Testing Association; www.seedtest.org
4. Website of Organic Seed Alliance; www.seedalliance.org

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