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LEGISLATIONS FOR SEED QUALITY REGULATION IN INDIA

V. Santhy

P.R. Vijaya Kumari

Anshu Vishwanathan

R.K. Deshmukh



**Central Institute for Cotton Research
Nagpur**

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PREFACE

Seed is the basic and vital input for a successful agriculture production. Therefore it is very much essential to maintain its purity and quality through various stages of seed production i.e. Breeder, foundation, registered and certified seed. Government of India besides had framed and brought out different legislations to protect the quality of seeds and planting materials. Seed Act(1966), Seed Rules(1968), Seed (Control) Order(1983), New Policy on Seed Development (1988), Plants, Fruits & Seeds (Regulation of import into India), 1989, The PPV & FRAct (2001), Essential Commodities Act including Seeds (1955), National Seed Policy (2002) and Seed Bill (2004) take care of seeds right from the production to marking, labeling and marketing levels to maintain the quality standards as prescribed by the Central Seed Committee. These laws are framed in order to make available quality seeds to a common farmer and equip him to approach authority for justice.

I congratulate the Seed Technology Scientists of CICR, Nagpur in bringing out this bulletin covering all Seeds Legislations in Nutshell which will be an immense help to the farmers, Researchers, Breeders, Seed Producers and Seed dealers.



K. R. Kranthi

Director (Acting)

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*When men are Pure, laws are useless;
When men are corrupt, laws are broken.*

- Benjamin Disraeli.

Introduction

Development of improved crop varieties is vital for sustained increase in agriculture production and productivity. Timely supply of quality seed is equally significant since the contribution of quality seed alone is estimated to be 15- 20% to total crop production (MSP Annual Report 2006-07). India with a population of more than 1 billion and an arable area of 168 million hectares has one of the largest potential seed market in the world. The total Indian seed market valued around \$500 million 5 years back (Gadwal, 2003), but it values \$ 1 billion presently with large portion of seed trade involving local exchanges of established varieties or farmer bred seeds. The total amount of certified seeds produced is only 8% (Gadwal, 2003) of total seed sown each year. Therefore it is imperative to increase the production and distribution of quality seeds. Seed quality attains more significance in view of emerging biotic and abiotic stresses, issues related to quality and phytosanitary measures, competition in domestic and international markets and emerging food needs.

Measures of seed legislation with respect to quantity and quality were initiated in the country by establishment of National Seed Corporation during 1963 under Ministry of Agriculture. The seed sector in India during the period was dominated by the Public sector. The NSC was the Central Body to produce seeds of superior dwarf varieties in rice, wheat and, superior hybrids in maize, pearl millet and sorghum. This was followed by various seed legislations enacted by Government of India details of which have been enumerated in followed pages. Further, AICRP-National Seed Project during 1979 (NSP) was undertaken by the Indian Government. The project resulted in achieving breeder seed production surpassing the indents in all major crops. Recently, Governments' decision to embrace biotechnology as a means of achieving food security has made seed quality an important aspect in R & D and business sector in India such as "approval for commercial cultivation of Bt cotton" in the year 2002. Several leading multinational seed companies have entered the seed market and at present the composition of the seed industry by volume of turnover, has reportedly reached a ratio of 60:40 between the private and public sectors (Govindan, 2003).

Since most of the farming community is illiterate or semi- literate, it is the responsibility of the Government to frame rules that govern the production and distribution of quality seeds to the farming community. Though seed act had been implemented in European countries at the fag end of eighteenth century, India did have an act to designate seed quality parameters. This void was fulfilled during 1966, when the Seed Act was formed and followed by Seed Rules in 1968. Both were adopted during 1969 for the whole of India except Sikkim and Kashmir. Amendments were made subsequently for the Seeds Act during the years 1972, 1973, 1974 & 1981. With newer varieties coming into the agricultural scenario, the seeds control order was formed insisting on compulsory licensing of the dealer. This was made even more stringent by bringing the seeds under the Essential Commodity Act, 1955. To help Multinational Corporation in utilizing the manpower and knowledge base of our country, the Plants, Varieties and Fruits Order

was passed during 1989 and amended subsequently during 1998, 2000 and 2001. Finally the order was revised by another order, Plant Quarantine (Regulation of import into India) Order in 2003. Signing of WTO in 1995 paved the way for private research and development of varieties. In order to regulate such varieties, the protection of Plant Varieties and Farmers' Right Act was passed in 2001 which was followed by National Seed Policy, 2002 and Seeds Bill, 2004.

Seed legislations by Government of India.

1. Seeds Act (1966)

The major legislative measures involved under the Act are Seeds rules framed in 1968, Seeds (Control) order, formulated in 1983 after including seeds as an essential commodity

A total of twenty five clauses have been mentioned in the act and they are:

1. Enacted by Parliament for the whole of India to regulate seeds
2. Seeds of food crops, oil crops, cotton seeds, seeds of cattle fodder and all types of vegetative propagating material are included
3. Constitution of a Central Seed Committee (comprising eight members) to advise the Central and State Governments on matters arising out of the administration of this act and carry out other functions assigned to it by the Act
4. Establishing a Central Seed Laboratory as well as State Seed Laboratory to carry out seed analysis of notified variety
5. Empowerment of the Central Seed Committee to notify any variety found suitable as per the Act after notification in the Official Gazette
6. Empowerment of the committee to fix the minimum limits of germination and purity of seed for a variety to be notified as well as for marking or labeling a seed lot to be sold commercially
7. Regulation of sale of seeds of notified varieties by compulsory truthful labeling revealing the true identity of the variety, germination as well as purity
8. Constituting a certification agency for undertaking the process of certification
9. Power of certification agency to recommend notification of suitable variety and grant of notification certificate provided the seed meets minimum limits of germination and purity
10. Empowerment to the agency for revocation of certificate if the agency is convinced that holder has obtained certificate by misrepresentation or not complied with the conditions
11. Provision for an appeal by the holder on payment basis to express before an appellate

authority, his limitations for not complying with the conditions

12. Appointment of a seed analyst to undertake seed testing.
13. Appointment of seed inspector who is deemed to be a public servant within the meaning or section 21 of the Indian Penal Code (45 of 1860)
14. Empowerment of seed inspector to draw samples from any seller or a purchaser and verify the quality by sending samples to a seed analyst in the seed testing laboratory
15. Laying-out of procedure for seed sample collection and other rules. The clause also entrust inspector with the power to break open any seed container or door of any premises where such seed may be kept for sale, under those circumstances when owner refuses to cooperate. The whole operation has to be done in presence of two witnesses with their signatures on a memorandum
16. Responsibility of Seed analyst to report the results in a specified format after analysis of the seed samples to Seed Inspector as well as the seller/ purchaser. Complainant if dissatisfied with the result can apply to the court for sending samples to Central Seed Testing Laboratory. Central seed laboratory shall thereupon send its report to the court in the prescribed format within one month from the date of receipt of the sample
17. Restriction on import and export of seeds of notified varieties. Any variety imported or exported should meet the minimum limits of seed germination and purity marked or labeled on the container truly
18. Recognition of seed certification agencies of foreign countries for the purpose of this act
19. Penalty or punishment or both for those who do not comply with the provisions of the act and also prevent seed inspectors from executing his power
20. Forfeiture of property (seeds) belonging to any person convicted under this act due to contravention of the procedures under this act
21. Punishment for offences committed by companies or any body corporate. All who was in-charge of, when the time the offence was committed and was responsible to the company shall be deemed to be guilty of the offence and punished accordingly
22. Protection of Government action taken in good faith that is no prosecution or legal proceeding will lie against Government or any Government Officer for anything that is done in good faith
23. Power for Government to give directions for smooth conduct of the act
24. Non-application of the act to the seed exchange by the farmers without any brand name

25. Power of Government to make rules to carry out various functions of Central Seed Committee, Central Seed Laboratory, Certification Agency and Seed Inspectors

Seed Rules, 1968

The rules have been framed to implement various legislations given under Seed Act, 1966 and contain 11 sections.

I. Preliminary

This section provides definitions of various terminology used under the seed rule.

II. Central Seed committee

This section describes the specific functions entrusted to the committee by the act such as recommendation for Seed Testing fee, advice on the suitability of seed testing laboratory, recommendation for the procedure and standards for seed certification and testing. Also the rules provide details of traveling and daily allowances payable to the members of the committee.

III. Central Seed Laboratory

In this section it describes the specific functions entrusted to the Central Seed Laboratory such as coordinating with State Seed Laboratories for uniformity in test results, collecting data on quality of seeds available in the market and any other function assigned to it by the Central Government.

IV. Seed Certification Agency

This section deals with the specific functions entrusted to the Certification Agency such as outlining the procedure for submission of applications, growing, harvesting and processing and storage of seeds indented for certification, maintaining a list of recognized nucleus seed breeders, inspections of seed production fields, seed processing plant and seed stores, grant of certificates.

V. Marketing or Labeling

Rules for marking or labeling of seed lots indented for certification have been provided in this section. The label should contain name of the person or agency that produced the seed and shall be responsible for the accuracy of information given in the unopened original container. The label should contain the name, the address of the person offering the sale of the seed, name of the variety, germination and purity level of the seed, net weight of the seed, date of seed testing and a statement if the seed is treated. Any transparent cover used solely for the purpose of packing during transport or delivery need not be marked or labeled.

VI. Requirements for Certification

Three classes of certified seed have been specified in this section, viz. Foundation (progeny of breeder seed), Registered (progeny of foundation seed) and Certified (progeny of registered /

foundation seed) and each class shall meet the specific standards. Certification agency has the discretion of producing certified seed from certified seed provided that it does not exceed three generation and the genetic purity is not significantly altered.

VII. Certification of seeds

The detailed procedure of seed certification starting from applying for certification till the grant of certificate has been provided in this section. Application has been outlined by the certification agency containing the name and details of the applicant, the name of the seed to be certified, class & source of the seed, germination and purity and mark or label. A fee of Rs. 25 is levied for certification. Once certified, the certification tag containing information such as name and address of the certification agency, name of variety, lot number, name and address of the producer, date of issue of its certificate and its validity, an appropriate sign, to designate certified seed. The color of the tag shall be white for foundation, purple for registered and blue for certified seed. The holder of certificate shall allow any seed inspector to enter and inspect the seeds kept for sale, registers or other documents.

VIII. Appeal

Provision for appeal has been provided by submitting a memorandum accompanied by a treasury receipt for Rs. 100. The appellate authority shall exercise all the powers which a court has, while deciding appeal under the code of civil procedure, 1908.

IX. Seed Analyst and Seed Inspectors

The specific qualifications and duties of seed analyst and seed inspectors have been provided in this section. Seed analyst should possess a Master Degree in Agriculture/ Agronomy/ Botany/ Horticulture from a recognized University with at least one year experience in Seed Technology or possess a Bachelors degree in Agriculture/Botany from a recognized university with a minimum of three years experience in Seed Technology for this purpose. Seed analyst shall analyze the seed samples according to the provisions of the Act. Seed Inspector shall be a graduate in agriculture with at least one year experience in Seed Technology.

X. Sealing, Dispatch and Analysis of Samples

The details of sampling, labeling, manner of packing and sealing the samples as well as its dispatch to the seed analyst has been provided.

XI. Miscellaneous

The need to maintain stock record of seeds and record of the sale of seed have been provided in this section.

Amendments to the Seed Act / Seed Rules

The Seeds (amendment) Rules, 1972

Inclusion of "jute seeds" to the Seeds Act, Establishment of a Seed Certification Board, and empowerment of the Board to fix minimum standards

➤ **Certification Board**

Establishing Central Seed Certification Board to advise Government on all matters relating to the certification and co- ordinate the functioning of certification agencies.

Details of the Board members to be included with a Chairman and employees nominated by the Central Government, Directors of Agriculture and Directors of Research.

Membership period has been given for two years.

The board can make by-laws for regulating its own procedure.

The Central Government shall appoint a Secretary for the board

- The rule says seed should not just meet a minimum limit of germination and purity as given in SEED ACT, 1966, but should meet a prescribed standard provided that the standard is not lower than the minimum limits of germination and purity specified for the seed.
- Clause for "Power to fix standards for which seeds should conform" was added under the power to make rules in the Seeds Act, 1966.

The Seeds (amendment) Rules, 1973

Powers of appellate authority and duty of seed analyst have been slightly modified. Seed Testing Manual published by ICAR has been mentioned to be referred by the seed analysts

- Judicial powers of authority provided in Seed Rules under Appeal, has been omitted.
- Seed analyst shall analyze samples in accordance with the procedures laid down in the Seed Testing Manual published by the ICAR.
- Amendment has been made by specifying the time period (maximum 30 days after receipt of the sample) within which the seed analyst should report the result.
- Amendment by empowering the State Government to assign any duty to Seed Inspector has been made.

The Seeds (amendment) Rules, 1974

More powers conferred on seed inspector during crop failure

- Modified the seed rules by adding a clause on action to be taken by the seed inspector if a complaint is lodged with him as a result of crop failure.
- The amendment says that in cases of crop failure, the inspector shall investigate causes of failure by sending seed samples for detailed analysis.
- He shall also submit the report to the competent authority

- If the inspector comes to conclusion that failure of performance is due to low quality seed not meeting the minimum standards notified by the Central government he shall take proceedings against supplier.

The Seeds (amendment) Rules, 1981

A new rule added under the seed certification and has mentioned

Indian Minimum Seed Certification Standards published by the Central Seed Committee to be referred for certification

- The amendment says certification agency shall ensure that the seed standards confirm to the minimum seed certification standards laid down in the manual known as Indian Minimum Seed Certification Standards published by the Central Seed Committee which is commonly called as Blue Book.

Seeds (Control) Order, 1983

The inclusion of seeds as an essential commodity item under the Essential Commodity Act, 1955 brought the Seeds (Control) Order.

- A person carrying on the business of selling, exporting and importing of seeds needs to obtain a license
- The Essential Commodity Act, 1955 gives powers to State governments to regulate various aspects of trading in essential commodities under the supervision of Central Government. The act again passed with amendments in the year 1980 clearly states that detaining of persons whose activities are unethical in the supply of essential commodities. This help in prevention of black marketing of the supplies
- The license provided to a seed dealer remains valid only for 3 years from the date of its issue which can be later renewed
- The seed dealer has to essentially display the stock position (opening and closing) on daily basis along with a list indicating prices or rates of different seeds
- A cash or credit memorandum has to be given by the dealer to purchaser of seeds, compulsorily
- The State Government is empowered with appointing a licensing authority, inspectors and mode of action for supply regulation.
- Under this order the time period for completion of seed analysis in case of any doubt about quality is 60 days compared to 30 days under Seed Rules
- Cancellation of license if obtained through misrepresentation
- Provision for appeal and an appellate has also been provided
- Provision for amendment of license and need for maintenance of records and submission of monthly returns by the dealer

The National Seed Project undertook various measures and had set up huge processing plants in order to provide processing of certified seeds of self pollinated food crops to farmers. However it did not result in complete fulfillment of the mission since private sectors were able to take

forward their quality seeds in both self and cross pollinated crops of varieties/ hybrids respectively. In the year, 1971, National Commission on Agriculture recommended breaking of Public sector hold and entry of private sector into the Indian Seed market. Subsequently, the National Seed Policy in 1988 was formulated to help privatize the Indian seed industry at that time the import of seeds were restricted.

New Policy on Seed Development, 1988

The policy was formulated to provide Indian farmers with access to the best available seeds and planting materials of domestic as well as imported

- The policy permits the import of selected seeds under Open General License (OGL), to make available to farmers high quality seeds to maximize yield, increase productivity thereby farm income. The policy allow import under OGL of items such as seeds of oilseed crops, pulses, coarse grains, vegetables, flowers, ornamental plants, tubers, bulbs, cuttings and saplings of flowers.
- While the import of horticultural crops including flowers need recommendation from Directors of Horticulture, import of crop seeds require permission from ICAR. ICAR will direct multi -locational trials in various agro-climatic conditions at least for one season.
- Evaluation of important traits such as yield, pest resistance etc. needs to be done within 3 months of harvest after which importer shall apply to the DAC for permit. Within a month, DAC will process it and thereafter controller of Imports and Exports will issue a license.
- Private seed producing firms should compulsorily register with NSC before importing the seeds.

The policy was immediately followed by an order by Government of India (Plants, Fruits and Seeds Order) for the purpose to regulate the import of agricultural items into India.

Plants, Fruits and Seeds Order (Regulation of Import into India order) 1989

The order was made suppressing the Plants, Fruits and Seeds Order (Regulation of Import into India) 1984 and provides regulations during import based on post entry quarantine checks.

- Post entry quarantine facilities shall be established which shall be permitted to be released by Designated Inspection Authority.
- Import of any form of seed for consumption or sowing should carry a permit issued by the competent authority, and the import should be only through specified customs stations.
- The consignment shall be inspected by the Plant Protection Advisor.

Amendments have been made for the above order during 1998, 2000 and 2001. With the liberalized trade in agriculture, as consequence to WTO agreements, Government thought of providing new legislative provisions under the new order, **Plant Quarantine (Regulation of import into India) Order, 2003**. The Order has now replaced the **Plants, Fruits and Seeds order, 1989**.

- The order has widened the scope of plant quarantine activities and has made pest risk analysis compulsory for imports
- The order includes provision for regulating the import of soil, moss, germplasm and GMO's for research, insects, microbial cultures and bio-control agents, timber and wooden logs
- The order prohibits import of commodities contaminated with weeds, alien species, and packaging material of plant origin unless the material has been treated
- Agricultural imports are thus classified as: prohibited plant species, restricted species where import permitted only by authorized institutions and declarations and plant material imported for consumption or industrial processing permitted with phytosanitary certificate
- Phytosanitary certificate according to Plant Quarantine requirements has to be provided so as to prevent spread of noxious pests
- Pest risk analysis during post entry quarantine is compulsory.
- Import of germplasm has to be permitted by NBPGR and any other biological materials such as soil, microbes, moss etc. has to be permitted by Plant Protection Advisor
- A list of 590 quarantine pests and 61 weed species have been declared under the Order
- Notified entry points for import have been increased compared to PFS Order, 1989
- Strengthening Plant Quarantine facilities, opening new quarantine stations, establishing advanced molecular diagnostic facilities for rapid pathogen detection, setting up of National Pest Risk Analysis unit are other important features of the Order

Global realization on the role of plant genetic resources in development of superior crop varieties and use of many traditionally grown plants in development of medicines and various industrial applications raised concerns for Conservation of Biological Diversity (CBD) which came into force in the year 1993. Government of India felt the need to provide protection to plant varieties which have tremendous commercial value after India became signatory to the Trade Related Aspects of Intellectual Property Rights Agreement (TRIPS) in the year 1994. The TRIPS agreement required the member countries to provide for protection of plant varieties either by a patent or by an effective *sui generis* system or by any combination there of. The *sui generis* system for protection of plant varieties was developed by India integrating the rights of breeders, farmers, and village communities. The Protection of Plant Varieties and Farmers Right Act was thus formulated in the year 2001.

Protection of Plant Varieties and Farmers Right Act, 2001

- The Act covers all categories of plants except microorganisms
- The variety being claimed for protection needs to be notified
- The food crops including major cereals, pulses, oilseeds, vegetables and fruit crops are selected on first priority
- Crops important for India in the world trade, species of Indian origin, crops where India could benefit from introduction of new germplasm are other priorities
- The act is unique in the world with inclusion of rights of farmers, breeders, researchers and equity concerns
- The Central Government shall establish a PPV & FR Authority with a Chairman and 15 members to implement the various functions of the Act
- A variety can be registered for protection if it satisfies the criteria of Novelty, Distinctness, Uniformity and Stability (NDUS)

Novel means the variety was not sold or disposed by the breeder for commercial exploitation in India earlier than one year or outside India, earlier than four years before the date of filing of application for registration.

Distinct means the variety is clearly distinguishable by at least one essential characteristic from any other variety whose existence is known in any country at the time of filing of application

Uniformity means the variety is sufficiently uniform for essential characteristics other than the variation that may be expected within the variety due to its mode of reproduction

Stability means the variety remain unchanged for its essential characteristics even after repeated propagation

- The DDS test guidelines have been laid for - many crops and registration for many crops for protection has already been initiated. In cotton, 37 characters for tetraploid and 31 for diploid cotton have been identified. A manual is available giving the description of such traits in various crops published by Directorate of Seed Research, MAU
- The detailed contents to be provided in the application form for registration has been given. Complete passport data of the variety, clear pedigree and source of origin of the variety, statement declaring no terminator gene is present, specification on novel and distinct character of the variety etc. are some of the major features in the form
- It shall not apply for registration of farmers' varieties
- Period of protection is six years in case of crops and may be renewed on condition that the total period of validity does not exceed 15 years
- Breeder has to pay an annual fee based on the royalty gained by the variety for retention of registration of the same
- Registration certificate issued to a breeder confer him/her exclusive right to produce, sell, market, distribute, import or export the variety
- Researchers are not prevented for conducting research using the registered variety or using the same for creating newer varieties provided an authorization is given by the breeder indicating the necessity of use of protected variety
- The breeder of essentially derived varieties so developed using the protected varieties shall have the same rights as the breeder of other new varieties
- Farmers have been provided right to avail protection of varieties conserved or developed by them.
- Farmers can save, re-sow, exchange, share and sell farm produce of any protected variety except its commercial marketing with brand name
- Farmers have the right for innocent infringement when, at the time of infringement he is not aware of the existence of breeder rights
- A National Gene Fund has been constituted which will be utilized for payment as rewards to farmers who has preserved a variety and which has been used as donor of genes in development of a new variety by any breeder
- The gene fund is also utilized for providing compensation to farmers if the variety does not perform to the expected performance of the variety. The expected performance of a protected variety under specific condition needs to be compulsorily provided to the farmers during sale
- Under situations of unavailability of seeds of protected varieties, the authority can grant

- compulsory license to any person for producing and distributing the seeds to public at a reasonable price, provided the expiry period of 3 years of registration of variety is completed
- Breeder needs to share the benefits accrued from a registered variety with the necessary claimers who shall be heard and if convinced, his share may be given as per the nature and extent of the benefit
 - National Gene fund is credited with the benefit sharing from the breeder, the annual fees payable by the breeder through royalties and contribution from any national and international organization and other sources
 - Fund will be utilized for disbursing shares to benefit claimers, compensation to seekers, supporting conservation and sustainable use of genetic resources, and for strengthening the capabilities of the Panchayat in carrying out such conservation measures
 - Constitution of Plant Variety Protection Appellate Tribunal to exercise jurisdiction and powers consisting of Judicial as well as Technical members
 - The authority provide measures to Institutions for registration of extant (already known to exist) and new varieties, characterization, documentation and developing a data base of all existing varieties, cataloguing of farmers' varieties, ensuring availability of seeds of registered varieties, maintenance of register of plant varieties etc. taking advantage of any institution including ICAR
 - Identification of possible reference varieties is a requirement under DDS testing which has to be for all crop species. Their storage is an important component of the act for which appropriate storage facilities need to be created at selected locations

The Indian PPV & FR Act thus appears to be an effective *sui generis* system providing a balance between plant breeders' rights along with farmers' rights and researchers' rights. The impact will be felt only after its effective implementation.

Protection of Plant Varieties Rules, 2003

The rules have been enforced for the smooth implementation of the Act, 2001. The rules provide detailed procedures while applying for protection, ways of administering the national gene fund, procedure on application for compensation, procedure to alter the denomination of a registered variety, procedure for cancellation of certificate and all other procedures to be implemented as per the provisions given in the PPV & FR Act, 2001.

Seed industry was promoted and regulated through Seeds Act, 1966, Seeds (Control) Order, 1983 and the New policy on seed development, 1988. However, far reaching changes have been taken place in the national economic and agricultural scenario and in the international environment since the enactment of the existing seed legislation. Biotechnology sector came up with promises of extremely productive GM crops. It was believed that the new technology has the potential to improve living standards. Various organizations such as ICAR, Ministry of Environment and Forests, Government of India, Federation of Indian Industries (FICCI) support commercialization of such crops. National seeds policy was thus formulated in the year, 2002 to provide an appropriate climate for the seed industry to utilize available and prospective opportunities, safeguarding the interest of farmers and conservation of the biodiversity. Liberalization has been targeted towards certain components of the policy retaining regulation to some components to safeguard national interest.

National Seed Policy, 2002

National Seed Policy was formulated in 2002 to raise India's share in the global seed trade by facilitating advanced scientific aspects such as biotechnology to farmers and in March 2002, first transgenic Bt cotton was approved for commercial cultivation in India.

- The policy encourages private sector participation in research and development of new plant varieties.
- The rights empowered to various bodies for regulating the quality of seeds produced, distributed and for providing variety protection as per the Seeds Act, 1966 and PPV & FR Act, 2001 have been retained in the policy
- Promotion of seed village scheme to increase the production and make available the seeds in time as well as upgrading the quality of farmers' saved seeds
- Establishment of seed banks for ensuring supply in times of calamity and storage facility at village level
- Establishment of a National Seed Board in place of Central Seed Committee and Central Seed Certification Board to undertake seed certification and advising Government on all matters related to seed planning and development. NSB will serve as the apex body in the seed sector
- Setting up of National Seed Research and Training Centre to impart training in seed technology
- Development of a National Seed Grid to provide information on availability of different varieties of seeds with production details. Both public and private sector will be encouraged to join the grid for a clear assessment of demand and supply of seeds

Few of Policy's other recommendations have been addressed in PPV &FR, Act, 2001 also. Major ones are maintenance of a National Register on seeds of varieties, establishing a national gene fund, disclosure of the variety's expected performance and provision for farmer to claim compensation in case of crop failure. Further, aims of National Seed Policy such as development of infrastructure, ensuring supply of good quality seeds and facilitating the International seed trade are sought to be addressed through the proposed Seeds Bill, 2004.

Seed Bill (2004)

The Seed Bill is proposed to replace the Seed Act, 1966

- Compulsory registration of seeds that are to be offered for sale through test for Value for Cultivation and Use (VCU)
- Seed certification will continue to be voluntary
- VCU will be tested by multi- locational trials over three seasons. Samples of materials for registration will also be sent to NBPGR for retention in the National Gene Bank
- Enable provisional registration based on the information filed by the applicant relating to trials over one season to tide over the stipulation of testing over three seasons before the grant of registration. The provisional registration will be for a period not exceeding two years
- Accreditation of any organization or individual or any seed producing organization to carry

out self- certification subject to the control of the seed committee and State Government

- Registration of seed processing units will be required.
- Varieties already in the market at the onset of policy implementation will have to be registered within a fixed time period
- Compulsory disclosure on the expected performance of a variety sold to a farmer. During failure the farmer may claim compensation under the Consumer Protection Act, 1986
- All registered seeds should meet the minimum limits of germination, purity and seed health and the seed lots on sale should be compulsorily labeled. In transgenic varieties, the label should carry the name of transgene
- Compulsory registration of seed producer or any seed production organization, horticultural nurseries engaged in business
- Any registered varieties offered for sale can also be certified by the State Certification Agency if the dealer intends to
- A Central Seed Committee in line with National Seed Board provided in the Seed Policy, 2002 will be the apex body to fix or set the minimum standards for the seeds and decide which seeds are harmful or dangerous to the environment and public health
- Empowerment of Central Government to declare any Seed testing laboratory as the Central Seed Testing laboratories which will also serve as referral lab in case of disputes. Empowerment of State Government in establishing one or more State Seed testing laboratories
- Seed testing labs will be established in conformity with ISTA to meet the quality requirements of seeds during export
- Special provision for registration of transgenic provided the applicant has obtained clearance from GEAC
- The seeds imported can be subject to registration granted based on the results of multi-locational trials
- The import of transgenic seeds to be done only through NBPGR after approval from GEAC as per the EPA, 1986
- During import to the country all seeds are required to be accompanied by a certificate from competent authority regarding their transgenic character
- Compulsory testing of transgenic crop varieties under AICCIP to determine their agronomic value in co-ordinance with the tests for environment and bio-safety clearance as per the EPA before its commercial release
- Post release monitoring of transgenic for performance for 3 - 5 years by the Ministry of Agriculture and State Departments of Agriculture
- Provision of protection of transgenic as per PPV & FR provisions
- Appointing Seed inspectors with more powers unlike that mentioned in Seed Act, 1966. No warrant or procedural safeguards shall be applicable
- Plant quarantine procedure need to be strictly followed during import of seed material with a permit from Plant Protection Adviser to the G.O.I
- Creation of data base on availability of seeds of different crops to assess the impact of exports on domestic availability of seeds
- Strengthening of testing and certification facility with international standards
- Encouraging seed production in non-traditional areas and subsidy to take up seed production in marginal lands

- Revocation of certificate under misrepresentation
- Recognition of Seed Certification Agencies in foreign countries
- Provision of appeals and establishment of an appellate authority

A public opinion has emerged on the fact that Seed Bill provisions are contradictory to the PPV & FR legislations and that the Seed Bill has been drafted to suppress the merits of PPV & FR Act, 2001.

Comparison of Seed Bill, 2004 and PPV & FR act, 2001

S.No	Seed Bill, 2004	PPV & FR act, 2001
1	Farmer has to claim compensation from a consumer court and redressal under the Consumer Protection Act, 1986	Farmer get compensation from the PPV authority which is all the more simpler
2	Does not require the declaration of origin of variety along with pedigree details	Requires the declaration of origin of variety along with pedigree details
3	Does not grant any recognition to the contribution of farmers	provides rewards for farmers contribution and also the benefit sharing
4	Seed dealers are not under any obligation to provide reasonable seed supply to farmers	Provides compulsory licensing which safeguards the interests of farming community to ensure adequate seed supply at reasonable price on the Government.
5.	Grant of provisional registration is considered a major draw back	No such provisions have been given

Regulatory measures specific to transgenic seeds

Recognizing the potential of Genetic Engineering and its relevance to India, Ministry of Science and Technology gave sufficient impetus for research and monitoring of transgenic seed development. The measures of transgenic regulation fall under the Environment and Protection Act, 1986 and EPA rules, 1989.

- Establishment of Department of Biotechnology in 1986 exclusively to apply biotechnological approaches in agriculture and human health
- Establishment of Review Committee on Genetic Manipulation (RCGM) in 1989 for effective monitoring and evaluation which lay guide lines for assessment of GM crops
- Establishment of Institute Bio-safety Committee at the organization level, to monitor r-DNA technology work
- Establishment of Special Monitoring cum Evaluation Committee under RCGM to monitor the impact of transgenic plants on the environment with following members:

— Establishment of Genetic Engineering Approval Committee which will recommend the Government for approval of a transgenic variety for commercial cultivation

- An All India Crop Biotechnology Association (AICBA) was also formed to represent seed industry in addition to existing ones such as Seed Association of India at New Delhi and Association of Seed Industries at Mumbai

- Under Seeds Rules, 1968, Central Government has declared CICR laboratory of ICAR as Referral Laboratory for Bt. cotton seeds in 2003. The detection kits developed at CICR has been recognized by the Government as a standard test for Bt. detection in GM seeds. As per the rule all seed testing laboratories are to perform Bt. purity testing along with genetic purity testing and the following standards have been specified for the same:

Submitted sample size: 25g

Working sample size: 10 seeds

Minimum level of Bt. toxin to be present: 450nanog/sq.cm. or /gm seed

The purity in terms of quantum of gene expression of Bt. Protein should be 90% for labeling of Bt. cotton seed.

Bt detection methods:

Three Bt detection methods, viz: (i) Bt express (ii) Bt detect (iii) Bt quant are in common use.

Besides there is Seed Association of India which has been formed with a mission to promote and support the seed industry. The association assist government in formulation of seed policies, assist in harmonizing seed laws, provides strong link between Government and other members (from various public sector seed corporations and companies).

ICAR has been taking various steps to augment the availability of quality seed as per the Government legislations. A **Directorate of Seed Research** was established at MAU which at present implements an ambitious hundred crore ICAR **Mega Seed Project titled "Seed Production in Agricultural crops and fisheries" with 84 co-operating centres**. In addition to agricultural seed production the project also aims at rapid multiplication and sapling production including tissue culture/micro propagation, improvement of quality of farm saved seed and on farm demonstrations of production technology. The production of quality seed has reached to 6.06 lakh Q in 2006-07 which is almost double from previous year. CICR, Nagpur is also one of the cooperating center along with its two regional stations at Sirsa and Coimbatore. Under this Project various stages of seed-Nucleus, Breeder, Foundation, Certified and Truthful label of various crops besides Cotton crop are being produced. Infrastructure also been developed to facilitate the seed production programme. **A National Seed Research Training Centre was established at Varanasi during October, 2005**. The main mission of the centre is to provide training in modern seed technology aspects such as transgenic testing etc. A seed specific portal has been developed by Seed division with the help of agricultural informatics division, Department of Information Technology to provide information about the requirement, production and availability of quality seeds at different State Agricultural Universities and breeder seed producers through seed net ([http:// seed net. gov. in](http://seed.net.gov.in)). The seed net portal also

provides all government orders, acts, quality control measures, export-import of seeds etc. The complete seed supply chain from Indent to Allocation has been made online.

Conclusion

Agriculture production is purely based on the basic input, seed. Until unless the purity, quality and seed standards are maintained, production programme cannot be successful. To maintain these quality standards, legislations are equally important. Therefore Government of India had taken steps in framing Seed Act, Seed Rules, Seed (control) order, National Seed Policy, Plant quarantine order, PPV & FR Act to not only to protect breeders, researchers but also a common farmer. These legislations have taken care of the quality of the seeds at production, processing, marketing and labeling and marketing levels to ensure the farmer gets the best quality seed. Therefore it is necessary that the information regarding seed legislations must reach farmers also to make them aware of their rights.

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