

CHAPTER-II

SEED REGISTRATION AND CERTIFICATION SYSTEM IN PAKISTAN

2.1 INTRODUCTION

National seed programme has passed through many transitional phases in Pakistan from 1947-61. The seed of improved varieties used to be multiplied and distributed by Department of Agriculture. Most of the farmers often practised to use their own saved seed or they exchanged seed with other fellow farmers. West Pakistan Agricultural Development Corporation (WPADC) was established in 1961, to initiate systematic seed production and its distribution through its own mobile marketing network. This system remained highly inefficient due to excessive procurement than the actual sale. Though due to such inefficiency, the WPADC was dissolved but it created seed quality awareness though the establishment of seed testing laboratories in the country. Realizing the importance of seed quality control, variety registration, seed production and multiplication programme, the government launched a seed industry project during 1976 with the assistance of FAO/IBRD. This has provided sound basis for quality seed production programme based on scientific lines (Fig.2.1). The seed system was given legal coverage through promulgation of Seed Act, 1976. Necessary institutional infrastructure was established as under:-

1. National Seed Council (NSC) at Federal Level.
2. Provincial Seed Councils (PSC) at each provincial level.
3. Federal Seed Certification Department (FSCD).
4. National Seed Registration Department (NSRD).

Under the economic austerity measures, the FSCD and NSRD were merged together during 1997 and the new organization has been designated as Federal Seed Certification & Registration Department (FSC&RD).

2.2 SEED PRODUCTION AGENCIES

Seed multiplication, production, processing, storage and marketing is done by the public and private seed sector in provinces. Private seed companies take basic seeds of various crop varieties from public sector seed agencies (statutory obligation) and multiply and market through their own network as certified seed.

2.2.1 Public sector seed agencies

Public sector seed agencies are obliged to get pre-basic seeds of various crop varieties from research institutes and multiply to produce basic seed for private seed companies and for their own requirement in their respective province. Anyhow, Punjab Seed Corporation has also developed a mechanism for the production of Breeder's Nucleus seed and pre-basic seed at its own farms in collaboration with respective Plant Breeders and Federal Seed Certification & Registration Department.

1. Punjab Seed Corporation (PSC), Lahore.
2. *Sindh Seed Corporation (SSC), Hyderabad.
3. ** NWFP Agricultural Development Authority (ADA), Peshawar.
4. Balochistan Department of Agriculture (BDA), Quetta.

* From 2001-2002, Sindh Seed Corporation has ceased to function and seed programme has been assigned to Foundation Seed Cell.

** From 2000-2001, ADA has ceased to function and seed programme has been assigned to various components of NWFP Department of Agriculture.

Balochistan and North West Frontier Province have no full-fledged seed corporation in public sector. The activities of seed are carried out by the department of Agriculture Extension in Balochistan and by the various components of NWFP, Department of Agriculture.

2.2.2 Private seed sector

Pakistan seed industry has large volume of private seed companies. It comprises of 372 national seed companies including five multinational seed companies. Government has very liberal policy to encourage further induction of private seed sector into seed business.

2.3 QUALITY CONTROL AGENCY

Federal Seed Certification and Registration Department provides quality control cover through registration of crop variety, crop inspection and seed testing. This system is being implemented at federal level under the Seed Act, 1976.

2.4 INSTITUTIONAL PROVISIONS AND SALIENT FEATURES OF SEED ACT, 1976

Seed Act provides mechanism for controlling and regulating the quality of seeds of various crop varieties. Its salient features include:-

- i. National Seed Council with well defined functions including policy regulations, standards and investment issues..
- ii. Federal Seed Certification and Registration agency alongwith its regulatory and quality control functions.
- iii. Establishment of provincial seed councils (Section-9).
- iv. It empowers the Federal Government to notify in the official gazette, the varieties or species of seed for production, the minimum limits of germination and purity standards for which such seed conforms with the mark and label.
- v. It regulates sale of seed of notified varieties and species.
- vi. Appointment of registered growers to produce seed in the prescribed manner;
- vii. It prescribes the period for which registration and certification shall remain effective (the registration of a grower for producing seed shall be effective for such period not exceeding five years, as may be prescribed).
- viii. It empowers the Federal Seed Certification Agency to appoint by notification in the official gazette a Seed Analyst to test the quality and purity of seed;

- ix. It authorizes the Federal Seed Certification Agency to appoint the Seed Certification Officer and Seed Inspector by notification in the official gazette;
- x. The Act delegates powers to Seed Inspectors to inspect and take samples of any seed in labeled containers purporting to contain seed of a notified variety or species of seed from any person producing, selling, delivering, stocking or distributing seeds and send such samples for analysis to the nearest laboratory of the Federal Seed Certification Agency; and
- xi. It prescribes offenses and penalty for a person which contravenes any provision of this Act or any rule. For the 1st offence, a fine not exceeding Rs.1000/- and where the offence continues after conviction, a fine of Rs.100/- for each day during which the offence continues and for a subsequent offence with imprisonment for a term which may extend to six months and with fine or with both.

The amendment draft of Seed Act, 1976 is being finalized for submission of Federal Government.

2.5 NATIONAL SEED COUNCIL (NSC)

National Seed Council is the supreme body concerns with all pursuits of seed both in public and private sectors. It works under the Federal Ministry of Food, Agriculture and Livestock, Government of Pakistan.

2.5.1 Composition of NSC

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| 1. Federal Minister for Food, Agri. & Livestock. | Chairman |
| 2. Federal Minister of State for Food, Agri. & Livestock. | Vice Chairman |
| 3. Secretary, Ministry of Food, Agriculture & Livestock. | “ |
| 4. Chairman, Pakistan Agricultural Research Council. | “ |
| 5. Secretary Agriculture, Department of Agriculture, Government of Punjab, Lahore. | “ |
| 6. Secretary, Agriculture Department, Government of NWFP, Peshawar | “ |
| 7. Secretary, Agriculture Department, Govt. of Sindh, Karachi | “ |
| 8. Secretary, Agriculture Department, Government of Balochistan, Quetta. | “ |
| 9. Director General, Federal Seed Certification & Registration Department. | “ |
| 10. Managing Director, Punjab Seed Corporation. | “ |
| 11. Managing Director, Sindh Seed Corporation. | “ |
| 12. Managing Director, Agriculture Development Authority. | “ |
| 13. One representative of each for the seed grower from the Punjab, Sindh, NWFP and Balochistan. | “ |
| 14. One representative of Progressive growers each from the Punjab, Sindh NWFP and Balochistan. | “ |
| 15. Four representative (Two local and two multinationals) of seed processing and trading companies of private sector. | “ |
| 16. Agricultural Development Commission/Additional Secretary. | Member/
Secretary |

(Notification No.SRO.313(1)/91, dated 1st April, 1991)

2.5.2 Functions of NSC

The functions of the National Seed Council interalia shall be:-

- i) to advise on policy for the development, operation and regulation of the Provincial Seed Industries;
- ii) to maintain a watch on the operation of the provisions of this Act;
- iii) to guide in administering the seed quality control service;
- iv) to direct initiation of Provincial Seed Projects;
- v) to ensure and protect investment in the seed industry;
- vi) to approve and sanction seed standards;
- vii) to regulate inter-provincial seed movement;
- viii) to advise on import of seeds;
- ix) to co-ordinate the arrangements for the maintenance of genetic potential;
- x) to co-ordinate multiplication and supply of seeds of approved varieties;
- xi) to assist in developing approved seed production farms.

2.6 FEDERAL SEED REGISTRATION COMMITTEE (FSRC)

FSRC work on behalf of National Seed Council and prepare necessary data and record pertaining to registration of different crop varieties.

2.6.1 Composition of FSRC

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| i) Secretary, Ministry of Food, Agriculture and Livestock. | Chairman |
| ii) Chairman, Pakistan Agricultural Research Council. | Member. |
| iii) Director General, AARI, Faisalabad. | “ |
| iv) One representative of each from provincial public sector seed agencies. | “ |
| v) Agricultural Development Commissioner, MINFAL, Islamabad. | “ |
| vi) Member/Secretary of VEC, PARC, Islamabad. | “ |
| vii) Director General, FSC&RD, Islamabad. | Member/
Secretary |

2.6.2 Functions of FSRC

1. To assess suitability of varieties for registration in regard to inter alia, distinctness, uniformity, stability and value for cultivation and use based on recommendations of the provincial government.
2. To recommend the registration of new varieties and areas for their suitability.

2.7 VARIETY EVALUATION COMMITTEE (VEC)

This committee also works on behalf of the National Seed Council but under the Pakistan Agricultural Research Council. It makes arrangements for National Uniform Yield Trial (NUYT) and evaluates performance of candidate crop varieties for regional suitability/adaptability and disease reaction. Such evaluation is carried out through traveling seminar. Seed Act, 1976 does not mention about VEC.

2.7.1 Composition of VEC

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| 1. Member Plant Sciences, PARC. | Chairman |
| 2. Director Research (Crops).
Convener | |
| 3. Director, CDRI, PARC. | Member |
| 4. Concerned Commodity Specialist from Provinces. | “ |
| 5. Concerned breeders submitting variety for approval. | “ |
| 6. Director General, FSC&RD. | “ |
| 7. Concerned Commodity Coordinator in PARC. | “ |
| 8. Any other Cooperative member. | “ |

2.8 PROVINCIAL SEED COUNCILS (PSCs)

Provincial Seed Councils have been established under section 9 of the Seed Act, 1976. Work on the same lines as National Seed Council but in their respective province. They can approve the variety but notification is issued by the Federal Government after registration process.

2.9 PLANT VARIETY REGISTRATION SYSTEM

It is a legal system to register the crop variety. FSRC is responsible to evaluate the report of DUS and VCU prepared by FSC&RD and recommend the registration of variety to NSC.

2.9.1 Variety development and testing

Crop variety development is the main domain of public sector organization in the provinces. At a federal level, PARC coordinates for all research pertaining to variety evaluation and testing and provides funding to some specific projects which are unique and not carried out by provinces previously. Research on cotton crop is exclusively carried out by PCCC. No doubt multinational seed companies after conducting local trials started submitting their hybrid varieties of sunflower, maize, sorghum for registration etc. but they enjoy privilege of trading seed under Seed (Truth-in-Labeling) Rules, 1991.

Plant breeders test their promising strains in micro varietal trials, breeding stations, sub-stations and the zonal varietal trials for a sufficient number of years. When a breeder selects a variety after sufficient years of testing, he submits it to PARC for evaluation of its value for cultivation and use. Simultaneously, breeder submits a seed sample of that variety to FSC&RD for evaluation of distinctness, uniformity and stability (statutory obligation for registration).

2.9.2 Variety registration and release

A variety that meets the requirements of VCU and DUS is accepted for registration by the FSC&RD. The department submits its DUS report to Federal Seed Registration Committee. The committee evaluates the report regarding DUS and VCU and recommends its registration. The National Seed Council approves the registration and

release of a variety. Notification is issued by Federal Government. All the decisions are made based on consensus of opinion by the experts. A number of agencies are involved in the process of variety development, evaluation, maintenance, registration and release (Fig.2.2).

Federal Seed Certification and Registration Department keeps the record of variety registration alongwith all morphological characters. The varieties registered, released and notified through the process, can be multiplied under seed certification system.

2.10 SEED CERTIFICATION SYSTEM

Seed certification system is a legal and regulatory mechanism. It is performed by the Federal Seed Certification and Registration Department, an attached department of the Ministry of Food, Agriculture and Livestock. To maintain and make availability of genetically pure seeds of improved varieties, the whole process is done at two main stages.

1. The crop raised for the production of seed is inspected by FSC&RD for genetical purity.
2. The seed samples are drawn after harvest of the crop and analyzed in the laboratory for evaluation on the basis of prescribed seed standard (analytical purity).

In addition to this, pre and post control plots are laid out to ascertain the genetic purity of the seed and seed-borne diseases. In Pakistan, seed certification system has four recognized categories.

1. Pre-basic seed.
2. Basic Seed.
3. Certified seed.
4. Approved seed

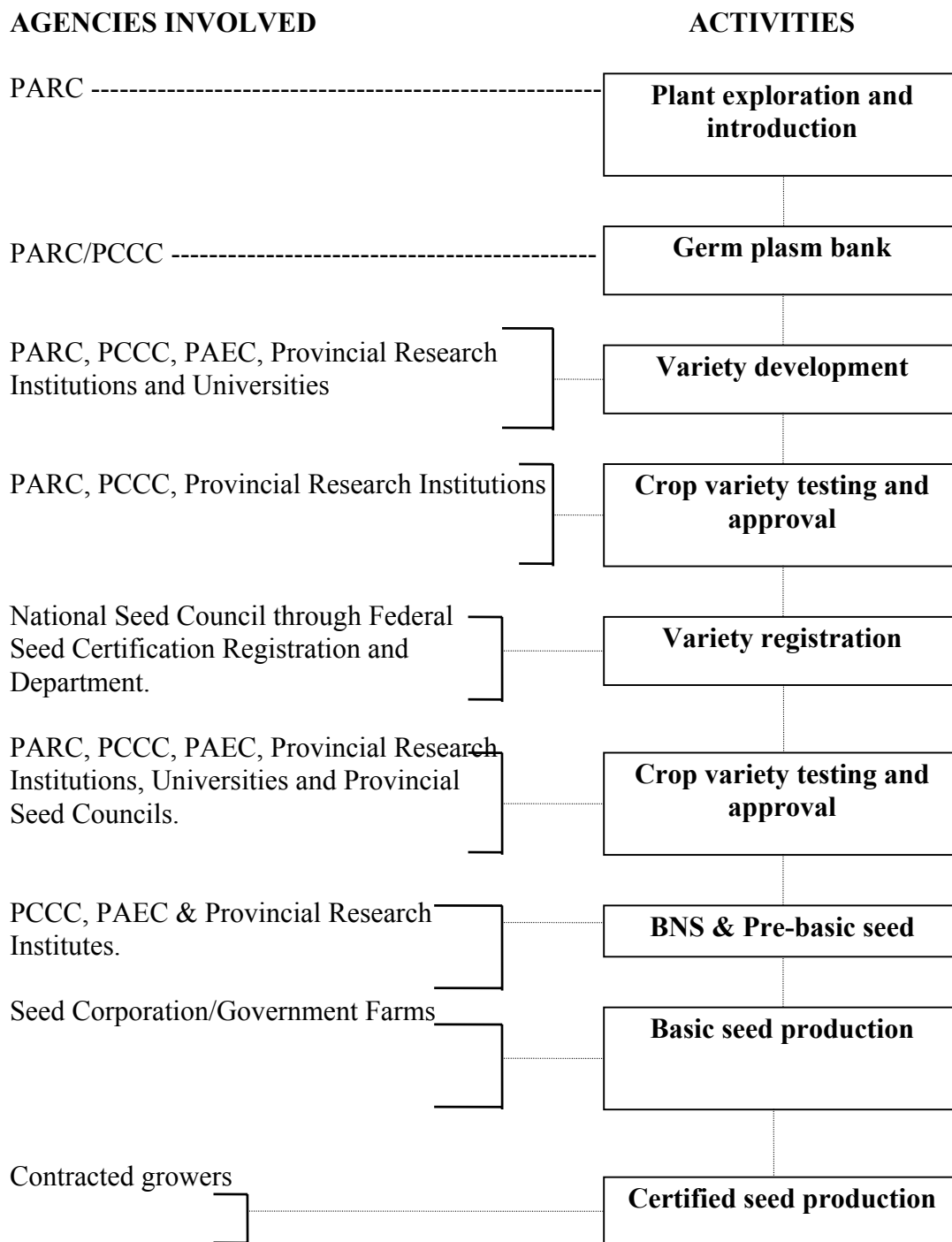
2.10.1 Crop Inspection

The purpose of crop inspection is to determine whether or not the crop is suitable for the production of seed of the standard required. The genetic purity of seed crop is assessed through field crop inspection. Inspection is carried out only for notified varieties based on physio-morphology characteristics develop through DUS studies. Before carrying out crop inspection, the following preliminaries are verified:

- i) Verification of the source from the labels, seals, bags or receipt of seed purchased.
- ii) Acreage and location of the seed field.
- iii) Cropping history of the field where the seed crop is grown.
- iv) Isolation distance of seed crops from other crops.
- v) Condition and health of the crop to carry out crop inspection properly. Crop must not be very much weedy or damaged.
- vi) Application from grower or seed agency, requesting for crop inspection.

If all the above conditions are found satisfactory then a detailed assessment of the crop is carried out to determine the following factors:

- a) Admixture with other cultivars.
- b) Admixture with other species.
- c) Presence of weeds particularly obnoxious weed plants.
- d) Presence of seed-borne diseases.



Quality control at all stages of seed production and after harvest by the federal seed certification and registration department (FSC&RD).

Fig. 2.2 AGENCIES RESPONSIBLE FOR VARIETY DEVELOPMENT, EVALUATION AND MAINTENANCE

After the crop inspection, the grower or seed company is informed about the decision/recommendations or other measures, necessary to bring the crop up to the prescribed standards. At final inspection, a certificate is issued by the department on the prescribed form.

2.10.2 Seed Testing

Seed testing is carried out to assess the analytical purity of seed lot. The following steps are taken to ensure quality of seed lot.

2.10.2.1. Submission of application for sampling

Seed samples are drawn from the produce whose fields have been certified subject to the prescribed written request by the grower. Three samples are drawn from each seed lot by the officer of the FSC&RD according to the method as prescribed in ISTA rules (1990). One sample is given to the respective seed testing laboratory and 2nd is handed over to the grower or seed agency. The 3rd sample is submitted to the central seed testing laboratory for post control check.

2.10.2.2. Requirement for seed lots to be sampled

It should be ensured before seed sampling that seed lot must be homogeneous. Credibility of results depends on the representative samples. Number of seed samples are drawn according to the size of seed lot.

2.10.2.3. Seed analysis

Working samples are made from the submitted samples in the laboratory. Each seed of the working seed samples is physically examined using magnifying lens. Doubtful seeds are further examined under stereo-microscope. Every crop seed is examined for purity on the basis of morphological characters of particular crop variety. Seed sample is analyzed for the assessment of the following factors.

- i) Purity (pure seed).
- ii) Mixture of the crop seed (other distinguishable varieties).
- iii) Presence of weeds.
- iv) Inert matter.
- v) Seed-borne diseases.
- vi) Moisture test.
- vii) Thousand seed weight.
- viii) Germination.
- ix) Seed lots are rejected or accepted on the basis of seed standards prescribed by the National Seed Council for individual crops.

2.10.2.4. Issuing of seed analysis certificate and temporary labels

After the seed analysis in the laboratory for the above mentioned factors, certificate of fitness is issued by the department and temporarily labels are also issued. These labels carry the following information printed on it:

- i. Federal Seed Certification and Registration Department.
- ii. Reference number.
- iii. Species.
- iv. Cultivar.
- v. No. of bags/containers.
- vi. Approximate weight of seed lots.

2.10.2.5. Seed sampling during processing and issuing of final labels and seals

All the seed lots are processed at processing plants/units by the seed agency. During processing, seed samples are drawn and analyzed in the laboratory. After this, a certificate is issued on the prescribed form and final labels and seals are also issued on the spot.

2.10.2.6. Re-testing of seed lots

To assess any deterioration during storage, a re-test sample is drawn from each lot at two months prior to its actual distribution/sale. Seed samples are analyzed for all the factors as mentioned above. Finally, the seed agencies are allowed to offer seed lots cleared by the FSC&RD.

2.11 CHECKING OF SEED LOT DURING MARKETING AND IMPORT OR EXPORT

To check the sale of deteriorated, inferior and low quality seed, the Federal Seed Certification Department monitors the quality of seed during distribution and marketing.

The department has established a system of seed testing under the Seed (Truth-in-Labeling) Rules, 1991 and also in accordance to the guidance of import policy 1999. Seed samples are drawn from all the seed consignments and tested for their analytical purity and germination. The label placed on the containers is verified. If the seed lot does not match with the information given on the label, the consignment is not allowed to sale as seed in Pakistan.