

23. Seed Certification

Introduction

- o Seed certification is a legally sanctioned, scientifically and systematically designed process to secure, maintain, multiply and make available to farmers, seeds of superior plant varieties, so grown to ensure genetic purity, physical quality, high germinability and freedom from pest and diseases.
- o In India, the launching of seed production programmes for hybrids of maize, sorghum and pearl millet in early 1960s sowed the seed for seed industry.
- o National Seeds Corporation (1963) was the first official seed certification agency even before enactment of The Seeds Act. Statutory support for quality control of seed and regulation of growing seed industry was provided by The Seeds Act (1966).
- o The Seed Review Team (1967) critically examined the situation and recommended the formation of the Seed Certification Agency as an autonomous body.
- o An amendment of the Seed Act (1972) provided for the establishment of a Central Seed Certification Board to advise the Governments on matters relating to certification and to co-ordinate the functioning of the State Seed Certification
- o The certification agencies are registered as autonomous bodies under the Societies Registration Act. The Seed Certification Agency of Tamil Nadu was established in the year 1979.

Phases of seed certification

1. Receipt and scrutiny of application
2. Verification of seed source
3. Field inspection to verify field standards
4. Post harvest seed inspection
5. Seed testing to verify seed standards
6. Issue of certificate , tagging , labeling and sealing

Seed certification procedures

Application for Registration as certified seed production

- o The person interested should register with the concerned Assistant Director of Seed Certification by remitting Rs 25/- per crop, per season.

Sowing Report

- o The seed producer shall apply to the Assistant Director of Seed Certification concerned. Separate sowing reports are required for different crop varieties, different classes, different stages and if the seed farm fields are separated by more than 50 m and sowing dates differ by more than 7 days and if the seed farm area exceeds 10 ha.

Registration of sowing report

- o The Assistant Director of Seed Certification scrutinizes and registers the seed farm and assigns a Seed Certification Number for each sowing report.

Verification of Seed Source

- o Verification of seed source is made by scrutiny of documents such as certification tags, sale bill of the producer to seed grower, purchase bills etc., and by enquiries during field inspection.

Field Inspection

- o The primary objective of conducting field inspection is to verify those factors, which can result in irreversible damage to seed quality by causing genetic and physical contamination.
- o The objective of field inspection is to verify the following factors:
 7. Cropping history
 8. Seed source
 9. Unit of seed certification
 10. Isolation distance
 11. Genetic and physical contaminants
 12. Border rows

1. Cropping history of seed field

- o The seeds left scattered in the field from the last crop may cause genetic or physical contamination of the seed crop by volunteer plants. Hence in the previous year or season the same crop of lower standard should not have been grown. The volunteer plants should be destroyed by irrigation and subsequent ploughing, just before sowing or planting.

2. Seed source

- o Source of seed of the seed crop should be approved and should satisfy the specific requirement of purity. It is verified by checking the certification tag of the source seed used for sowing.

3. Unit of seed certification

- o One unit shall consist of 10 hectares of seed farm if (i) seed fields are separated by not more than 50 meters (ii) planting dates do not differ by more than 7 days (iii) seed crop is of same variety and class.

4. Isolation distance

- o It should be provided to separate the seed crop from all possible sources of contamination during the growing period. Sources of contamination may be (i) cross pollination from different cultivars or (ii) transmission of designated diseases (iii) mechanical admixture from adjacent crop during harvest.

5. Physical and genetic contaminants

- o Proper roguing of physical and genetic contaminants must have been performed so as to conform to the prescribed minimum seed certification standards. In

hybrid seed production field, border rows are used to provide enough pollen and it absorbs foreign pollen thus avoiding contamination of main seed crop. Besides, the planting ratio between male and female parent is also confirmed. Roguing space should also be verified wherever applicable. Necessary guidance should be given to farmers at each stage of field inspection.

6. Border rows

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Stages and number of field inspection

- o The stages and number of field inspections required depends on the breeding system of the seed crop.

Table1. Stages of field inspection for sexually propagated crops.

Crop	Vegetative	Flowering	Post flowering	Pre harvest
Self pollinated varieties	-	√		√
Cross pollinated varieties	√	√		√
Hybrids	√	√	√	√

Table 2.General factors to be observed

Vegetative stage	Seed source, cropping history, isolation distance, seed production practices
Flowering stage	Isolation distance, off-types, rogues, objectionable weeds, seed borne diseases, other crop plants.
Post flowering and pre-harvest stage	Isolation distance, off-types, rogues, objectionable weeds, seed borne diseases, other crop plants.
Harvest stage	Isolation distance, off-types, rogues, objectionable weeds,

Stages of crop inspection for vegetatively propagated crops

- o Potato - Sprouting, seedling lifting and replanting, tuberisation, tube hardening, haulm cutting stages
- o Cauliflower - Curd formation, bolting
- o Knol khol - Knob formation, bolting
- o Cabbage - Head formation

Field counts

- o It is impossible to examine all the plants in the seed farm. All the characters of the plant may not exhibit in a particular time. Hence 'random counting' is made at required stages of crop growth.

Table3. No. of field counts

Area of the field (acres)	No. of counts to be taken
<5	5
5 – 10	6
10 – 15	7
15 – 20	8
20 – 25	9

Table 4. Number of plants /heads per count

S.No.	Crop	No. plants / heads per count
1.	Bajra, barely, oats, paddy, sorghum, wheat, ragi	1000 heads
2.	Berseem, jute, lucerne, mesta, soyabean	1000 plants
3.	Beans, cluster beans, cowpea, pea, greengram, blackgram, horsegram, bengalgram, mustard, sesamum, niger, safflower, green leafy vegetables	500 plants
4.	Bhendi, brinjal, bulb crops, capsicum, chilli, cole crops, cucurbits, potato, cotton, maize, castor, groundnut, sunflower, redgram, root crops, tomato	100 plants

Processing

- o Processing report should accompany the seed lot. ODV should not exceed 1%. Yield should correlate with estimated yield. Seed should conform to prescribed moisture level and be brought to the processing plant in new containers within 2 months. Processing and sampling should be completed within 2 months.
- o Processing should be done only in approved seed processing unit after proper cleaning. Lot identity should be maintained throughout. Appropriate sieve size should be used except in cases of exigencies with approval from Assistant Director of Seed Certification. Processed seed shall not have seed of the size lower than the aperture of the bottom screen used beyond 5 % by weight. Float test is done for paddy, the maximum float admissible is 5 %, or else adjust the air flow or feeding to perfect the processing. Stenciling on containers should be verified. Next lot number should be assigned and written legibly on the containers after processing.

Hand processing

- o It is allowed when the quantity of seed lot is below 1000 kg in pulses and sunflower, 500 kg in sesamum under single seed certification number for tomato, chillies, brinjal etc., and groundnut, hand processing is allowed irrespective of quantity since required equipments are not available.

Assigning

Lot

No

The lot number will have four parts. Each part will signify and conform the following

details.

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- First part - Month of harvest
- Second part - State code
- Third part - Processing plant code
- Fourth part - Seed producer code

Seed Sampling and Testing

- Processing and sampling should be completed within 2 months from the date of receipt in the processing unit. SCO (Seed Certification Officer) who takes the sample shall send the same to the concerned Assistant director of Seed Certification within 24 hours of sampling with necessary details. He will be sent it to the STL with secret code number within 3 days. After analyses, STO (Seed Testing Officer) will communicate the result to the Assistant director of Seed Certification. After decoding he will communicate the result immediately to the producer and SCO concerned.

Tagging and Labelling

- After receiving the seed analytical reports from the STO the result will be checked with seed standard. After checking the tags the details may be filled up without any correction or omission. Seed will be treated with approved chemicals, bagged, weighed and stitched with tags and sealed. Tagging should be done within one month from the date of test. For lots subjected to genetic purity tagging should be completed within 15 days from the date of receipt of results.

Sealing and grant of certificate

- After receiving the seed analytical report, the producer will get the tag from the ADSC & affixes labels (producer's label) and tags (Blue for C.S & White for F.S) to the containers & sealed to prevent tampering and grant certificate fixing a validity period for 9 months. Tagging should be done within two months from the date of testing.

Validation

- Before expiry of the seed lot the producer shall apply for validation if he desires to have the seed lot validated for a further period of 6 months. He shall do so after stocking the seed lot in an approved seed processing unit. The process of extension of validity is called "validation". Within 10 days from the date of receipt of orders from the Assistant director of Seed Certification, SCO will inspect the seed lot. He will verify the correctness of the seed lots and ensure whether all the containers have tags and seals are intact. Later samples will be drawn and tested, if the lot conforms to the prescribed standards the SCO will extend the validity period by six months by stamping validation in the existing tags duly signed.

Seed certification agency

- o The functions of the Seed Certification Agency can be broadly classified into five categories.
- 2. Seed certification
- 3. Seed law enforcement
- 4. Grow out test
- 5. Issuing of certificate for transport of seeds
- 6. Training and Liaison

1. Seed certification

- (a) Outlines the procedure for seed certification, which includes submission of application, growing, harvesting, processing, storage and labeling of seeds.
- (b) Inspection of fields to ensure that minimum standards for seed source, land requirements, isolation, off types, pollen shedders, shedding tassels, objectionable weed plants, designated diseases and similar factors are maintained at all times.
- (c) Inspection of seed processing plants to seed that the admixtures of other kinds and varieties are not introduced.
- (d) Arrange of seed sampling, analysis of sample and issue of certificate in accordance with the provisions of the seed Act and Seed Rules. (e) Maintain the list of recognized breeders of seed, required records to verify the production of certified seeds.
- (f) Monitor the Breeder seed production plots by constituting a monitoring team.

2. Seed Law Enforcement

- o Seed inspectors will visit the premises of seed distribution agencies, inspect seed lots produced, take samples of seed, as per the procedure and have such samples tested to ensure that the seed conforms to the prescribed standards of certification. If found necessary seed inspectors can issue orders to stop the sale of seeds, seize the stocks and initiate prosecution.

3. Grow out test

- o It is a test of genetic purity. Samples are drawn both from the source seed and the seed produced and grown in the field along with the standard seed samples of respective variety. By comparison, it can be determined whether varietal purity and health of the seed produced are according to the prescribed standards.
- o The objective of grow-out-test is to determine the genetic purity of a given seed lot of a released cultivar and the extent to which the submitted sample conforms to the prescribed standards. Grow out tests are conducted for foundation classes I and II of variety cotton and tomato, hybrid cotton and its parents and hybrids of red gram, castor, tomato, brinjal, musk-melon, true potato seed and seeds of seedless watermelon. Grow out test will be conducted under direct supervision of the Director of Seed Certification

4. Issuance of certificate

- o Issuance of Form II to the seeds to be moved out of Tamil Nadu.

- o Issuance of following certificate for export of seeds “Certified that the seeds to be exported are not wild species do not belong to foundation or breeder seeds”.

5. Training and Liaison

- (a) Orientation training
 - o Training is given to the newly joined seed certification officers.
- (b) Refresher training
 - o Technical officers already positioned in the department are trained.
- (c) Training to seed producers
 - o Training is given on seed production aspects to Government, Quasi government and Private Seed Producers.
- (d) Quality control training to seed dealers
 - o Training is also given to seed dealers on the regulatory aspects of seed selling and seed legislation.