









Citation: Ravinder Reddy Ch, Tonapi VA, Bezkorowajnyj PG, Navi SS and Seetharama N. 2007. Seed System Innovations in the semi-arid Tropics of Andhra Pradesh, International Livestock Research Institute (ILRI), ICRISAT, Patancheru, Andhra Pradesh, 502 324, India. ISBN 978-92-9066-502-1. 224 pp.

Abstract

An effective seed supply system is necessary to make good quality seed available to farmers at the right time and at low cost. Given the critical role played by improved varieties in increasing production of grain and quantity and quality of stover for livestock fodder in conventional cropping systems, agriculture decision-makers have the challenge of developing an integrated and cost-effective seed system that is capable of generating and delivering improved seed varieties to farmers. Such a system would be an important step toward ensuring seed security and enhancing livelihoods, particularly of dryland farmers.

Issues related to seed multiplication and delivery systems in India are discussed in this publication. The book outlines the development of the seed industry in India and highlights the changes made to seed policies over the years. It records the experience from an attempt to improve the local seed systems in four dryland agricultural districts that are typically representative of the semi-arid areas of Andhra Pradesh state. Using specific seed delivery models, it presents ways of strengthening seed systems to address the needs and vulnerabilities of smallholder farmers including those associated with livestock and fodder security in these areas.

This book is not an all-encompassing summary of the seed systems in Andhra Pradesh, nor does it try to provide magical solutions to constraints encountered by poor farmers. It does, however, attempt to illustrate alternative approaches to strengthen the seed systems by employing new approaches aswell as implementing tested approaches in new ways constituting innovation. Given the ever rapid changes taking place in the technological, socioeconomic and policy environments, understanding some of the processes and mechanisms involved in these changes as has been presented in this document will help in continuous development of an appropriate seed system and contribute to enhancing the livelihoods of poor farmers in the semi-arid areas of India.

Acknowledgment

We record our appreciation of the help rendered by G Thirupati Reddy, Chief Executive Officer, Awakening People Action for Rural Development (APARD), Kurnool, and the support of Harshal Gawali, K Sanath Kumar, KV Raghavendra Rao and P Subhakar Rao in bringing out this publication. The fodder Innovation Project conducts research in India and Nigeria to enhance the livelihoods of livestock dependant poor people through increasing use of fodder. It is funded by the Department for International Development (DFID) and is implemented by the International Livestock Research Institute (ILRI) on behalf of the System wide Livestock Program (SLP).

Seed System Innovations in the Semi-Arid Tropics of Andhra Pradesh

Ch Ravinder Reddy, VA Tonapi, PG Bezkorowajnyj, SS Navi and N Seetharama



Fodder Innovation Project, International Livestock Research Institute (ILRI) Patancheru 502 324, Andhra Pradesh, India



International Crops Research Institute for the Semi-Arid Tropics Patancheru 502 324, Andhra Pradesh, India



National Research Centre for Sorghum (NRCS) Rajendranagar, Hyderabad (AP) 500 030, India

Foreword

The power of a seed is unlimited. As a powerful agent of change, seeds can be a means of overcoming production constraints, thereby making a difference in the lives of the poor and hungry. This requires seed demand and supply to be balanced by way of a secure seed supply system. This would give farmers access to adequate quantities of good quality seed of the desired type at the required time and at affordable cost.

Seeds are key components in the conservation and ownership of biodiversity. Accordingly, sustainable seed supply and implementation of seed security are among the major activities outlined in the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture. Seeds therefore represent hope for the future of mankind.

Throughout our history, farmers' informal seed systems have had a great influence on the evolution of modern agriculture, by practising conservation of agrobiodiversity at the gene, farmer and ecosystem levels. Within this framework, women in particular have played a crucial role, as has been identified by a recent analysis, in sustaining the informal seed sector, and more widely, in ensuring food security. However, informal seed systems are heavily dependent on local resources and inputs, and highly vulnerable to natural disasters and sociopolitical disruptions. Therefore, investing in a range of appoaches in order to strengthen local seed systems assumes great urgency.

While the formal hybrid seed industry led by the private sector has tended to focus on profit-making species and crops, the informal sector has concentrated on crops – mainly self- or open-pollinated varieties – that are crucial to local food production systems. Given such a scenario, national seed policies concludes helping to strengthen the informal sector. International support too continues to be mainly engaged with the formal sector. Perhaps matching support is required to encourage continued development of informal seed systems.

In this context, the concept of 'seed villages', which advocates self-sufficiency in production and distribution of good quality seed, is fast gaining ground. Seed villages, or village seed banks, operate under supervision and utmost transparency, inculcating mutual trust and social responsibility among farmers, thereby reducing their dependence on external inputs.

Several initiatives have been launched to revive this traditional concept, such as those initiated by the Indian Council of Agricultural Research (ICAR), the National Research Centre for Sorghum (NRCS) and state agricultural universities (SAUs). Similarly, the seed bank concept is part of ICRISAT's projects in collaboration with the Asian Development Bank (ADB), Tata-ICRISAT project in Vidisha and Guna districts of Madhya Pradesh and the Andhra Pradesh Rural Livelihoods Project (APRLP) in Kurnool district in Andhra Pradesh and other ongoing efforts in the states of Maharashtra and Karnataka.

In low-rainfall, dryland agricultural areas, cereals and legumes serve the dual purpose of providing food and income for poor farmers and fodder for their cattle. Given the critical role played by improved varieties in increasing conventional crop production, a key question arises: how do we facilitate the development of an integrated and cost-effective seed system that is capable of generating, producing and distributing improved seed varieties that meet the needs of resource-poor farmers?

This book is an attempt to review and document the existing seed multiplication and delivery systems in four dryland agricultural districts of Andhra Pradesh: Anantapur, Kurnool, Mahbubnagar and Nalgonda. While analyzing the problems associated with different seed systems in these districts, the book makes a strong case for strengthening alternative seed systems and seed delivery models that address the needs of small farmers in the context of constantly changing dynamics on the national, international, political and socioeconomic fronts.

I am sure this book will be a valuable reference source for those engaged in strengthening local seed systems as a step toward food security in the semi-arid tropics of India.

William D Dar Director General ICRISAT

Part VI: Summary, Annexure & Literature cited

- Summary
- Acronyms
- Annexure I
- Annexure II
- Literature cited
- About the authors

Summary

Early human civilizations realized that some of the plants growing in the wild could be used for food, clothing and health care. Thus began the evolution of world agriculture. Farmers identified, selected and cultivated plants that were useful to them and were best suited for cultivation in their region. Crop plants from these areas spread to others as a result of farmer-to-farmer sharing, exchange and sale of plant material. Human migration, travel, trade and war also helped in the spread of crops to new regions far from their place of origin. There, these exotic cultivars were again selected by local farmers and adapted to local conditions and needs. This was the origin of community seed systems.

Since the advent of hybrid technology, farmers now have to replenish their seeds each season with supplies from external sources (such as public sector research institutions and private seed producers) to harness hybrid vigor. This has no doubt helped increase production manifold but at the same time, it has also increased farmers' dependence on external agencies. As a result, the once informal and decentralized village seed industry has yielded ground to a highly centralized system. However, the organized seed sector finds it difficult to meet the demand for seed of the whole array of crops and varieties cultivated across the country. This has forced farmers in many areas to turn to unreliable seed supplies resulting in a range of complex socioeconomic problem.

The history of the formal seed industry in India dates back to 1957. Since then, it has passed several milestones along the way and today several major seed systems, both formal and informal, operate in the country. This book discusses the need for an integrated seed supply system operating within the framework of the national seed policy. It outlines the efforts to promote seed trade, variety development, seed production, quality assurance, seed distribution and marketing, infrastructure facilities, seed import and export, promotion of the domestic seed industry and strengthening of monitoring mechanisms for the implementation of the national seed policy. It also deals with issues relating to legislations on plant variety protection and farmers' rights, which are aimed at protecting local seed systems by imparting freedom to farmers to save, exchange and sow any seed.

Although the informal sector provides a dynamic and flexible system of seed supply, it mainly relies on nontested material, repeated use of which leads to degeneration of seed quality. While the formal seed sector presents an

alternative, farmers tend to depend on their own seed, not only because of inadequate access to the formal sector, but also because the range of cultivars and varieties available from it is not always suitable for their needs On-farm growing and maintenance of locally adapted landraces, cultivars and wild species do allow the farmer to restrict the impact of production constraints like drought, flooding, heat, cold, pests and diseases. However, community seed systems are likely to take no, or inadequate, control measures against seedborne diseases, the consequence of which may be buildup and dissemination of disease and yields far below potential.

This book presents a synthesis of knowledge that needs to be imparted to community seed systems in order to produce, process, treat, test, store, trade or barter and resow seeds for food, feed, fodder and livelihood security. It also outlines the mechanisms of creating and training seed growers' associations. It shares the experience gained through an on-farm survey of the fungal profile and germination potential of seed and grain collected from communities. Information on storage systems and options for improving the quality of molded grain is presented at length.

We have discussed in this book the elements and factors that support a sustainable seed system, in the light of the focus that such a system is never static and is always interacting with changing structural and policy dynamics within a geographical boundary. A sustainable system has an innate capacity to cope with change and reevolve to serve the needs of the community. Livelihoods consist of capabilities, assets - both material and social - and activities required for a living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, and provide net benefits to other livelihoods locally and widely, both now and in the future, while not undermining the natural resource base. Therefore, the focus of interventions should be to create seed security operating at the household, community, national and regional levels. Issues of gender in the seed and food chain, the role of women as seed conservers and issues that influence food security in the context of the ecological, political and socioeconomic environment have been discussed at length in this book.

In this book we discuss ways of strengthening seed systems to address the needs and vulnerabilities of such farmers, using specific delivery models and innovations such as the concept of village seed banks. We also describe our experience in testing innovative seed system models and a case study of a

village seed bank in relation to its management, capacity building, participatory selection of varieties and management of seed production, processing, storage and community-level seed trade.

Despite the penetration of markets in the local economy, traditional coping strategies based on local processes of seed exchange are still important. Any successful developmental intervention aimed at increasing the resilience of seed systems should take into account these traditional exchange practices. For example, a strategy for improving local institutions and seed exchange networks could be aimed at increasing production and multiplication of seeds at the local level and facilitating movement of farmers between the formal and informal sectors, rather than distributing seeds from outside to farmers. Hence, availability of good quality seed at the right time, right place and right price is an important prerequisite for the food security of a nation.

Acronyms

ADB Asian Development Bank

AICSIP All India Coordinated Sorghum Improvement Project

ANGRAU Acharya NG Ranga Agricultural University

APARD Awakening People Action for Rural Development

APRLP Andhra Pradesh Rural Livelihoods Programme

ASSINSEL International Association of Plant Breeders for the Protection

of Plant Varieties

CBO Community-Based Organization

CIMMYT Centro Internacional de Mejoramiento de Mäiz y Trigo

CSC Central Seed Committee

CSCB Central Seed Certification Board

CSTL Central Seed Testing Laboratory

CVRC Central Variety Release Committee

DAC Department of Agricultural Cooperation

DFID Department For International Development (UK)

DOA Directorate of Agriculture

DUS Distinctiveness Uniformity and Stability

DWMA District Water Management Agency

EDV Essentially Derived Variety

EPA Environment Protection Act

FAO Food and Agriculture Organization

FIP Fodder Innovation Project

FGD Focus Group Discussion

FRs Farmers' Rights

GATT General Agreement on Tariffs and Trade

GDP Gross Domestic Product

GEAC Genetic Engineering Approval Committee

GMO Genetically Modified Organism

HRD Human Resource Development

HYV High-Yielding Variety

ICAR Indian Council of Agricultural Research

ICRISAT International Crops Research Institute for the Semi-Arid Tropics

IPDM Integrated Pest and Disease Management

IPR Intellectual Property Rights

ILRI International Livestock Research Institute

IRCs International Research Centers

ISTA International Seed Testing Association

KVK Krishi Vignan Kendra

MAHYCO Maharashtra Hybrid Seeds Company

MLT Multilocational Testing

MNC Multinational Corporations

MTA Material Transfer Agreement

NGB National Gene Bank

NGO Nongovernmental Organization

NIAB National Institute of Agricultural Botany (UK)

NRCS National Research Centre for Sorghum

NSB National Seed Board

NSC National Seeds Corporation

OECD Organization for Economic Cooperation and Development

NSP National Seeds Project

OPV Open-Pollinated Variety

PBR Plant Breeders' Rights

PIA Project Implementing Agency

PIC Prior Informed Consent

PVP Plant Variety Protection

RCV Reference Collection Variety

RRA Rapid Rural Appraisal

SAT Semi-Arid Tropics

SAUs State agricultural universities

SFCI State Farms Corporation of India

SHG Self-Help Group

SSDC State Seeds Development Corporation

SSTL State Seed Testing Laboratory

SVRC State Variety Release Committee

TNC Transnational Corporation

TRIPS Trade-Related Aspects of Intellectual Property Rights

UPOV Union for the Protection of New Plant Varieties

VCU Value for Cultivation and Usage

VO Village Organization

VSB Village Seed Bank

VSBC Village Seed Bank Committee

WIPO World Intellectual Property Organization

WDT Watershed Development Team

WTO World Trade Organization

Annexure I: Draft Seed Bill, 2004 (Revised Seeds Act) An Act

- to provide for regulating the sale, import and export of seeds;
- to facilitate supply of quality seeds to farmers throughout the country;
 and
- to establish a National Seeds Board to advise government in all matters connected therewith.

1. Short title, extent and commencement

- a) This Act may be called the Seeds Act, 2002.
- b) It extends to the whole of India;
- c) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint, and different dates may be appointed for different provisions of this Act, and for different states or for different areas thereof.

2. Definitions

In this Act, unless the context otherwise requires:

- a) "Agriculture" includes horticulture;
- b) "Central Seed Laboratory" means the Central Seed Laboratories established or declared as such under Sub-section (1) of Section 4;
- c) "Certification Agency" means the certification agency established under Section 18 or accredited under Section 19;
- d) "Board" means the National Seeds Board constituted under Sub-section (1) of Section 3;
- e) "Container" means a box, bottle, basket, tin, barrel, case, receptacle, sack, bag, wrapper other thing in which any article or thing is placed or packed;
- f) "Export" means taking out of India to a place outside India;
- g) "Import" means bringing into India from a place outside India;
- h) "Kind" means one or more related species or sub-species of crop plants each individually or collectively known by one common name such as cabbage, maize, paddy and wheat;
- i) "Registered kind or variety" in relation any seed, means any kind or variety thereof registered under section 5;
- j) "Prescribed" means prescribed by rules made under this Act;

- k) "**Seed**" means any type of living embryo or propagule capable of regeneration and giving rise to a plant which is true to such type;
- l) "**Seed Inspector**" means a Seed Inspector designated as such under section 23:
- m) "State Government" in relation to a Union territory, means the administrator thereof;
- n) "State Seed Testing Laboratory" in relation to any State, means the State Seed Laboratory established or declared as such under Sub-section (2) of Section 4 for that State;
- o) "Variety" in relation to plants, means a plant grouping within a single botanical taxon of the lowest known rank, which can be:
 - i) defined by the expression of the fundamental characteristics resulting from a given genotype of the plant grouping;
 - ii) distinguished from any other plant grouping by expression of at least one of the said fundamental characteristics; and
 - iii) considered as a unit with regard to its suitability for being propagated which remains unchanged after such propagation and includes propagating material of such variety.
- p) "Registered variety" means the variety registered under Section 5;
- q) "Farmer" means any person who cultivates crops either by cultivating the land himself or through any other farmer and includes a farmer who conserves and preserves, severally or jointly, with any person any wild species or traditional varieties, or adds value to such wild species or traditional varieties through selection and identification of their useful properties;
- r) "Dealer" means a person carrying on the business of selling, exporting or importing seeds, and includes an agent of a dealer under Section 12;
- s) "Registering Authority" means a Registering Authority appointed under this Act:

3. National seeds board

- The Central Government shall, by notification in the Official Gazette establish a Board to be known as National Seeds Board for the purpose of this Act;
- b) The Board shall be a body corporate by the name aforesaid having perpetual succession and a common seal with power to acquire, hold and dispose of properties, both movable and immovable, and to contract, and shall by the said name sue and be sued;

- c) The head office of the Board shall be at such place as the Central Government may, by notification in the Official Gazette, specify with the approval of Central Government;
- d) The Board shall consist of Chairperson, Vice-Chairperson, five ex-officio members and other nominated members:
- e) A. The ex-officio members of the Board shall be:
 - i) Secretary, Agriculture & Cooperation, Government of India;

 Chairperson
 - ii) Agricultural Commissioner, Government of India Member Department of Agriculture & Cooperation
 - iii) Deputy Director General (Crop Sciences), Member Indian Council of Agricultural Research
 - iv) Deputy Director General (Horticulture), Member Indian Council of Agricultural Research
 - v) Joint Sectary (Seeds), Government of India Member
 Department of Agriculture & Cooperation
 - vi) Horticulture Commissioner, Government of India Member Department of Agriculture & Cooperation
- B. Vice-Chairperson, shall be a person of outstanding caliber and eminence and long experience in the field of seed development or in a related field of agricultural development, appointed by the Government of a period of five years;
- C. The following Members shall be nominated by the Government of India:
 - i) Secretary (Agriculture) from one State, of each of the five geographical zones, on rotation basis;
 - ii) Director of Agriculture from two States, on rotation basis;
 - iii) Director, State Seed Certification Agency from two States, on rotation basis;
 - iv) Managing Director, State Seeds Corporation from two States, on rotation basis;
 - v) Two representatives of farmers;
 - vi) Two representatives of seed industry;
 - vii) Two specialists / experts in the field.
- f) Vice-Chairman shall be the Chief Executive of the Board and shall exercise such powers and perform such duties as may be prescribed and as may be delegated by the Board;
- g) The tenure of the ex-officio Members of the National Seeds Board under Sub-section 5(a) to (vi) shall be co-terminus with their tenure in the concerned office, unless removed by the order of the Government;

- h) The Members nominated under Sub-section 5(c) (i) to (vii) shall, unless their seats become vacant earlier by resignation or death or otherwise, be entitled to hold office for two years;
- i) The functions of the Board shall be exercised not withstanding any vacancy therein;
- j) The Board may, subject to the previous approval of the Central Government, make bye-laws fixing quorum and regulating its own procedure and the conduct of all business to be transacted by it;
- k) The Board may appoint one or more Committees consisting wholly of Members of the Board or wholly of other persons or partly Members of Board and partly of other persons as it thinks fit for the efficient discharge of its duties and functions under this Act;
- l) Functions of the Board: National Seeds Board shall advise the Central Government and the State Government on all matters related to:
 - i) Seed programming and planning;
 - ii) Seed development and production;
 - iii) Registration of kind or varieties of seeds;
 - iv) Maintenance of National Register of Varieties;
 - v) Determination of quality parameters, and criteria for registration, certification etc;
 - vi) Conduct of Value for Cultivation and Use (VCU) test or any other test for the purpose of registration;
 - vii) De-registration of varieties;
 - viii) Certification of seeds;
 - ix) Accreditation of seed producing organizations for purposes of self certification:
 - x) Export and import of seeds;
 - xi) Seed legislation and its enforcement; and
 - xii) Such other functions assigned by the Central Government.

4. Central and state seed testing laboratories

- a) The Central Government may establish a Central Seed Testing Laboratory or declare any seed laboratory as the Central Seed Testing Laboratory, to carry out the functions under this Act, and Rules framed there under:
- b) The State Government may, on the recommendation of National Seeds Board, establish one or more State Seed Testing Laboratories or declare any seed testing laboratory in the Government non-Government sector

as a State Seed Testing Laboratory where analysis of seeds shall be carried out under this Act in the prescribed manner.

5. Registration of kind or variety of seeds

- Seed of any kind or variety for the purpose of sowing or planting will be sold in the country only if the said kind or variety has been registered by the Board for the purpose of this Act on fulfillment of the criteria as prescribed;
- Registration will be granted for new varieties on the basis of multilocational trails to determine VCU over a minimum period of three seasons, which in case of some long duration varieties and some Horticulture crops may be increased;
- c) Until completion of trials required to be conducted for fulfillment of the criteria for registration under Sub-clause (2), sale of seed of the kind or variety for which application for registration has been applied, may be permitted on the basis of provisional registration granted by the Board on the basis of information filed by the applicant relating to trials conducted in India for one season, as prescribed;
- d) Any kind or variety that has been notified under Seeds Act, 1966, will be deemed to be registered for the purpose of this Act.

6. Accreditation of institutions for conducting VCU trials

The Board will accredit ICAR Centres, State Agricultural Universities and private organizations to conduct VCU trials for the purpose of registration, as prescribed.

7. Maintenance of national register of varieties

All varieties that are registered under Section 5 (2) will be entered in the National Register of Varieties maintained by the Board.

8. Exclusion of certain kind or varieties from registration

Notwithstanding anything contained in this Act, no registration of a kind or variety shall be made under this Act, if prevention of commercial exploitation of such kind or variety is necessary to protect public order or public morality or human, animal and plant life and health or to avoid serious prejudice to the environment.

9. Powers to specify minimum limits of germination and purity and criteria for registration

The National Seeds Board will specify:

- a) the minimum standards of germination, genetic and physical purity with respect to any seed of a registered kind or variety;
- b) the mark or label to indicate that such seed conforms to the minimum standards of germination, genetic and physical purity specified under Clause (a) of Section 9 above and the particulars which such mark or label may contain;
- c) criteria and background data required for registration of a kind or variety;
- d) trials to be carried out for the purpose of registration and provisional registration.

10. Period of registration

Registration under Section 5 (2) and (4) shall be granted for a fixed period as prescribed.

11. Power of de-registration

The board may cancel the registration granted to a variety under Section 5 if it is satisfied that:

- a) registration has been obtained by mis-representation or concealment of the essential data; or
- b) the variety is obsolete and has out lived its utility and should not, in the public interest, be made available for sale in the market; or
- c) prevention of commercial exploitation of such variety is necessary in the public interest to protect public order or public morality or human, animal and plant life and health, or to avoid serious prejudice to the environment.

12. Regulation of sale of seeds

- a) No person or dealer shall himself or by another person on his behalf carry on the business of selling, keeping for sale, offering to sell, or otherwise supplying any seed which is not of a registered kind / variety;
- b) All such seed should;
 - i) be identifiable as to its kind or variety;
 - ii) conform to the minimum limits of germination, genetic and physical purity specified under Clause (a) of Section 9;

- iii) bear, on their container, in the prescribed manner, the mark or label containing the correct particulars thereof prescribed;
- iv) comply with such other requirements as may be prescribed by the Board.

13. Maintenance of records and submission of returns

Every dealer shall maintain such books, accounts and records included the particulars about the seed lot, expiry of seed standards, etc. relating to his business as may be directed by the Board or the State Government.

14. Power to direct a dealer to sell or distribute seed in a specified manner

If considered necessary in public interest, the Board may, by any order in writing direct any producer or dealer to sell or distribute any seed in such manner as may be specified therein.

15. Maintenance of list of dealers and seed producers

The State Government shall maintain, in each district, a list of dealers and seed producers.

16. Dealers to follow specific procedure

Every dealer shall:

- a) display stock and price list in the place of business indicating opening and closing stocks, on daily basis of different seeds held by him, and a list indicating prices or rats of different seeds;
- b) issue cash or credit memo for purchase of seeds wherein the particulars of lot number, germination percentage and validity period of germination should be indicated: and
- c) submit a monthly return relating to his business for the preceding month in the Form prescribed by the State Government.

17. Exemption of farmers from registration

Nothing in this Act shall restrict the right of the farmer to save, use, exchange, share or sell his farm seeds and planting material, except that seeds shall not be sold under a brand name in a commercial marketing arrangement.

Explanation – Farmers shall not be required to register their kind or variety to save, use, exchange, share or sell his farm seeds and planting material.

18. Certification agency

The State Government or the Board, in consultation with the State Government, may establish one or more Certification Agencies for the State to carry out the functions entrusted to the Certification Agency by or under this Act. The Board will perform all the functions of the erstwhile Central Seed Certification Board.

19. Accreditation of certification agencies

The State Government or the Board may:

- a) accredit individuals or organizations to carry out certification, including self certification on fulfillment of criteria prescribed by the Board;
- b) accredit seed producing organizations to carry self-certification as prescribed.

20. Grant of certificate by certification agency

- a) Any person selling, keeping for sale, offering to sell, bartering or otherwise supplying any seed of any registered kind or variety may, if he desires to have such seed certified by the Certification Agency, apply to the Certification Agency, for the grant of a certification for the purpose;
- b) Every application under sub-section (1) shall be made in such form, shall contain such particulars and shall be accompanied by such fees as may be prescribed;
- c) On receipt of any such application for the grant of a certificate, the Certification Agency shall, after such enquiry as it thinks fit and after satisfying itself that the seed to which the application relates conforms to the prescribed standards of minimum limits of germination, genetic and physical purity specified under Section 9 (a), grant of a certificate in such form and on such conditions, within a specific, within a specific time limit, as may be prescribed.

21. Revocation of certificate

If the State Government or the Board is satisfied, either on a reference made to it in this behalf or otherwise, that:

- a) the certificate granted by it under Section 20 has been obtained by misrepresentation as to an essential fact; or
- b) the holder of the certificate has without reasonable cause, failed to comply with the conditions subject to which the certificate has been granted or has contravened any of the provisions of this Act or the rules made thereunder.

Then, without prejudice to any other penalty to which the holder of the certificate may be liable under this Act, the State Government or the Board may, after giving the holder of the certificate an opportunity of showing cause, revoke the certificate.

22. Appeal

- a) Any person aggrieved by a decision of Certificate Agency under Section 20(3) and 21, may within thirty days from the date on which the decision is communicated to him and on payment of such feeds as may be prescribed, prefer an appeal to such authority as may be specified by the Board or State Government in this behalf:
 - Provided that the appellate authority may entertain an appeal after the expiry of the said period of thirty days if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.
- b) On receipt of an appeal Sub-section (1) the appellate authorities shall, after giving the appellant an opportunity of being heard, dispose of the appeals expeditiously as possible;
- c) Every order of the appellate authority under this section shall be final.

23. Seed inspectors

- a) The State Government may designate such seed inspectors, having prescribed qualifications to exercise such fund functions for the achievement of the objectives of this Act as, shall be prescribed in the Rules, and define the areas within which they shall exercise jurisdiction;
- b) Every Seed Inspector shall be deemed to be a Public Servant within the meaning of Section 21 of the Indian Penal Code (45 of 1860) and shall be officially subordinate to such authority as the State Government may specify in this behalf.

24. Restriction on export and import of seeds of registered kinds or varieties

- All import of seed or planting material shall be subject to provisions of the Plants, Fruits and Seeds (Regulation of Import into India) Order, 1989;
- b) Seed imported for sale in the country, shall conform to minimum limits of germination and purity as prescribed under Section 9 (a) and (b);
- c) Import of seed for sale shall be permitted only of registered varieties. Registration of such varieties shall be granted on the basis of trials conducted for minimum period of three seasons in India, which, in case of some long duration varieties and Horticulture crops may be increased as per procedure and conditions prescribed by the Board;
- d) An unregistered variety may be allowed to be imported in limited quantity for research and trial purposes on the basis of data from trial over one season in the country of origin;
- e) Notwithstanding anything contained in this Act, no import of a variety shall be made under this Act in cases where prevention of commercial exploitation of such variety is necessary to protect public order or public morality or human, animal and plant life and health or to avoid serious prejudice to the environment;
- f) Any person intending to import seed or planting material shall declare that such material is, or is not, as the case may be, a product of transgenic manipulation, or involves GURT (Genetic Use Restriction Technology);
- g) If the seed or planting material to be imported is a product of transgenic manipulation or involves GURT, such material can be imported only if subjected to testing and screening as prescribed, and shall carry a declaration to this effect on its label when placed on sale.

25. Penalty

- 1. If any person:
 - a) contravenes any provision of this Act or any rule made thereunder; or
 - b) contravenes any direction issued by the Board or the State Government under this Act; or
 - c) prevents a Seed Inspector from exercising any power conferred on him by or under this Act:

He shall, on conviction be punishable;

i) for the first offence with fine which may extent from minimum ten thousand rupees to maximum twenty-five thousand rupees;

- ii) in the event of such person having been previously convicted of an offence under this section, with imprisonment for a term which may extent to six moths, or with fine which may extend to fifty thousand rupees, or with both.
- 2. When any person has been convicted under this Act for the contravention of any of the provisions of this Act or the rules made thereunder, the seed in respect of which the contravention has been committee may be forfeited by the Government.

26. Offences by companies

- a) Where and offence under this Act has been committee by a company every person who at the time the offence was committee was in charge of, and was responsible to the company for the conduct of the business of the company, as well as the company shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly;
 - Provided that nothing contained in this sub-section shall render any such person liable to any punishment under this act if he proves that the offence was committee without his knowledge and that he exercised all due diligence to prevent the commission of such offence.
- b) Notwithstanding anything contained in Sub-section (1) where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any officer or partner of the company, such officer or partner shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly;

Explanation – for the purpose of this section:

- "Company" means any body corporate and includes a firm or other association of individuals: and
- ii) "Officer" in relation to a firm, means a member of the Board of Directors or any functionary of the company;
- iii) "Partner" in relation to a firm, means a shareholder of the company.

27. Protection of action taken in good faith

No suit, prosecution or other legal proceeding shall lie against the Government or any officer of the Government for anything which is in good faith done or intended to be done under this Act.

28. Power to give directions

The Central Government may give such directions to any State Government as may appear to the Central Government to be necessary for carrying into execution in the State any of the provisions of this Act or of any rule made thereunder.

29. Exemption

Nothing in this Act shall apply to any seed of any registered kind or variety grown by a farmer and sold or delivered by him on his own premises or in the local market direct to another farmer for being used by that farmer for the purpose of sowing or planting.

30. Powers to make rules

- a) The Central Government and the National Seed Board may make rules and regulations to carry out the purposes of this Act;
- b) In particular and without prejudice to the generality of the foregoing powers, such rules may provide for;
- c) Every rule made under this Act shall be laid as soon as may be after it is made, before each House of Parliament while it is in session for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, that rule shall, thereafter have effect only in such modified form or be of no effect, as the case may be; so however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

Annexure II: Protection of Plant Varieties and Farmer's Rights Act, 2001

The purpose of this act in India is to provide for the establishment of an effective system for protection of plant varieties (PPV) rights of farmers and plant breeders, to encourage the development of new varieties of plants. Whereas it is considered necessary to recognize and protect the rights of the farmers in respect of their contribution made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties. And whereas for accelerated agricultural development in the country, it is necessary to protect plant breeders' rights to stimulate investment for research and development, both in the public and private sector, for the development of new plant varieties. And whereas, such protection will facilitate the growth of the seed industry in the country which will ensure the availability of high quality seeds and plant material to the farmers. And whereas to give effect to the aforesaid objectives, it is necessary to undertake measures for the protection of the rights of farmers and plant breeders; And whereas India, having ratified the Agreement on Trade Related Aspects of Intellectual Property Rights should inter-allia make provision for giving effect to sub-paragraph (b) of paragraph 3 of article 27 in Part II of the said Agreement relating to protection of plant varieties; Be it enacted by Parliament in the Fifty-first Year of the Republic of India as follows:

Chapter-I: Preliminary

- 1. Short title, extent and commencement: (1) This Act may be called the Protection of Plant Varieties and Farmers' Rights Act, 2000; (2) It extends to the whole of India; (3) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint; and different dates may be appointed for different provisions of this Act and any reference in any such provision to the commencement of this Act shall be construed as a reference to the coming into force of that provision.
- **2. Definitions:** In this Act, unless the context otherwise requires: (a) "Authority" means the Protection of Plant Varieties and Farmers' Rights Authority established under sub-section (1) of section 3; (b) "benefit sharing" in relation to a variety, means such proportion of the benefit accruing to a breeder of such variety of such proportion of the benefit

accruing to the breeder from an 2 agent or a Licensee of such variety, as the case may be, for which a claimant shall be entitled as determined by the Authority under section 26. (c) "breeder" means a person or group of persons or a farmer or group of farmers or any institution which has bred, evolved or developed any variety; (d) "Chairman" means the Chairman of the Tribunal; (e) "Chairperson" means the Chairperson of the Authority appointed under clause (a) of sub-section (5) of section 3; (f) "Convention country" means a country which has acceded to an international convention for the protection of plant varieties to which India has also acceded, or a country which has a law on protection of plant varieties on the basis of which India has entered into an agreement for granting, plant breeders' right to the citizens of both the countries; (g) "denomination", in relation to a variety or its propagating material or essentially derived variety or its propagating material, means the denomination of such variety or its propagating material or essentially derived variety or its propagating material, as the case may be, expressed by means of letters or a combination of letters and figures written in any language; (h) "essential characteristics" means such heritable traits of a plant variety which are determined by the expression of one or more genes of other heritable determinants that contribute to the principle features, performance or value of the plant variety; (i) "essentially derived variety", in respect of a variety (the initial variety) shall be said to be essentially derived from such initial variety when it— (i) is predominantly derived from such initial variety, or from a variety that is itself predominantly derived from such initial variety, while retaining the expression of the essential characteristics that results from the genotype or combination of genotype of such initial variety; (ii) is clearly distinguishable from such initial variety; and (iii) conforms (except for the differences which result from the act of derivation) to such initial variety in the expression of the essential characteristics that result from the genotype or combination of genotype of such initial variety. (j) "extant variety" means a variety available in India which is—(i) notified under section 5 of the Seeds Act, 1966; or (ii) farmers' variety; or (iii) a variety about which there is common knowledge; or (iv) any other variety which is in public domain; (k) "farmer" means any person who—(i) cultivates crops either by cultivating the land himself; or (ii) cultivates crops by directly supervising the cultivation of land through any other person; or (iii) conserves and preserves, severally or jointly, with any person any wild species or traditional varieties or adds value to such wild species or traditional varieties through selection and identification of their useful properties. (l) "farmers' variety" means a variety which— (i) has been

traditionally cultivated and evolved by the farmers in their fields; or (ii) is a wild relative or land race of a variety about which the farmers possess the common knowledge. (m) "Gene Fund" means the National Gene Fund constituted under subsection (1) of section 45; (n) Judicial Member" means a Member of the Tribunal appointed as such under sub-section (1) of section 56 and includes Chairman: (o) "Member" means a Judicial Member or a Technical member of the Tribunal and includes Chairman;.3"member" means a member of the Authority appointed under clause (b) of sub-section (5) of section 3 and includes the Member-Secretary; (g) "prescribed" means prescribed by rules made under this Act; (r) "propagating material" means any plant or its component or part thereof including an intended seed or seed which is capable of or of suitable for regeneration into a plant; (s) "Register" means a national Register of Plant Varieties referred to in section 13; (t) "Registrar" means a Registrar of Plant Varieties appointed under subsection (4) of section 12 and includes the Registrar-General; (u)"Registrar-General" means the Registrar-General of Plant Varieties appointed under sub-section; (3) of section 12; (v) "Registry" means the Plant Variety Registry referred to in sub-section (1) of section 12; (w) "regulations" means regulations made by the Authority under this Act; (x) "seed" means a type of living embryo or propagule capable of regeneration and giving rise to a plant which is true to such type; (y) "Variety", means a plant grouping except microorganism within a single botanical taxon of the lowest known rank, which can be— (i) defined by the expression of the characteristics resulting from a given genotype of that plant grouping; (ii) distinguished from any other plant grouping by expression of at least one of the said characteristics; and (iii) considered as a unit with regard to its suitability for being propagated, which remains unchanged after such propagation, and includes propagating material of such variety, extant variety, transgenic variety, farmers' variety and essentially derived variety. (z) "Tribunal" means the Plant Varieties Protection Appellate Tribunal established under section 54; (z-a) "Technical Member" means a Member of the Tribunal who is not a Judicial Member.

Chapter II: A. The plant varieties and farmers' rights protection authority

3. Establishment of Authority: (1) The Central Government shall, by notification in the Official Gazette, establish an authority to be known as the Protection of Plant Varieties and Farmers' Rights Authority for the purposes of this Act; (2) The Authority shall be a body corporate by the name

aforesaid, having perpetual succession and a common seal with power to acquire, hold and dispose of properties, both movable and immovable, and to contract, and shall by the said name sue and be sued; (3) The head office of the Authority shall be at such place as the Central Government may, by notification in the Official Gazette, specify and the Authority may, with the previous approval of the Central Government, establish branch offices at other places in India; (4) The Authority shall consist of a Chairperson and fifteen members; (5) (a) The Chairperson to be appointed by the Central Government, shall be a person of outstanding calibre and eminence, with long practical experience to the satisfaction of that Government especially in the field of plant varietal research or agricultural development. (b)The members of the Authority, to be appointed by the Central Government, shall be as follows, namely: (i) the agriculture Commissioner, Government of India, Department of Agriculture and Cooperation, New Delhi, Member exofficio; 4; (ii) the Deputy Director General in charge of Crop Sciences, Indian Council of Agricultural Research, New Delhi, ex-officio; (iii) the Joint Secretary in charge of Seeds, Government of India, Department of Agriculture & Cooperation, New Delhi, ex-officio; (iv) the Horticulture Commissioner, Government of India, Department of Agriculture & Cooperation, New Delhi, ex-officio; (v) the Director, National Bureau of Plant Genetic Resources, New Delhi, ex-officio; (vi) one member not below the rank of Joint Secretary to the Government of India, to represent the Department of Bio-Technology, Government of India, ex-officio; (vii) one member not below the rank of Joint Secretary to the Government of India to represent the Ministry of Environment and Forests of the Government of India, ex-officio; (viii) one member not below the rank of Joint Secretary to the Government of India to represent the Ministry of Law of the Government of India, ex-officio; (ix) one representative from a National or State level farmers' organisation to be nominated by the Central Government; (x) one representative from a tribal organization to be nominated by the Central Government; (xi) one representative from the seed industry to be nominated by the Central Government; (xii) one representative from an agricultural university to be nominated by the Central Government; (xiii) one representative from a National or State level women's organisation associated with agricultural activities to be nominated by the Central Government; (xiv) two representatives of State Governments on rotation basis to be nominated by the Central Government; (c) The Registrar General shall be the ex-officio Member-Secretary of the Authority; (6) The term of office of the Chairperson and the manner of filling the post shall be such as may be prescribed; (7) The Chairperson shall appoint a Standing Committee consisting of five members, one of which shall be a member who is a representative from a farmers organisation to advise the Authority on all issues including farmers rights; (8) The Chairperson shall be entitled to such salary and allowances and shall be subject to such conditions of service in respect of leave, pension, provident fund and other matters as may be prescribed. The allowances for non-official members for attending the meeting of the Authority will be as such as may be prescribed. The allowances for non-official members for attending the meeting as prescribed; (9) The Chairperson may resign his office by giving notice thereof in writing to the Central Government and on such resignation being accepted, he shall be deemed to have vacated his office; (10) On the resignation of the Chairperson or on the vacation of the office of Chairperson for any reason, the Central Government may appoint one of the members to officiate as Chairperson till a regular Chairperson is appointed in accordance with clause (a) of sub-section (5).

4. Meeting of Authority: (1) The Authority shall meet at such time and place and shall observe such rules of procedure in regard to the transaction of business at its meetings (including the quorum at its meetings and the transaction or business of its Standing Committee appointed under subsection 7 of section 3) as may be prescribed; (2) The Chairperson of the Authority shall preside at the meetings of the Authority..5 (3) If for any reason the Chairperson is not able to attend any meeting of the Authority, any member of the Authority chosen by the members present at the meeting shall preside at the meeting; (4) All questions which come before any meeting of the Authority shall be decided by a majority of the votes of the members of the Authority present and voting and in the event of equality of votes, the Chairperson of the Authority or in his absence, the person presiding shall have and exercise a second or casting vote; (5) Every member who is in any way, whether directly, indirectly or personally, concerned or interested in a matter to be decided at the meeting shall disclose the nature of his concern of interest and after such disclosure, the member concerned or interested shall not attend that meeting; (6) No act or proceeding of the Authority shall be invalid merely by reason of— (a) any vacancy in, or any defect in the constitution of the Authority; or (b) any defect in the appointment of a person acting as the Chairperson or a member of the Authority; or (c) any irregularity in the procedure of the Authority not affecting the merits of the case.

- 5. Committee of Authority: (1) The Authority may appoint such committees as may be necessary for the efficient discharge of its duties and performance of its functions under this Act; (2) The persons appointed as members of the committee under sub-section (1) shall be entitled to receive such allowances or fees for attending the meetings of the committee as may be fixed by the Central Government.
- **6.** Officers and employees of Authority: Subject to such control and restriction as may be prescribed, the Authority may appoint such other officers and employees as may be necessary for the efficient performance of its functions and the method of appointment, the scale of pay and allowances and other conditions of service of such other office and employees of the Authority shall be such as may be prescribed.
- **7.** Chairperson to be Chief Executive: The Chairperson shall be the Chief Executive of the Authority and shall exercise such powers and perform such duties as may be prescribed.
- **8.** General functions of Authority: (1) It shall be the duty of the Authority to promote, by such measures as it thinks fit, the encouragement for the development of new varieties of plants and to protect the rights of the farmers and breeders; (2) In particular, and without prejudice to the generality of the foregoing provisions, the measures referred to in sub-section (1) may provide for— (a) the registration of extant and new plant varieties subject to such terms and conditions and in the manner as may be prescribed; (b) developing characterization and documentation of varieties registered under this Act; (c) documentation, indexing and cataloguing of farmers' varieties; (d) compulsory cataloguing facilities for all varieties of plants; (e) ensuring that seeds of the varieties registered under this Act are available to the farmers and providing for compulsory licensing of such varieties if the breeder of such varieties or any other person entitled to produce such variety under this Act does not arrange for production and sale of the seed in the manner as may be prescribed; (f) collecting statistics with regard to plant varieties, including the contribution of any person at any time in the evolution or development of any plant variety, in India or in any other country, for compilation and publication; (g) ensure the maintenance of the National Register of plant variety.
- **9.** Authentication of orders of Authority: All orders and decisions of the Authority shall be authenticated by the signature of the Chairperson or any other member authorized by the Authority in this behalf.

- **10. Delegation:** The Authority may, by general or special order in writing, delegate to the Chairperson, any member or officer of the Authority subject to such conditions or limitations, if any, as may be specified in the order, such of its powers and functions (except the power to make regulations under section 94) under this Act as it may deem necessary.
- 11. Power of Authority: In all proceedings under this Act before the Authority or the Registrar— (a) the Authority or the Registrar, as the case may be, shall have all the powers of a civil court for the purposes of receiving evidence, administering oaths, enforcing the attendance of witnesses, compelling the discovery and production of documents and issuing commissions for the examination of witnesses; (b) the Authority or the Registrar may, subject to any rules made in this behalf under this Act, make such orders as to cost as it considers reasonable and any such order shall be executable as a decree of a civil court.

B. The registry, registration of varieties and conditions of registration

- 12. Registry and offices thereof: (1) The Central Government shall establish for the purpose of this Act, a Registry which shall be known as the Plant Varieties Registry; (2) The head office of the Plant Varieties Registry shall be located in the head office of the Authority, and for the purpose of facilitating the registration of plant varieties, there may be established, at such places, as the Authority may think fit, branch offices of the Registry; (3) The Authority shall appoint a Registrar General of Plant Varieties who shall be entitled to such salary and allowances and shall be subject to such conditions of service in respect of leave, pension, provident fund and such other matters as may be prescribed; (4) The Authority may appoint such number of Registrars as it thinks necessary for Registration of plant varieties under the superintendence and direction of the Registrar General under this Act and may make regulations with respect to their duties and jurisdiction; (5) The term of office and the conditions of service of the Registrars shall be such as may be provided by regulations; (6) The Authority may, by notification in the Official Gazette, define the territorial limits within which a branch office of the Registry may exercise its functions; (7) There shall be a seal of the Plant Varieties Registry.
- 13. National Register of Plant Varieties: (1) For the purposes of this Act, a register called the National Register of Plant Varieties shall be kept at the

head office of the Registry, wherein shall be entered the names of all the registered plant varieties with the names and addresses of their respective breeders, the right of such breeders in respect of the registered variety, the particulars of the denomination of each registered variety, its seeds or other propagating material along with specification of salient features thereof and such oilier matters as may be prescribed; (2) Subject to the superintendence and direction of the Central Government, the register shall be kept under the control and management of the Authority; (3) There shall be kept at each branch office of the Registry a copy of the register and such oilier documents as tile Central Government may, by notification in the Official Gazette, direct.

Chapter III: A. Registration of plant varieties

- **14. Application for Registration:** Any person specified in section 16 may make an application to the Registrar for registration of any variety— (a) of such genera and species as specified under sub-section (2) of section 29; or (b) which is an extant variety; or (c) which is a farmers' variety.
- **15.** Registrable varieties: (1) A new variety shall be registered under this Act if it conforms to the criteria of novelty, distinctiveness, uniformity and stability; (2) Notwithstanding anything contained in sub-section (1) an extant variety shall be registered under this Act within a specified period if it conforms to such criteria of distinctiveness, uniformity and stability as shall be specified under regulations made by the Authority; (3) For the purposes of sub-section (1) and sub-section (2) as the case may be a new variety shall be deemed to be: (a) novel, if at the date of filing of the application for registration for protection, the propagating or harvested material of such variety has not been sold or otherwise disposed of by or with the consent of its breeder or his successor for the purposes of exploitation of such variety; (i) in India, earlier than one year, or (ii)Outside India in the case of trees or vines earlier than six years, or in any other case, earlier than four years; before the date of filing such application. Provided that a trial of a new variety which has not been sold or otherwise disposed of shall not affect the right to protection. Provided further that the fact that on the date of filing the application for registration the propagating or harvested material of such variety has become a matter of commonly known other than through the aforesaid manner shall not affect the criteria of novelty for such variety; (b) distinct, if it is clearly distinguishable by at least one essential characteristic from any another variety whose existence is a matter of common knowledge

in any country at the time of filing of the application; Explanation—For the removal of doubts, it is hereby declared that the filing of an application for the granting of a breeder's right to a new variety or for entering such variety in the official register of varieties in any convention country shall be deemed to render that variety a matter of common knowledge from the date of the application in case the application leads to the granting of the breeder's right or to the entry of such variety in such official register, as the case may be; (c) uniform if subject to the variation that may be expected from the particular features of its propagation it is sufficiently uniform in its essential characteristics; (d) stable, if its essential characteristics remain unchanged after repeated propagation or, in the case a particular cycle of propagation, at the end of each such cycle; (4) A new variety shall not be registered under this Act if the denomination given to such variety: (i) is not capable of identifying such variety; and (ii) consists solely of figures; and (iii) is liable to mislead or to cause confusion concerning the characteristics, value identity of such variety or the identity of breeder of such variety; or (iv) is not different from every denomination which designates a variety of the same botanical species or of a closely related species registered under this Act; or (v) is likely to deceive the public or cause confusion in the public regarding the identity of such variety; (vi) is likely to hurt the religious sentiments respectively of any class or section of the citizens of India; or (vii) is prohibited for use as a name or emblem for any of the purpose mentioned in section 3 of the Emblems and Names (Protection of Improper Use) Act, 1950; or (viii) is comprised of solely or partly of geographical name: Provided that the Registrar may register a variety. the denomination of which comprises solely or partly of a geographical name, if he considers that tile use of such denomination in respect of such variety is an honest use under the circumstances of the case.

B. Application for registration

16. Persons who may make application: (1) An application for registration under section 14 shall be made by: (a) any person claiming to be the breeder of the variety; and (b) any successor of the breeder of the variety; or (c) any person being the assignee of the breeder of the variety in respect of the right to make such application or (d) any farmer or group of farmers or community of farmers claiming to be the breeder of the variety; (e) any person authorized in the prescribed manner by a person specified under clause (a) to (d) to make application on his behalf; (f) any university or

publicly funded agricultural institution claiming to be the breeder of the variety; (2) An application under sub-section (1) may be made by any of the persons referred to therein individually or jointly with any other person;

- 17. Compulsory Plant Variety denomination: (1) Every application shall assign a single and distinct denomination to a variety with respect to which he is seeking registration under this Act in accordance with the regulations; (2) The Authority shall, having regard to the provisions of any international convention or treaty to which India has become a party, make regulations governing the assignment of denomination to a plant variety; (3) Where the denomination assigned to the variety do not satisfy the requirements specified in the regulations, the Registrar may require the applicant to propose another denomination within such time as may be provided by such regulations; (4) Notwithstanding anything contained in the Trade Mark Act, 1999 a denomination assigned to a variety shall not be registered as a trade mark under that Act.
- **18. Form of applicant:** (1) Every application for registration under section 14 shall: (a) be with respect to a variety; (b) state the denomination assigned to such variety by the applicant; (c) be accompanied by an-affidavit sworn by the applicant that such variety does not contain any gene or gene sequence involving terminator technology; (d) be in such form as may be specified by regulation; (e) contain a complete passport data of the parental lines from which the variety has been derived along with the geographical location in India from where the genetic material has been taken and all such information relating to the contribution, if any, of any farmer, village community, institution or organisation in breeding, evolution or developing the variety; (f) be accompanied by a statement containing a brief description of the variety bringing out its characteristics of novelty, distinctiveness, uniformity and stability as required for registration; (g) be accompanied by such fees as may be prescribed; (h) contain a declaration that the genetic material or parental material acquired for the breeding, evolving or developing the variety has been lawfully acquired; and (i) be accompanied by such other particulars as may be prescribed: Provided that in case where the application is for the registration of farmers' variety, nothing contained in clause (h) to (i) shall apply in respect of the application and the application in such form as may be prescribed; (2) Every application referred to in subsection (a) shall be filed in the office of the Registrar. (3) Where such application is made by virtue of a succession or an assignment of the right to apply for registration, there shall be furnished at the time of making the

application, or within such period after making the application as may be prescribed, a proof of the right to make the application.

- 19. Test to be conducted: (1) Every applicant shall, along with the application for registration made under this Act, make available to the Registrar such quantities of seeds of a variety for registration of which such application is made, for the purpose of conducting tests to evaluate whether such variety along with parental material conform to the standards as may be specified by regulations: Provided that the Registrar or any person or test centre to whom such seed has been sent for conducting test shall keep such seed during his or its possession in such manner and in such condition that its viability and quality shall remain unaltered. (2) The applicant shall deposit such fee as may be prescribed for conducting tests referred to in sub-section (1). The tests under sub-section (1) shall be conducted in such manner and by such method as may be prescribed.
- **20.** Acceptance of application or amendment thereof: (1) On receipt of an application under section 14, the Registrar may, after making such inquiry as he thinks fit with respect to the particulars contained in such application, accept the application absolutely or subject to such condition or limitations as he deems fit.
- (2) Where the Registrar is satisfied that the application does not comply with the requirements of this Act or any rules or regulations made there under, he may, either—(a) require the applicant to amend the application to his satisfaction; (b) reject the application; Provided that no application shall be rejected unless the applicant has been given a reasonable opportunity of presenting his case.
- **21.** Advertisement of application: (1) Where an application for registration of a variety has been accepted absolutely or subject. to conditions or limitations under sub-section (1) of section 20, the Registrar shall, as soon as after its acceptance, cause such application together with the conditions or limitations, if any, subject to which it has been accepted and the specifications of the variety for registration of which such application is made including its photographs or drawings. To be advertised in the prescribed manner calling objections front the persons interested in the matter; (2) Any person may, within three months from the date of the advertisement of an application for registration on payment of the prescribed fee, give notice, in writing in the prescribed manner, to the Registrar, of his opposition to the registration: (3) Opposition to the registration under sub-section (2) may be

made on the following grounds, namely: (a) that the person opposing the application is entitled to the breeder's right as against the applicant; or (b) that the variety is not registrable under this Act; (c) that the grant of certificate of registration may not be in public interest; (d) that the variety may have adverse effect on environment. (4) The Registrar shall serve a copy of the notice of opposition on the applicant for registration and, within two months from the receipt by the applicant of such copy of the notice of opposition, the applicant shall send to the Registrar in the prescribed manner a counter statement of the grounds on which he relies for his application, and if he does not do so, he shall be deemed to have abandoned his application; (5) If the applicant sends such counter statement, the Registrar shall serve a copy thereof on the person giving notice of opposition; (6) Any evidence upon which the opponent and the applicant may rely shall be submitted, in the manner prescribed and within the time prescribed, to the Registrar and the Registrar shall give an opportunity to them to be heard, if so desired; (7) The Registrar shall, after hearing the parties, if so required, and considering the evidence, decide whether and subject to what conditions or limitations, if any, the registration is to be permitted and may take into account a ground of objection whether relied upon by the opponent or not.

- (8) Where a person giving notice of opposition or an applicant sending a counter statement after receipt of a copy of such notice neither resides nor carries on business in India, the Registrar may require him to give security for the cost of proceedings before him and in default of such security being duly given may treat the opposition or application, as the case may be, as abandoned; (9) The Registrar may, on request, permit correction of any error in, or any amendment of, a notice of opposition or a counter statement on such terms as he may think fit.
- **22.** Registrar to consider grounds for opposition: The Registrar shall consider all the grounds on which the application has been opposed and after giving reasons for his decision, by order, uphold or reject the opposition.
- 23. Registration of essentially derived variety: (1) An application for the registration of an essentially derived variety of the genera or species specified under sub-section (2) of section 29 by the Central Government shall be made to the Registrar by or on behalf of any person referred to in section 14 and in the manner specified in section 18 as if for the word "variety" the words "essentially derived variety" have been substituted therein and shall be accompanied by such documents and fee as may be prescribed; (2) When

the Registrar is satisfied that the requirements of sub-section (1) have been complied with to his satisfaction, he shall forward the application with his report and all the relevant document to the Authority.

(3) On receipt of an application under sub-section (2), the Authority shall get examined such essentially derived variety to determine as to whether the essentially derived variety is a variety derived from the initial variety by conducting such tests and following such procedure as may be prescribed; (4) When the Authority is satisfied on the report of the test referred to in sub-section (3) that the essentially derived variety has been derived from the initial variety, it may direct the Registrar to register such essentially derived variety and the Registrar shall comply with the direction of the Authority; (5) Where the Authority is not satisfied on the report of the test referred to in sub-section (3) that the essentially derived variety has been derived from the initial variety it shall refuse the application; (6) The rights of the breeder of a variety contained in section 28 shall apply to the breeder of essentially derived variety:

Provided that the authorisation by the breeder of initial variety to the breeder of essentially derived variety under, sub-section (2) of section 28 may be subject to such terms and conditions as both the parties may mutually agree upon; (7) An essentially derived variety shall not be registered under this section unless it satisfies the requirements of section 15 as if for the word "variety", the words "essentially derived variety" have been substituted therein; (8) When an essentially derived variety has been registered by the Registrar in compliance with the direction of the Authority under sub-section (4), the Registrar shall issue to the applicant a certificate of registration in the prescribed form and sealed with seal of the Registry and send a copy thereof to the Authority and to such other authority, as may be prescribed, for information.

Chapter IV: Duration and effect of registration and benefit sharing

- **25. Publication of list of varieties:** The Authority shall, within such intervals as it thinks appropriate, publish the list of varieties which have been registered during that intervals.
- **26. Determination of benefit sharing by Authority:** (1) On receipt of a copy of the certificate of registration under sub-section (8) of section 23 or

sub-section (2) of section 24, the Authority shall publish such contents of the certificate and invite claims of benefit sharing to the variety registered under such certificate in the manner as may be prescribed; (2) On invitation of the claims under sub-section (1), any person or group of persons or nongovernmental; organisation shall submit its claim of benefit sharing to such variety in the prescribed form within such period, and accompanied with such fee, as may be prescribed; (3) On receiving a claim under subsection (2), the Authority shall send a copy of such claims to breeder of the variety registered under such certificate and the breeder may, on receipt of such copy, submit his opposition to such claim within such period and in such manner as may be prescribed; (4) The Authority shall, after giving an opportunity of being heard to the parties' dispose of the claim received under sub-section (2) (5) While disposing of the claim under sub-section (4), the Authority shall explicitly indicate in its order the amount of the benefit sharing, if any, for which the claimant shall be entitled and shall take into consideration the following matters, namely: (a) the extent and nature of the use of genetic material of the claimant in the development of the variety relating to which the benefit sharing has been claimed, (b) the commercial utility and demand in the market of the variety relating to which the benefit sharing has been claimed; (6) The amount of benefit sharing to a variety determined under this section shall be deposited by the breeder of such variety in the manner referred to under clause (a) of sub-section (1) of section 45 in the National Gene Fund; (7) The amount of benefit sharing determined under this section shall, on a reference made by the Authority in the prescribed manner, be recoverable as an arrear of land revenue by the District Magistrate within whose local limits of jurisdiction the breeder liable for such benefit sharing resides.

- **27.** Breeder to deposit seeds or propagating material: (1) The breeder shall be required to deposit such quantity of seeds or propagating material including parental line seeds of registered variety in the National Gene Bank as may be specified in the regulations for reproduction purpose at the breeder's expense within such time as may be specified in that order; (2) The seeds or propagating material or parental line seeds to be deposited under sub-section (1) shall be deposited to the National Gene Bank specified by the Authority.
- **28. Registration to confer right:** (1) Subject to the other provisions of this Act, a certificate of registration for a variety issued under this Act shall confer an exclusive right on the breeder or his successor, his agent or licensee,

to produce, sell, market, distribute, import or export the variety. Provided that in the case of an extant variety, unless a breeder or his successor establishes his right, the Central Government, and in cases where such extant variety is notified for a State or for any area thereof under section 5 of the Seeds Act, 1966 the State Government, shall be deemed to be the owner of such right.

- **29.** Authorization of breeder: (2) breeder may authorize any person to produce, sell, market or otherwise deal with a variety registered under this Act subject to such limitations and conditions as may be specified in the regulations; (3) Every authorization under this section shall be in such form as may be specified by regulations; (4) Where an agent or a licensee referred to in sub-section (1) becomes entitled to produce, sell, market, distribute, import or export a variety, he shall apply in the prescribed manner and with the prescribed fee to the Registrar to register his title and the Registrar shall on receipt of application and on proof of title to his satisfaction, register him as an agent or a licensee, as the case may be, in respect of the variety for which he is entitled for such right, and shall cause particulars of such entitlement and conditions or restrictions, if any, subject to which such entitlement is made, to be entered in the Register: Provided that when the validity of such entitlement is in dispute between the parties, the Registrar may refuse to register the entitlement and refer the matter in the prescribed manner to the Authority and withhold the registration of such entitlement until the right of the parties in dispute referred to has been determined by the Authority.
- (5) The Registrar shall issue a certificate of registration under sub-section (4) to the application after such registration and shall enter in the certificate the brief conditions of entitlement, if any, in the prescribed manner, and such certificate shall be the conclusive proof of such entitlement and the conditions or restriction thereof, if any.; (6) Subject to any agreement subsisting between the parties, an agent or licensee of a right to a variety registered under sub-section (4) shall be entitled to call upon the breeder or his successor thereof to take proceedings to prevent infringement thereof, and if the breeder or his successor refuses or neglects to do so within three months after being so called upon, such registered agent or licensee may institute proceedings for infringement in his own name as if he were the breeder. making the breeder his defendant: or successor (7) Notwithstanding anything contained in any other law, a breeder or his successor so added as defendant shall not be liable for any costs unless he

enters an appearance and takes part in the proceedings; (8) Nothing in this section shall confer on a registered agent or registered licensee of a variety any right to transfer such a right further thereof; (9) Without prejudice to the registration under sub-section (4), the terms of registration—(a)may be varied by the Registrar as regards the variety in respect of which, or any condition or restrictions subject to which, it has effect on receipt of an application in the prescribed manner of the registered breeder of such variety, or his successors; (b) ay be cancelled by the Registrar on the application in the prescribed manner of the registered breeder of such variety or his successor or of the registered agent or registered licensee of such variety; (c) may be cancelled by the Registrar on the application in the prescribed manner of any person other than the breeder, his successor, the registered agent or the registered licensee on any of the following, grounds, namely:—(i) that the breeder of a variety or his successor or the registered agent or registered licensee of such variety, misrepresented, or failed to disclose, some fact material to the application for registration under subsection (4) which if accurately represented or disclosed would have justified the refusal of the application for registration of the registered agent or registered licensee; (ii) that the registration ought not to have effected having regard to the right vested in the applicant by virtue of a contract in the performance of which he is interested; (d) may be cancelled by the Registrar on the application in the prescribed manner of the breeder of a registered variety, or his successor on the ground that any stipulation in the agreement between the registered agent or the registered licensee, as the case may be, and such breeder or his successor regarding the variety for which such agent or licensee is registered is not being enforced or is not being complied with; (e) may be cancelled by the Registrar on the application of any person in the prescribed manner on the ground that the variety relating to the registration is no longer existing; (10) The Registrar shall issue notice in the prescribed manner of 'every application under this section to the registered breeder of a variety or his successor and to each registered agent or registered licensee (not being the applicant) of such variety; (11) The Registrar shall before making any order under sub-section (9) forward the application made in that behalf along with any objection received by any party after notice under subsection (10) for the consideration of the Authority, and the Authority may, after making such enquiry as it thinks fit, issue such directions to the Registrar as it thinks fit and the Registrar shall dispose of the application in accordance with such directions.

- **29.** Exclusion of certain varieties: (1) Notwithstanding anything contained in this Act, no registration of a variety shall be made under this Act in cases where prevention of commercial exploitation of such variety is necessary to protect public order or public morality or human, animal and plant life and health or to avoid serious prejudice to the environment; (2) The Central Government shall, by notification in the Official Gazette, specify the genera or species for the purposes of registration of varieties other than extant varieties and farmers' varieties under this Act; (3) Notwithstanding anything contained under sub-section (2) above and sub-sections (1) and (2) of section 15, no variety of any genera or species which involves any technology including which is injurious to the life or health of human beings, animals or plants shall be registered under this Act.; Explanation—For the purpose of this sub-section; the expression any "technology" includes genetically use restriction technology and terminator technology; (4) The Central Government shall not delete any genera or species from the list of genera or species specified in a notification issued under sub-section (2) except in public interest; (5) Any variety belonging to the genera or species excluded under subsection (4) shall not he eligible for any protection under this Act.
- **30.** Researcher's Rights: Nothing contained this Act shall prevent: (a) the use of any variety registered under this Act by any person using such variety for conducting experiment or research; and (b) the use of a variety by any person as an initial source of variety for the purpose of creating other varieties: Provided that the authorization of the breeder of a registered variety is required where the repeated use of such variety as a parental line is necessary for commercial production of such other newly developed variety.

31. Special provisions relating to applications for registration from citizens of convention

Countries: (1) With a view to the fulfillment of a treaty, convention or arrangement with any country outside India which affords to citizens of India similar privileges as granted to its own citizen, the Central Government may, by notification in the Official Gazette, declare such country to be a convention country for the purposes of this Act; (2) Where a person has made an application for the granting of a breeder's right to a variety or for entering such variety in the official register of varieties in a convention country and that person or any person entitled to make application on his behalf under section 14 or section 23 makes an application for the

registration of such variety in India within twelve months after the date on which the application was made in the convention country, such variety shall, if registered under this Act, be registered as of the date on which the application was made in the convention country and that date shall be deemed for the purposes of this Act to be the date of registration; (3) Where applications have been made for granting of a breeder's right to a variety or for entering such variety in the official register of varieties in two or more convention countries, the period of twelve months referred to in the last preceding sub-section shall be reckoned from the date on which the earlier or earliest of those application was made; (4) Nothing in this Act shall entitle the breeder of a registered variety to infringement of rights other than protected under this Act which took place prior to the date of application of registration under this Act.

32. Provisions as to reciprocity: Where any country specified by the Central Government in this behalf by notification in the Official Gazette under sub-section (1) of section 31 does not accord to citizens of India the same rights in respect of the registration and protection of a variety, as it accords to its own nationals, no nationals of such country shall be entitled, either solely or jointly with any other person, to apply for the registration of a variety or be entitled to get a variety registered under this Act.

Chapter V: Surrender and revocation of certificate and rectification and correction of register

- 33. Surrender of certificate of registration: (1) A breeder of a variety registered under this Act may, at any time by giving notice in the prescribed manner to the Registrar, offer to surrender his certificate of registration; (2) Where such an offer is made, the Registrar shall notify in the prescribed manner every registered agent or registered licensee relating to such certificate; (3) Any of such agent or licensee may within the prescribed period after such notification give notice to the Registrar of his opposition to the surrender and where any such notice is given, the Registrar shall intimate the contents of such notice to the breeder of such variety; (4) If the Registrar is satisfied after hearing the applicant and all the opponents, if desirous of being heard that the certificate of registration may properly be surrendered, he may accept the offer and by order revoke the certificate of registration;
- **34.** Revocation of protection on certain grounds: Subject to the provisions contained in this Act, the protection granted to a breeder in respect of a

variety may, on the application in the prescribed manner of any person interested, be revoked by the authority on any of the following grounds, namely:—(a) that the grant of the certificate of registration has been based on incorrect information furnished by the applicant;

- (b) that the certificate of registration has been granted to a person who is not eligible for protection under this Act; (c) that the breeder did not provide the Registrar with such information, documents of material as required for registration under this Act; (d) that the breeder has failed to provide all alternative denomination of the variety which is the subject matter of the registration to the Registrar in case where the earlier denomination of such variety provided to the Registrar is not permissible for registration under this Act; (e) that the breeder did not provide the necessary seeds or propagating material to the person to whom compulsory license has been issued under section 48 regarding the variety in respect of which registration certificate has been issued to such breeder; (f) that the breeder has not complied with the provisions of this Act or provisions of rules or regulations made there under; (g) that the breeder has failed to comply with the directions of the Authority issued under this Act; (h) that the grant of the certificate of registration is not in the public interest. Provided that no such protection shall be revoked unless the breeder is given a reasonable opportunity to file objection and of being heard in the matter.
- 35. Payment of annual fee and forfeiture of registration in default thereof: (1) The Authority may, with the prior approval of the Central Government and after notification in the Official Gazette, impose a fee to be paid annually, by every breeder of a variety, agent and licensee thereof registered under this Act determined on the basis of benefit or royalty gained by such breeder, agent or licensee, as the case may be, in respect of the variety, for the retention of their registration under this Act; (2) If any breeder, agent or licensee fails to deposit the fee referred to in sub-section (1) imposed upon him under that sub-section in the prescribed manner up to two consecutive years, the Authority shall issue notice to such breeder, agent or licensee and on service of such notice if he fails to comply with the direction in the notice, the Authority shall declare all the protection admissible under registration certificate issued to such breeder or agent or licensee forfeited; (3) the arrears of fee imposed under sub-section (1) shall be deemed to be arrears of land revenue and shall be recoverable accordingly.

- **36.** Power to cancel or change registration and to rectify the Register: (1) On an application made in the prescribed manner to the Registrar by any person aggrieved, the Registrar may make such order as he may think fit for cancelling or changing any certificate of registration issued under this Act on the ground of any contravention of the provisions of this Act or failure of observe a condition subject to which such registration certificate is issued; (2) Any person aggrieved by the absence or omission from the register of any entry, or by any entry in the register without sufficient cause, or by any entry wrongly remaining on the register, may apply in the described manner to the Registrar and the Registrar may make such order for making, expunging or varying the entry as he may think fit; (3) The Registrar may in any proceeding, under this section decide any question that may be necessary or expedient to decide in connection with the rectification of the register; (4) The Registrar, on his own motion may, after giving notice in the prescribed manner to the parties concerned and after giving them an opportunity of being heard make any order referred to in sub-section (1) or sub-section (2).
- 37. Correction of register: (1) The Registrar may, on an application in the prescribed manner by the breeder of a variety registered under this Act—correct any error in the register in the name, address or description of such breeder or any other entry relating to such variety; (b) enter in the register any change in the name, address or description of such breeder; (c) cancel the entry in the register of the variety in respect of which such application is made; and make any consequential amendment or alteration in the certificate of registration and for that purpose require the certificate of registration to be produced to him. (2) The Registrar may, on application made in the prescribed register by a registered agent or a registered licensee of a variety and after notice to the registered breeder of such variety, correct any error, or enter any change, in the name, address or description of such registered agent or registered licensee, as the case may be, in the register or certificate of registration under this Act.
- **38.** Alteration of denomination of a registered variety: (1) The breeder of a variety registered under this Act may apply in the prescribed manner to the Registrar to delete any part or to add to or alter the denomination of such variety in any manner not substantially affecting the identity thereof, and the Registrar may refuse, leave or may grant it on such terms and subject to such limitations as he may think fit to avoid any conflict with the rights of other breeders of the varieties registered under this Act; (2) The Registrar may cause an application under this section to be advertised in the prescribed

manner in any case where it appears to him that it is expedient so to do, and where he does so, if within the prescribed time from the date of the advertisement any person gives notice to the Registrar in the prescribed manner of opposition to the application, the Registrar shall, after hearing the parties if so required, decide the matter; (3) Where leave is granted under this section, the denomination of the variety as altered shall be advertised in the prescribed manner, unless the application has already been advertised under sub-section (2).

Chapter VI

39. Farmers rights: (1) Notwithstanding anything contained in this Act, a farmer (i) who has bred or developed a new variety shall be entitled for registration and other protection in like manner as a breeder of a variety under this Act: (ii) the farmers' variety shall be entitled for registration as specified in the Article 18(h); (iii) who is engaged in the conservation of genetic resources of land races and wild relatives of economic plants and their improvement through selection and preservation shall be entitled in the prescribed manner for recognition and reward from the National Gene Fund; Provided that material so selected and preserved has been used as donors of genes in varieties remittable under this Act; (iv) Shall be deemed to be entitled to save, use, sow, re-sow, exchange, share or sell his farm produce including seed of a variety protected under this Act in the same manner as he was entitled before the coming into force of this Act; Provided that the farmer shall not be entitled to sell branded seed of a variety protected under this Act.

Explanation: For the purpose of clause (iv) branded seed means any seed put in a package or any other container and labeled in a manner indicating that such seed is of a variety protected under this Act; (2) Where any propagating material of a variety registered under this Act has been sold to a farmer or a group of farmers or any organisation of farmers, the breeder of such variety shall disclose to the farmer or the group of farmers or the organisation 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 as the farmer or the group of farmers or the organisation of farmers, as the case may be, may claim compensation in the prescribed manner before the Authority and the Authority shall after giving notice to the breeder of the variety and after

providing him an opportunity to file opposition in the prescribed manner and after hearing the parties, it may direct the breeder of the variety to pay such compensation as it deems fit, to the farmer or the group of farmers or the organisation of farmers, as the case may be.

- **40.** Certain information to be given in application registration: (1) A breeder or other person making application for registration of any variety under chapter III shall disclose in the application the information regarding the use of genetic material conserved by any tribal or rural families in the breeding or development of such variety; (2) If the breeder or such other person fails to disclose any information under sub-section (1), the Registrar may after being satisfied that the breeder or such person has willfully and knowingly concealed such information reject the application for registration.
- 41. Rights of communities: (1) Any person, group of persons (whether actively engaged in farming or not) or any governmental or non-governmental organisation may on behalf of any village or local community in India, file in any centre notified, with the previous approval of the Central Government by the Authority in the Official Gazette any claim attributable to the contribution of the people of that village or local community as the case may be in the evolution of any variety for the purpose of staking a claim on behalf of such village or local community; (2) Where any claim is made under subsection (1), the centre notified under that sub-section may verify the claim made by such person or group of persons or such governmental or nongovernmental organisation in such manner as it deems fit and if it is satisfied that such village or local community has contributed significantly to the evolution of the variety which has been registered under this Act, it shall report its findings to the Authority; (3) When the Authority, on a report under sub-section (2) is satisfied, after such enquiry as it may deem fit, that the variety with which the report is related has been registered under the provision of this Act, it may issue notice in the prescribed manner to the breeder of that variety and after providing opportunity to such breeder to file objection in the prescribed manner and of being heard, it may subject to any limit notified by the Central Government, by order, grant such sum of compensation to be paid to a person or group of persons or governmental or non-governmental organisation which has made claim under sub-section (1) to the Authority, as it may deem fit; (4) Any compensation granted under subsection (3) shall be deposited by the breeder of the variety in the Gene Fund; (5) The compensation granted under sub-section (3) shall be deemed to be an arrear of land revenue and shall be recoverable by the Authority accordingly.

- **42. Protection of innocent infringement:** Notwithstanding anything contained in this Act—(i) a right established under this Act shall not be deemed to be infringed by a farmer who at the time of such infringement was not aware of the existence of such right; and (ii) a relief which a court may grant in any suit for infringement referred to in section 65 shall not be granted by such court nor any cognizance of any offence under this Act shall be taken for such infringement by any court against a farmer who proves, before such court, that at the time of the infringement he was not aware of the existence of the right so infringed.
- 43. Authorization of farmer's variety.: Notwithstanding anything contained in section 28 and sub-section (6) of section 23, where an essentially derived variety is derived from a farmers' variety, the authorization under sub-section (1) of section 28 shall not be given by the breeder of such farmers' variety except with the consent of the farmers or group of farmers or community of farmers who have made contribution in the preservation or development of such variety.
- **44. Exemption from fee:** A farmer or group of farmers or village community shall not be liable to pay any fee in any proceeding before the Authority or Registrar or the Tribunal or the High Court under this Act and the rules made there under: *Explanation*: For the purposes of this section, fee for any proceeding includes any fee payable for inspection of any document or for obtaining a copy of any decision or order or document under this Act or the rules made there under.
- 45. Gene Fund: (1) The Central Government shall constitute a Fund to be called the National Gene Fund and there shall be credited thereto—(a) the benefit sharing received in the prescribed manner from the breeder of a variety or an essentially derived variety registered under this Act or propagating material of such variety or essentially derived variety, as the case may be; (b) the annual fee payable to the authority by way of royalty under subsection (1) of section 35; (c) the compensation deposited in the Gene Fund under sub-section (4) of section 41; (d) the contribution from any national and international organisation and other sources; (2.) The Gene Fund shall in the prescribed manner be applied for meeting— (a) any amount to be paid by way of benefit sharing under sub-section (5) of section 26; (b) the compensation payable under sub-section (3) of section 41; (c) the expenditure for supporting the conservation and sustainable use of genetic resources including *in-situ* and *ex-situ* collections and for strengthening the

capability of the Panchayat in carrying out such conservation and sustainable use; (d) the other expenditures of the schemes relating to benefit sharing, framed under section 46.

46. **Framing of schemes etc:** (1) The Central Government shall, for the purposes of section 41 and clause (d) of sub-section (2) of section 45 frame by notification in the Official Gazette, one or more schemes. (2) In particular and without prejudice to the generality of the provisions of subsection (1), the scheme may provide for all or any of the following matters, namely:—(a) the registration of the claims for the purposes of section 41 under the scheme and all matters connected with such registration; (b) the processing of such claims for securing their enforcement and matters connected therewith; (c) the maintenance of records and registers in respect of such claims; (d) the utilisation, by way of disbursal (including apportionment) or otherwise, of any amounts received in satisfaction of such claims. (e) the procedure for disbursal or apportionment by the Authority in the event of dispute regarding such claims; (f) the utilisation of benefit sharing for the purposes relating to breeding, discovery or development of varieties; (g) the maintenance and audit of accounts with respect to the amounts referred to in clause (d).

Chapter VII: Compulsory License

47. Power of Authority to make order for compulsory license in certain circumstances: (1) At any time, after the expiry of three years from the date of issue of a certificate of registration of a variety, any person interested may make an application to the Authority alleging that the reasonable requirements of the public for seeds or other propagating material of the variety have not been satisfied or that the seed or other propagating material of the variety is not available to the public at a reasonable price and pray for the grant of a compulsory license to undertake production, distribution and sale of the seed or other propagating material of that variety; (2) Every application under sub-section (1) shall contain a statement of the nature of the applicant's interest together with such particulars as may be prescribed and the facts upon which the application is based; (3) The Authority, after consultation with Central Government, and if satisfied after giving an opportunity to the breeder of such variety, to file opposition and after hearing the parties, on the issue that the reasonable requirements of the public with respect to the variety have not been satisfied or that the variety is not available to the public at a reasonable price, may order such breeder to grant a license to the applicant upon such terms and conditions as it may deem fit and send a copy of such order to the Registrar to register such license under sub-section; (3) or section 29 on payment of such fee by the applicant as is referred to in that sub-section.

- 48. When requirement of public deemed to have not been satisfied: In determining the question as to whether the reasonable requirements of the public for seeds of a variety or its propagating material as referred to in subsection (1) or sub-section(3) of section 47, the Authority shall take into account—(i) the nature of the variety, the time which has elapsed since the grant of the certificate of registration of the variety, price of the seed of the variety and the measures taken by the breeder or any registered licensee of the variety to meet the requirement of the public; and (ii) the capacity, ability and technical competence of the applicant to produce and market the variety to meet the requirement of the public.
- **49** Adjournment of application for grant of compulsory license: (1) If the breeder of a variety registered under this Act in respect of which any application has been pending before the Authority under section 47 makes a written request to the Authority on the ground that due to any reasonable factor, such breeder has been unable to produce seed or other propagating material of the variety on a commercial scale to an adequate extent till the date of making such request, the Authority may on being satisfied that the said ground is reasonable, adjourn the hearing of such application for such period not exceeding twelve months in aggregate as it may consider sufficient for optimum production of the seed or propagating material of such variety or essentially derived variety, as the case may be, by such breeder; (2) No adjournment of the application under sub-section (1) shall be granted unless the Authority is satisfied that the breeder of the variety registered under this Act in respect of which such application is made has taken immediate measures to meet the reasonable requirements of the public for the seeds or other propagating material of such variety.
- **50. Duration of compulsory license:** The Authority shall determine the duration of the compulsory licenses granted under this Chapter and such duration may vary from case to case keeping in view the gestation periods and other relevant factors but in any case shall not exceed to the total remaining period of the protection of that variety and when a compulsory license is granted the prescribed authority shall in the prescribed manner

make available to the licensee of such compulsory license, the reproductive material of the variety relating to such compulsory license stored in the National Gene Bank or any other centre.

- 51. Authority to settle terms and conditions of licence: (1) The Authority shall, while determining the terms and conditions of a compulsory licence under the provisions of this Chapter, endeavour to secure—(i) reasonable compensation to the breeder of the variety relating to the compulsory licence having regard to the nature of the variety, the expenditure incurred by such breeder in breeding the variety or for developing it and other relevant factors; (ii) that the compulsory licensee of such variety possesses the adequate means to provide to the farmers, the seeds or its other propagating material of such variety timely and at reasonable market price; (2) No compulsory licence granted by the Authority shall authorize the licensee to import the variety relating to such licence or any seed or other propagating material of such variety from abroad where such import would constitute an infringement of the rights of the breeder of such variety.
- 52. Revocation of compulsory licence: (1) The Authority may on its own motion or on application from an aggrieved person made to it in the prescribed form, if it is satisfied that a compulsory licensee registered under this Chapter has violated any terms or conditions of his licence or it is not appropriate to continue further such licence in public interest, it may after giving such licensee an opportunity to file opposition and of being heard make order to revoke such licence; (2) When a licence is revoked under subsection (1) by an order of the Authority, the Authority shall send a copy of such order to the Registrar to rectify the entry or correct the register relating to such revocation and the Registrar shall rectify the entry or correct the register accordingly.
- 53. Modification of compulsory licence: The Authority may on its own motion or on application from the licensee of a compulsory licence, after providing the opportunity of being heard to the breeder of the variety registered under this Act relating to such compulsory licence, if it considers, in public interest, so to do, modify, by order, such terms and conditions as it thinks fit and send a copy of such order to the Registrar to correct the entries and register according to such modification and the Registrar shall ensure such corrections to be made accordingly.

Chapter VIII: Tribunal

- **54.** *Tribunal:* The Central Government may, by notification in the Official Gazette, establish a Tribunal to be known as the Plant Varieties Protection Appellate Tribunal to exercise the jurisdiction, powers and authority conferred on it by or under this Act.
- **55.** Composition of Tribunal: (1) The Tribunal shall consist of a Chairman and such number of Judicial Members and Technical Members as the Central Government may deem fit to appoint; (2) A Judicial Member shall be a person who has for at least ten years held a judicial office in the territory of India or who has been a member of the Indian Legal Service and has held a post in Grade-II of that service or any equivalent or higher post for at least three years or who has been an advocate for at least twelve years; Explanation:—For the purposes of this sub-section (1),—(i) in computing the period during which a person has held judicial office in the territory of India, there shall be included any period, after he has held any judicial office, during which the person has been an advocate or has held the office of a member of a tribunal or any post, under the Union or a State, requiring special knowledge of law; (ii) in computing the period during which a person has been an advocate, there shall be included any period during which the person has held judicial office or the office of a member of a tribunal or any post, under the Union or a State, requiring special knowledge of law after he became an advocate; (3) A Technical Member shall be a person who is an eminent agricultural scientist in the field of plant breeding and genetics and possesses an experience of at least twenty years to deal with plant variety or seed development activity, or who has held the post in the Central Government or State Government dealing with plant variety or seed development equivalent to the Joint Secretary to the Government of India for at least three years and possesses the special knowledge in the field of plant breeding and genetics; (4) The Central Government shall appoint a Judicial Member of the Tribunal to be the Chairman thereof; (5) The Central Government may appoint one of the members of the Tribunal to be the Senior Member there of; (6) The Senior member or a Member shall exercise such of the powers and perform such of the functions of the Chairman as may be delegated to him by the Chairman by a general or special order in writing.
- **56. Appeals to the Tribunal:** (1) An appeal shall be preferred to the Tribunal within the prescribed period from any—(a) order or decision of the

Authority or Registrar, relating to registration of a variety; or (b) registration as an agent or a licensee of a variety; or (c) determining the benefit sharing by the Authority; (d) order or decision of the Authority regarding revocation of compulsory licence or modification of compulsory licence; or (e) order or decision of Authority regarding payment of compensation, made under this Act or rules made there under; (2) Every such appeal shall be preferred by petition in writing and shall be in such form and shall contain such particulars as may be prescribed; (3) The Tribunal in disposing of an appeal under this section shall have the power to make any order which the Authority or the Registrar could make under this Act.

- 57: Orders of the Tribunal: (1) The Tribunal may, after giving both the parties to the appeal an opportunity of being heard, pass such orders thereon as it thinks fit; (2) The Tribunal may, at any time within thirty days from the date of the order, with a view to rectifying the mistake apparent from the record, amend any order passed by it under sub-section (1), and shall make such amendment if the mistake is brought to its notice by the appellant or the opposite party; (3) In every appeal, the Tribunal, where it is possible, hear and decide such appeal within a period of one year from the date of filing the appeal; (4) The Tribunal shall send a copy of any orders passed under this section to the Registrar; (5) The orders of the Tribunal under this Act shall be executable as a decree of a civil court.
- **58. Procedure of Tribunal:** (1) The powers and functions of the Tribunal may be exercised and discharged by Benches constituted by the Chairman of the Tribunal from among the Members thereof; (2) A bench shall consist of one Judicial Member and one Technical Member; (3) If the members of a Bench differ in opinion on any point, the point shall be decided according to the opinion of the majority, if there is a majority, but if the members are equally divided, they shall state the point or points on which they differ, and the case shall be referred to the Chairman for hearing on such point or points by one or more of the other Members and such point or points shall be decided according to the opinion of the majority of the Members who have heard the case, including those who first heard it; (4) Subject to the provision of this Act, the Tribunal shall have power to regulate its own procedure and the procedure of Benches thereof in all matters arising out of the exercise of its powers or the discharge of its functions, including the places at which the Benches shall holding their sitting; (5) The Tribunal shall, for the purpose of discharging its functions, have all the powers which are vested in the Registrar under section 11, and any proceeding before the Tribunal shall

deemed to be judicial proceeding within the measuring of sections 193 and 228 and for the purposes of section 196 of the Indian Penal Code, and the Tribunal shall be deemed to be a civil court for all the purposes of section 195 and Chapter XXXV of the code of Criminal Procedure, 1973; (6) Notwithstanding anything contained in any other provisions of this Act or in any other law for the time being in force, no interim order (whether by way of injunction or stay or any other manner) shall be made on, or in any proceedings relating to an appeal unless—(a) copies of such appeal and of all documents in support of the plea for such interim order are furnished to the party against whom such appeal is made or proposed to be made; and (b) opportunity is given to such party to be heard in the matter.

59. Transitional provision: Notwithstanding anything contained in this Act, till the establishment of the Tribunal under section 54, the Intellectual Property Appellate Board established under section 83 of the Trade Marks Act, 1999 shall exercise the jurisdiction, powers and authority conferred on the Tribunal under this Act subject to the modification that in any Bench of such Intellectual Property Appellate Board constituted for the purpose of this section, for the Technical Member referred to in subsection (2) of section 84 of the Trade Marks Act, 1999, the Technical Member shall be appointed under this Act and he shall be deemed to be the Technical Member for constituting the Bench under the said sub-section (2) of section 84 for the purposes of this Act.

Chapter IX: Finance, accounts and audit

- **60. Grants by Central Government:** The Central government may, after due appropriation made by Parliament by law in this behalf, make to the Authority grants and loans of such sums of money as the Central Government may think fit for being utilized for the purposes of this Act.
- 61. Authority Fund: (1) There shall be constituted a fund to be called the Protection of Plant Varieties Authority Account and there shall be credited thereto—(a) all grants and loans made to the Authority by the Central Government under section 60; (b) all fees received by the Authority and the Registrars except the annual fee determined on the basis of benefit or royalty under subsection (1) of section 35; (c) all sums received by the Authority from such other sources as may be decided upon by the Central Government; (2) The Protection of Plant Varieties Authority Account shall be applied for meeting—(a) the salaries, allowances and other remuneration

of the Chairperson, officers and other employees of the Authority and allowances, if any, payable to the members; (b) the other expenses of the Authority in connection with the discharge of its functions and for purposes of this Act.

- 62. Budget, accounts and audit.24: (1) the Authority shall prepare a budget, maintain proper accounts and other relevant records (including the accounts and other relevant records of the Gene Fund) and prepare an annual statement of account in such form as may be prescribed by the Central Government in consultation with the Comptroller and Auditor-General of India; (2) The accounts of the Authority shall be audited by the Comptroller and Auditor-General of India at such intervals as may be specified by him and any expenditure incurred in connection with such audit shall be payable by the Authority to the Comptroller and Auditor-General of India; (3) The Comptroller and Auditor General of India and any other person appointed by him in connection with the audit of the accounts of the Authority shall have the same right and privileges and authority in connection with such audit as the Comptroller and Auditor General generally has in connection with the audit of the government accounts and, in particular, shall have the right to demand the production of books, accounts, connected vouchers and other documents and papers and to inspect any of the offices of the Authority; (4) The accounts of the Authority as certified by the Comptroller and Auditor General of India or any other person appointed by him in his behalf together with the audit report thereon shall be forwarded annually to the Central Government and that Government shall cause the same to be laid before each House of Parliament.
- **63. Financial and administrative powers of the Chairperson:** The Chairperson shall exercise such financial and administrative powers over the functions of the Authority as may be prescribed: Provided that the Chairperson shall have the authority to delegate such of his financial and administrative powers as he may think fit to a member or any other officer of the Authority subject to the condition that the member or such officer shall, while exercising such delegated powers, continue to be under the direction, control and supervision of the Chairperson.

Chapter x

64. *Infringement:* Subject to the provisions of this Act, a right established under this Act is infringed by a person—(a) who, not being the breeder of a

variety registered under this Act or a registered agent or registered licensee of that variety, sells, exports, imports or produces such variety without the permission of its breeder or within tile scope of a registered licence or registered agency without permission of the registered licensee or registered agent, as the case may be; (b) who uses, sells, exports, imports or produces any other variety giving such variety, the denomination identical with or deceptively similar to the denomination of a variety registered under this Act in such manner as to cause confusion in the mind or general people in identifying such variety so registered.

- **65.** Suit for infringement etc.: (1) No suit—(a) for the infringement of a variety registered under this act; or (b) relating to any right in a variety registered under this Act, shall be instituted in any court inferior to a District Court having jurisdiction to try the suit; (2) For the purpose of clauses (a) and (b) of sub-section (1), "District court having jurisdiction" shall mean the District Court within the local limit of whose jurisdiction the cause of action arises.
- 66. Relief in suits for infringement..25: (1) The relief which a court may grant in any suit for infringement referred to in section 65 includes an injunction and at the option of the plaintiff, either damages or a share of the profits; (2) The order of injunction under sub-section (1) may include an exparte injunction or any interlocutory order for any of the following matters, namely:—(a) for discovery of documents; (b) preserving of infringing variety or documents or other evidence which are related to the subject matter of the suit; (c) attachment of such property of the defendant which the court deems necessary to recover damages, costs or other pecuniary remedies which may be finally awarded to the plaintiff.
- **67.** Opinion of scientific adviser: (1) When the court has to form an opinion upon any question of fact or a scientific issue, such court may appoint an independent scientific adviser to suggest it or to enquire and report upon the matter to enable it to from the desired opinion; (2) The scientific adviser may be paid such remuneration of expenses as the court may fix.

B. Offences, penalties and procedure

68. Prohibition to apply the denomination of a registered variety: (1) No person other than the breeder of a variety registered under this Act or a

registered licensee or registered agent thereof shall use the denomination of that variety in the manner as may be prescribed; (2) A person shall be deemed to apply the denomination of a variety registered under this Act who— (a) applies it to the variety itself; or (b)applies it to any package in or with which the variety is sold, or exposed for sale, or had in possession such package for sale or for any purpose of trade or production; or (c)places, encloses or annexes the variety which are sold, or exposed for sale, or had in possession for sale or for any purpose of trade or production, in or with any package or other thing to which the denomination of such variety registered under this Act has been applied; or(d)uses the denomination of such variety registered under this Act in any manner reasonably likely to lead to the belief that the variety or its propagating material in connection with which it is used is designated or described by that denomination; or (e) in relation to the variety uses such denomination in any advertisement, invoice, catalogue, business letter, business paper, price list or other commercial document and such variety is delivered to a person in pursuance of a request or order made by reference to the denomination as so used; (3) A denomination shall be deemed to be applied to a variety whether it is woven in; impressed on, or otherwise worked into, or annexed or affixed to, such variety or to any package or other thing;

- 69. Meaning of falsely applying the denomination of a registered variety: (1) A person shall be deemed to falsely apply the denomination of a variety registered under this Act who, without the assent of the breeder of such variety—(a) applies such denomination or a deceptively similar denomination to any variety or any package containing such variety. (b) uses any package bearing a denomination which is identical with or deceptively similar to the denomination of such variety registered under this Act, for the purpose of packing, filling or wrapping therein any variety other than such variety registered under this Act; (2) any denomination of a variety registered under this Act falsely applied as mentioned in sub-section (1), is in this Act referred to as false denomination; (3) In any prosecution for falsely applying a denomination of a variety registered under this Act, the burden of proving the assent of the breeder of such variety shall lie on the accused.
- **70. Penalty for applying false denomination etc.** (1) Any person who— (a) applies any false denomination to a variety; or (b) indicates the false name of a country or place or false name and address of the breeder of a variety registered under this Act in course of trading such variety; Shall unless he proves that he acted, without intent to defraud, be punishable— (i) With

imprisonment for a term which shall not be less than three months but which may extend to two years; or (ii) fine which shall not be less than fifty thousand rupees but which may extend to five lakh rupees; or (iii) both.

- 71. Penalty for selling varieties to which not authorized or to which false denomination is applied, etc.: Any person who sells, or exposes for sale, or has in his possession for sale or for any purpose of trade or production any variety to which any false denomination is applied or to which an indication of the country or place in which such variety was made or produced or the name and address of the breeder of such variety registered under this Act has been falsely made, shall unless he proves—(a) that having taken all reasonable precautions against committing an offence against this section, he had at the time of commission of the alleged offence no reason to suspect the genuineness of the denomination of such variety or that any offence had been committed in respect of indication of the country or place in which such variety registered under this Act, was made or produced or the name and address of the breeder of such variety; (b) that, on demand by or on behalf of the prosecutor, he gave all the information in his power with respect to the person from whom he obtained such variety; or that otherwise be had acted innocently, be punishable—(i) with imprisonment for a term which shall not be less than six months but which may extend to two years; or (ii) with fine which shall not be less than fifty thousand rupees but which may extend to five lakh rupees; or (iii) both;
- 72. Penalty for falsely representing a variety as registered: Whoever makes any representation with respect to the denomination of a variety or its propagating material or essentially derived variety or its propagating material or essentially derived variety or its propagating material registered under this Act to the effect that it is a variety or its propagating material or essentially derived variety or its propagating material registered under this Act or otherwise represents any variety, or its propagating material or essentially derived variety or its propagating material not registered under this Act to the effect that it is registered under this Act to the effect that it is registered under this Act shall be punishable— (i) with imprisonment for a term, which shall not be less than six mouths and may extend to three years; or (ii) with fine which shall not be less than one lakh rupees but which may extend to five lakh rupees; or (iii) both;
- **73. Penalty for subsequent offence:** Whoever, having already been convicted of an offence under this Act is again convicted of such offence shall

be punishable for the second and for every subsequent offence— (i) with imprisonment for a term which shall not be less than one year but which may extend to three years; or (ii) with fine which shall not be less than two lakh rupees but which may extend to twenty lakh rupees; or (iii) both.

- **74. No offence in certain cases:** The provisions of this Act relating to offences shall be subject to the right created as recognized by this Act and no act or omission shall be deemed to be an offence under the provisions of this Act if such act or omission is permissible under this Act.
- 75. Exemption of certain persons employed in ordinary course of business: Where a person accused of an offence under this Act proves that in the ordinary course of his employment, he has acted without any intention to commit the offence and having taken all reasonable precautions against committing the offence charged, he had, at the time of the commission of the alleged offence, no reason to suspect the genuineness of the act so charged as an offence and on demand made by or on behalf of the prosecutor, he gave all the information in his power with respect to the persons on whose behalf the offence was committed, he shall be acquitted.

76. Procedure where invalidity of registration is pleaded by the accused:

(1) Where the offence charged under this Act is in relation to a variety or its propagating material or essentially derived variety or its propagating material registered under this Act and the accused pleads that the registration of such variety or its propagating material or essentially derived variety or its propagating material, as the case may be, is invalid and the court is satisfied that such offence is prima facie not tenable, it shall not proceed with the charge but shall adjourn the proceedings for three months from the date on which the plea of the accused is recorded to enable the accused to file an application before the Registrar under this Act for the rectification of the register on the ground that the registration is invalid; (2) If the accused proves to the court that he has made such application within the time so limited or within such further time as the court for sufficient cause allow, the further proceedings in the prosecution shall stand stayed till the disposal of such application for rectification; (3) If within a period of three months or within such extended time as may be allowed by the court, the accused fails to apply to the Registrar for rectification of the register, the court shall proceed with the case as if the registration were invalid; (4) Where before institution of a complaint of an offence referred to in subsection (1), any application for the rectification of the register concerning the registration of the variety or its propagating material or essentially derived variety or its propagating material, as the case may be, in question on the ground of invalidity of such registration has already been properly made to and is pending before the Registrar, the court shall stay the further proceedings in the prosecution pending the disposal of the application aforesaid and shall determine the charge against the accused in conformity with the result of the application for rectification.

77. Offences by companies: (1) If the person committing an offence under this Act is a company, the company as well as every person in charge of, and responsible to, the company for the conduct of its business at the time of the commission of the offence shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly; Provided that nothing contained in sub-section shall render any such person liable to any punishment, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence; (2) Notwithstanding anything contained in subsection (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or that the commission of the offence is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly; Explanation — For the purpose of this section—(a) "company" means any body corporate and includes a firm or other association of individuals; and (b) "director", in relation to a firm, means a partner in the firm.

Chapter XI: Miscellaneous

78. Protection of security of India: Notwithstanding anything contained in this Act, the Authority or the Registrar shall—(a) not disclose any information relating to the registration of a variety or any application relating to the registration of a variety under this Act, which is considered prejudicial to the interest of the security of India; and (b)take any action regarding the cancellation of registration of such varieties registered under this Act which the Central Government may by notification in the Official Gazette specify in the interest of the security of India. Explanation:— For the purpose of this section, the expression "security of India" means any action necessary for the security of India which relates to the use of any produce of any variety

registered under this Act directly or indirectly for the purposes of war or military establishment or for the purposes of war or other emergency in international relations.

- **79.** Implied warranty on sale of registered variety, etc.: Where a denomination of a variety or its propagating material or essentially derived variety or its propagating material registered under this Act has been applied to the variety or its propagating material or essentially derived variety or its propagating material, as the case may be, on sale or in the contract for sale of such variety or its propagating material or essentially derived variety or its propagating material, as the case may be, seller shall be deemed to warrant that the denomination is a genuine denomination and not falsely applied, unless the contrary is expressed in writing signed by or on behalf of the seller and delivered at the time of the sale of the variety or its propagating material or essentially derived variety or its propagating material, as the case may be, on contract to and accepted by the buyer.
- **80. Death of party to a proceeding:** If a person who is a party to a proceeding under this Act (not being proceeding in a court) dies pending the proceeding, the Authority or the Registrar, as the case may be, may, on request, and on proof to the satisfaction of such Authority or Registrar, of the transmission of the interest of the deceased person, substitute in the proceedings his successor in interest in his place, or, if the Authority or the Registrar is of opinion that the interest of the deceased person is sufficiently represented by the surviving party, permit the proceedings to continue without the substitution of his successor in interest.
- 81. Right of registered agent and registered licensee to institute suit: The registered agent or the registered licensee of a variety or its propagating material or essentially derived variety or its propagating material registered under this Act may institute appropriate proceedings in the court under this Act on behalf of the breeder of such variety or its propagating material or essentially derived variety or its propagating material, as the case may be, if such agent or licensee has been authorized in the prescribed manner by such breeder for doing so.
- **82.** Evidence of entry in register, etc., and things done by authority and the registrar.29: (1) A copy of any entry in the register, or of any document issued under this Act purporting to be certified by the Authority or the Registrar and sealed with the seal of such Registrar or the Authority, as the case may be, shall be admitted in evidence in all courts and in all proceedings

without further proof or production of the original; (2) A certificate purporting to be under the hand of the Authority or the Registrar, as the case may be, as to any entry, matter or things that such Authority or the Registrar is authorized by this Act or the rules to make or do shall be *prima facie* evidence of the entry having been made, and of the content thereof, or of the matter or things having been done or not done.

- **83.** Authority and registrar and other officers not compellable to production of register, etc.: The Authority or the Registrar or any officer working under the Authority or the Registrar, as the case may be, shall not, in any legal proceedings be compelled to produce the register or any other document in its or his custody, the content of which can be proved by the production of a certified copy issued under this Act in the prescribed manner or to appear as a witness to prove the matter therein recorded unless by order of the court, as the case may be, made for special case.
- **84. Document open to public inspection:** Any person may, on an application to the Authority or the Registrar, as the case may be, and on payment of such fee as may be prescribed, obtain a certified copy of any entry in the register or any other document in any proceedings under this Act pending before such Authority or Registrar or may inspect such entry or document.
- **85.** Report of the Authority and the Registrar to be placed before Parliament: The Central Government shall cause to be placed before both Houses of Parliament once a year a report regarding the performance of the Authority under this Act.
- **86.** Government to be bound: The provisions of this Act shall be binding on the Government.
- 87. Proceedings before authority: All proceedings before the Authority or the Registrar, as the case may be, relating to registration of variety or essentially derived variety, registration of agent, registration of licence or registration of compulsory licensing under this Act shall be deemed to be judicial proceedings within the meaning of section 193 and 228 and for the purpose of section 196 of the Indian Penal Code and the Authority or the Registrar, as the case may be, shall be deemed to be a civil court for the purpose of section 195 and Chapter XXVI of the Code of Criminal Procedure, 1973.
- **88.** Protection of action taken in good faith: No suit, prosecution or other legal proceedings shall lie against the Central Government, or against the

Chairperson, or members, or the Registrar or any person acting under such Government, Authority, or Registrar under the provisions of this Act, for anything which is done in good faith or intended to be done in pursuance of this Act or any rule, regulation, scheme or order made thereunder.

- **89.** Bar of jurisdiction: No civil court shall have jurisdiction in respect of any matter which the Authority or the Registrar or the Tribunal is empowered by or under this Act to determine.
- **90. Member and staff of Authority etc. to be public servants:** The Chairperson, members and the officers and other employees of such Authority and the Registrar-General and the officers and other employees working under him shall be deemed to be public servants within the meaning of section 21 of the Indian Penal Code.
- **91.** Exemption from tax on wealth and income: Notwithstanding anything contained in the Wealth-tax Act, 1957, the Income-tax Act, 1961, or any other enactment for the time being in force relating to tax on wealth, income, profits or gains, the Authority shall not be liable to pay wealth tax, income tax or any other tax in respect of their wealth, income, profits or gains derived.
- **92.** Act to have overriding effect: The provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force or in any instrument having effect by virtue of any law other than this Act.
- **93.** Power to remove difficulties: (1) If any difficulty arises in giving effect to the provisions of this Act, the Central Government may, by order, published in the Official Gazette, make such provisions not inconsistent with the provisions of this Act as may appear to be necessary for removing the difficulty;

Provided that no order shall be made under this section after the expiry of two years from the date of commencement of this Act. (2) Every order made under sub-section (1) shall be laid before each House of Parliament.

94. Power to make regulations: (1) The Authority may, with the previous approval of the Central Government, by notification in the Official Gazette make regulations consistent with this Act and the rules made thereunder to carry out the provisions of this Act; (2) In particular, and without prejudice to the generality of the foregoing power, such regulations may provide for all or any of the following of this Act.

(a) duties and jurisdiction of Registrars under sub-section (4) of section 12; (b) the terms of office and the conditions of service of the Registrars under sub-section (5) of section 12; (c) the criteria of distinctiveness, uniformity and stability for registration of extant variety under sub-section (2) of section 15; (d) the manner in which a single and distinct denomination to a variety shall be assigned by the applicant under sub-section (1) of section 16; (e) matters governing the assignment of denomination of variety under subsection (2) of section 17; (f) the time within which the Registrar may require the applicant to propose another denomination under sub-section (3) of section 17; (g) the form of application under clause (d) of sub-section (1) of section 18; (h) the standards for evaluating seeds during tests under subsection (1) of section 19; (i) to specify the quantity of seeds or other propagating material including parental line seeds to be deposited by a breeder under section 27; (j) the limitations and conditions subject to which a breeder may authorise a person to sell, market or otherwise deal with variety under sub-section (2) of section 28; (k) the form for authorisation under sub-section (3) of section 28.

95. Power of the Central Government to make rules: (1) The Central Government may, by notification in the Official Gazette, make rules to carry out the provisions of this Act; (2) In particulars, and without prejudice to the generality of the foregoing powers, such rules may provide for all or any of the following matters, namely—(i) the terms of office of the Chairperson and the manner of filling the post under sub-section (6) of section 3; (ii) the salary and allowances of the Chairperson and his conditions of service in respect of leave, pension, provident fund and other matters under subsection (7) of section 3; (iii) the time and place of meetings of the Authority and the rules of procedure in regard to the transaction of business at its meetings (including the quorum at its meetings) and the transaction of business of its Standing Committee appointed under sub-section (7) of section 3 under sub-section (1) of section 4; (iv) the control and restriction regarding appointment of the officers and employees of the Authority and the method of such appointment, scale of pay and allowances and other conditions of service under section 6; (v) the powers and duties of the chairperson under section 7; (vi) the terms and conditions subject to which and the manner in which the measures referred to in sub-section (1) of section 8 may provide for the registration of extant or new varieties under clause (a) of subsection (2) of that section; (vii) the manner for arranging production and sale of the seeds under clause (d) of sub-section (2) of

section 8; (viii) the salary and allowances of Registrar-General of Plant Varieties and the conditions of service in respect of his leave, pension, provident fund and other matter under sub-section (3) of section 12; (ix) the matters to be included in the National Register of Plant Varieties under subsection (1) of section 13; (x) the manner of authorising a person under clause (e) of sub-section (1) of section 16; (xi) the fee under clause (g) and the other particular under clause (i) which shall accompany the application under sub-section (1) of section 18; (xii) the period within which after making application a proof of the right to make the application is to be furnished under sub-section (3) of section 18; (xiii) the form of application under provision to section (1) of section 18; (xiv) the fee to be deposited by applicant under sub-section (2) of section 19; (xv) the manner and method of conducting the tests referred to in sub-section (1), under sub-section (3) of section 19; (xvi) the manner of advertising specifications of variety for registration including its photograph or drawing under sub-section (1) of section 21; (xvii) the manner of making application and the fee payable for allowing further period to give notice and the manner of giving notice under sub-section (2) of section 21; (xviii) the manner of sending counter statement under sub-section (4) of section 21; (xix) the manner of submitting evidence and the time within which such evidence may be submitted under sub-section (6) of section 21; (xx) the documents and the fee which shall accompany the application under sub-section (2) of section 22; (xxi) the tests to be conducted and the procedure to be followed under sub-section (4) of section 23; (xxii) the form of a certificate of registration and the other authority to which a copy thereto shall be sent under subsection (9) of section 24; (xxiii) the form of a certificate of registration and the other authority to which a copy thereto and the maximum time for issuing the certificate of registration shall be sent under sub-section (2) of section 24; (xxiv) the manner of giving notice to the applicant under subsection (3) of section 24; (xxv) the contents of the certificate and the manner of publishing such contents and inviting claim of benefits sharing under sub-section (1) of section 26; (xxvi) the form for submitting claims of benefit sharing and the fee to be accompanied therewith under sub-section (2) of section 26; (xxvii) the manner in which and the time within which opposition to claims shall be submitted under sub-section (3) of section 26; (xxviii) the fee payable for renewal or further renewal of period of validity of certificate of registration under sub-section (6) of section 26; (xxix) the manner of making reference under sub-section (7) of section 26; (xxx) the manner of making an application for registration for title and the fee to be

accompanied therewith under sub-section (4) of section 28; (xxxi) the manner of referring the disputes regarding registration of entitlement under sub-section (4) of section 28; (xxxii) the manner to enter into a certificate the brief conditions of entitlement under sub-section (5) of section 28: (xxxiii) the manner of making an application for varying the terms of registration under clause (a), of sub-section (9) of section 28; (xxxiv) the manner of making an application by the registered breeder and certain others for cancellation of terms of registration under clause (b) of sub-section (9) of section 28; (xxxv) the manner of application by any person other than the breeder, his succession, the registered agent or the registered licensee for cancellation of terms of registration under clause (c) of sub-section (9) of section 28; (xxxvi) the manner of application for cancellation of the terms of registration under clause (d) of sub-section (9) of section 28; (xxxvii) the manner of application for cancellation of the terms of registration under clause (e) of sub-section (9) of section 28; (xxxviii) the manner to issuing notice to Registered breeder, and certain others under sub-section (10) of section 28; (xxxix) the manner of giving notice to the Registrar under subsection (1) of section 33; (xl) the manner of notifying to the registered agent or registered licensee under sub-section (2) of section 33; (xli) the period within which the notice of opposition under sub-section (3) of section 33 may be given; (xlii) the manner of making application under section 34; (xliii) the manner depositing fee payable under sub-section (2) of section 35; (xliv) the manner of making application under sub-section (1) of section 36; (xlv) the manner of applying to the Registrar under sub-section (2) of section 36; (xlvi) the manner of giving notice under sub-section (4) of section 36; (xlvii) the manner of application under sub-section (1) of section 37; (xlviii) the manner of making application under sub-section (2) of section 37; (xlix) the manner to apply to the Registrar under sub-section (1) of section 38; (l) the manner of advertising application and to give notice to the Registrar, and the time from the date of the advertisement within which a person may give such notice under sub-section (2) of section 38; (li) the manner of advertising the denomination of the variety under sub-section (3) of section 38; (lii) the manner of claiming compensation and filing of opposition under sub-section (2) of section 39; (liii) the manner of recognition and reward from the National Gene Fund under clause (2) of section 42: (liv) the particulars to be contained in the application under sub-section (2) of section 47; (lv) the authority and the manner in which such authority shall make available to the compulsory licensee the reproduction material of the variety under section 50; (lvi) the form for making application under sub-section (1)

of section 52; (lvii) the period within which an appeal shall be preferred under section 56: (lviii) the form of petition and the particulars which such petition shall contain under sub-section (3) of section 56; (lix) the manner of issuing notice and filing objection under sub-section (3) of section 41; (lx) the manner of receiving benefit sharing under clause (9) of subsection (I) of section 45; (lxi) the manner for applying Gene Fund under sub-section (2) of section 45; (lxii) the period within which an appeal shall be made under subsection (1) of section 60; (lxiii) the form of petition and the particulars which such petition shall contain under sub-section (2) of section 60; (lxiv) the form for preparing annual statement of accounts under sub-section (1) of section 62; (lxv) the financial and administrative powers which the Chairperson shall exercise under section 63; (lxvi) the manner of using the denomination of a variety under sub-section (1) of section 68; (lxvii) the manner of authorising registered agent or registered licensee under section 81; (lxviii) the manner of issuing certified copy of Register, or any other document under section 83; (lxix) the fee payable for obtaining a certified copy of any entry in the Register, or any other document under section 84; (lxx) any other matter which is to be, or may be, prescribed or in respect of which this Act makes no provision or makes insufficient provision and provision, is, in the opinion of the Central Government, necessary for the proper implementation of this Act.

96: Rules, regulations and schemes to be laid before Parliament: Every rule and every regulation and every scheme made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive session, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or regulation or scheme or both Houses agree that the rule or regulation or scheme should not be made, the rule or regulation or scheme shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule or regulation or scheme.

Literature cited

Almekinders CJM, Louwaars NP and de Bruijn GH. 1994. Local seed systems and their importance for an improved seed supply in developing countries. Euphytica. 78:207-216.

Ball SS and Douglas JE. 1992. Designing successful farmer-managed seed systems. Winrock International Institute for Agricultural Development. Development Studies Paper Series. Winrock, Arlington, USA.

Bandyopadhyay, R., D.R. Butler, A. Chandrashekar, R.K. Reddy, and S. S. Navi. 2000. Biology, epidemiology, and management of sorghum grain mold. Pages 34-71 *in* Technical and Institutional Options for Sorghum Grain Mold Management: proceedings of an international consultation, 18–19 May 2000, ICRISAT, Patancheru, India (Chandrashekar, A., Bandyopadhyay, R., and Hall, A.J., eds) Patancheru 502 324, Andhra Pradesh, India. International Crops Research Institute for the Semi–Arid Tropics.

Bandyopadhyay, R., L. K. Mughogho, and K. E. P. Rao. 1988. Sources of resistance to sorghum grain molds. *Plant Disease*. 72:504–508.

Barnett, **H. L.**, **and B. B. Hunter**. 1972. Illustrated genera of imperfect fungi. Minneapolis, Minnesota, USA: Burgess Publishing Co. 241 pp.

Barron, G. L. 1968. The genera of hyphomycetes from soil. New York, USA: Robert E Krieger Publishing Co. 364 pp.

Bhat R. V., H. P. K. Shetty, and S. Vasanthi. 2000. Human and animal health significance of mycotoxins in sorghum with special reference to Fumonisins. Pages 107-115 *in* Technical and Institutional options for sorghum grain mold management: Proceedings of an international consultation, 18–19 May 2000, ICRISAT, Patancheru, India (Chandrashekar, A., Bandyopadhyay, R., and Hall, A.J., eds.). Patancheru, 502 324, Andhra Pradesh, India: International Crops Research Institute for the Semi-Arid Tropics.

Camargo, C.P., Braganton C. & Monares A. (1989). Seed production systems for small farmers: a non-conventional perspective CIAT, Cali, Columbia

Champ, B. R., E. Highley, A. D. Hocking, and J. I. Pitt. (eds.). 1991. Fungi and mycotoxins in stored products: Proceedings of an international conference, Ban kok, Thailand 23-26 April 1991. ACIAR proceedings No. 36 Australia: The Griffin press ltd. 270 pp.

Christensen, C. M., and R. A. Meronuck. 1986. Quality maintenance in stored grains and seeds, University of Minnesota Pres, Minneapolis, 138 pp.

Cormwell E, Friis-Hansen E and **Turner M.** 1992. The seed sector in developing countries: A framework for performance analysis. ODI, London.

Cromwell, E. (ed.). 1990. Seed diffusion mechanisms in small farmer communities: Lessons from Asia, Africa and Latin America. ODI, London

Dixit S, Wani SP, Ravinder Reddy Ch, Roy S, Reddy BVS, Sridevi TK, Chourasia AK, Pathak P, Rama Rao M and Ramakrishna A. 2005. Participatory varietal selection and village seed banks for self-reliance: Lessons learnt. Global Theme on Agroecosystems, Report No 17. Patancheru, Andhra Pradesh, India: International Crops Research Institute for the Semi-Arid Tropics. 20 pp.

Ellis, M. B. 1971. Dematiaceous hyphomycetes. Kew, Surrey, England: Commonwealth Mycological Institute. 608 pp.

Ellis, M. B. 1976. More dematiaceous hyphomycetes. Kew, Surrey, England: Commonwealth Mycological Institute. 507 pp.

FAO. 1995. Sorghum and millets in human nutrition. FAO Food and Nutrition Series, No. 27. Food and Agriculture Organization of the United Nations, Rome, 1995

Feistritzer, W.P. and A.F. Kelly. 1978. Improved Seed Production: A Manual on the Formulation, Implementation and Evaluation of Seed Programs and Projects. FAO, Rome.

Fodder Innovation Project. 2006. Groundnut-Livelihoods. An Impact pathways analysis of groundnut innovation system. Working document of the project." Enhancing Livelihoods of poor livestock keepers through increasing use of fodder (DFID-DF1039)". International Livestock Research Institute(ILRI). Hyderabad, India.

Geervani, P., and V. Vimala. 1993. Rural food enterprises: Operational research on development of sorghum food enterprises for alternate uses and supplementary feeding. Hyderabad 500 004, Andhra Pradesh, India: College of Home Science, Acharya N.G. Ranga Agricultural University. 126 pp.

Gonz´alez, H. H. L., E. J. Mart´ýnez, and S. L. Resnik. 1997. Fungi associated with sorghum grain from Argentina. Mycopathologia. 139: 35–41.

Grossman, T. A. Linnemann, H. Wierema. 1991. Seed industry development in North-South perspective. Wageningen: Pudoc.

Gwinner, J., R. Harnisch, and O. Mück. 1996. Manual of the prevention of post-harvest grain losses. Eschborn, 1996 Published in 1996 by: Post-Harvest Project, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, Postfach 5180, D - 65726 Eschborn, pages 338. FRG© 1996 GTZ

Hanlin, R. T. 1990. Illustrated genera of Ascomycetes. St. Paul, Minnesota, USA: American Phytopathological Society. 263 pp.

Hawksworth, D. L., P. M. Kirk, E. C. Sutton, and D. N. Pegler. 1995. Ainswoth & Bisby's dictionary of the fungi. 8th edition. Surrey, UK: International Mycological Institute.

- Hodges, R. J., A. J. Hall, K. Jayaraj, P. Jaiswal, N. Potdar, B. Yoganand and S. S. Navi. 1999. Quality changes in farm–stored sorghum grain grown in wet or dry season in South India A technical and social study, NRI Report 2412, Natural Resources Institute, Central Avenue, Chatham Maritime, Kent ME4 4TB, U.K. and DFID April 1999. Pp33.
- **Jaffe, S. and J. Srivastava.** 1992. Seed system development: The appropriate role of the private and public sectors. World Bank Discussion Paper 167. World Bank, Washington D.C. USA
- **Jaffee S** and **Srivastava J.** 1994. The role of the private and public sectors in enhancing the performance of seed systems. The World Bank Research Observations. 9:97-117.
- **Kelly A.E and R.A.T George** 1998. Encyclopedia of seed production of world crops. Chiester: John Wiley and sons
- **Lewis L** and **Mulvany PM.** 1996. A typology of community seed banks. Natural Resources Institute, University of Greenwich, UK.
- **Linnemann**, **A.R.** and **G.H.** de **Bruijn**. 1987. Traditional seed supply for food crops. ILEIA Newsletter 3(2):10-11.
- Monyo ES, Mgonja MA and Rohrbach DD. 2003. An analysis of seed systems development, with special reference to smallholder farmers in southern Africa: Issues and challenges. Paper presented at the workshop on Successful community based seed production strategies, co-organised by CIMMYT and ICRISAT, 3-6 August 2003, Harare, Zimbabwe.
- **Mugedeza C.** 1996. Local knowledge and systems of on-farm seed production and maintenance in Ward 21, Chivi District-Masvingo. ITDG, Zimbabwe.
- Navi, S. S. and S. D. Singh. 2000. Identification and control of seed mycoflora on sorghum grain. VIIIth Vasantrao Naik memorial national agriculture seminar on Sorghum under different agro-ecological systems and its industrial utilization March 1–2, 2000. (Abstract) p. 48.
- Navi, S. S. and S. D. Singh. 2003. Effects of pounding and garlic extract on sorghum grain mold and grain quality. *International Sorghum and Millets Newsletter* 44: 122–124.
- Navi, S. S., R. Bandyopadhyay, A. J. Hall, and Paula Bramel-Cox. 1999. A pictorial guide for the identification of mold fungi on sorghum grain. *Information Bulletin no* 59 (in En, Fr). Patancheru 502 324, Andhra Pradesh, India: International Crops Research Institute for the Semi-Arid Tropics. 118 pp.
- Navi, S. S., R. Bandyopadhyay, M. Blümmel, R. K. Reddy, and D. Thomas. 2003. Maize stripe virus: a disease of sorghum emerging in south India. *International* Sorghum and Millets Newsletter 44:126–129.

- Navi, S. S., R. Bandyopadhyay, R. K. Reddy, R. P. Thakur, and X. B. Yang. 2005. Effects of wetness duration and grain development stages on sorghum grain mold infection. *Plant Disease* 89:872–878.
- Navi, S. S., S. D. Singh, V. Gopal Reddy, N. Kameswara Rao, and J. Bramel Paula. 2002. New Sources of resistance to grain mold in converted zerazera sorghum. *International Sorghum and Millets Newsletter*. 43:77–80.
- Navi, S. S., X. B. Yang, R. P. Thakur, P. A. Murphy and R. Bandyopadhyay. 2005a. Fumonisins in molded sorghum grain. *Phytopathology* 95:S74.
- **Navi, S.S.** 2005. Fungi associated with sorghum grain in rural Indian storages. <u>Journal of New Seeds</u> 7:51–68.
- Navi, S.S., Yang, X.B., Rao, V.P. and Thakur, R.P. 2005b. Association of <u>fumonisin</u> producing *Fusarium* spp. in sorghum grain mold complex in India. Page#101 *in* Abstracts of the Global Conference II on Plant Health-Global Wealth, November 25–29, 2005, Dept of Plant Pathology, Rajasthan College of Agriculture, Maharana Pratap University of Agriculture & Technology, Udaipur, India 313 001.
- **Nelson, R. R.** 1959. *Cochilobolus carbonum*, the perfect stage of *Helminthosporium carbonum*. Phytopathology 49:807–810
- **Pitt, J. I.** 1991. Penicillium toxins. Pages 99–103 in Fungi and myctoxins in stored products: Proceedings of an international conference, Bangkok, Thailand, 23-26 April 1991 (Champ, B.R, Highley, E., Hocking, A.D., and Pitt, J.I., eds). ACIAR Proceedings No. 36. Australia: The Griffin Press Ltd.
- **Prasad,VL, Bezkorowajnyj PG, Nigam SN, Hanson J and Romney D** 2006. Participatory varietal selection of multiple actors orientation-case study of groundnut in Anantapur, Andhra Pradesh, paper presented at the International conference of social science perspectives in Agriculture Research and Development, February 15-18, 2006, Indian council of agricultural Research, New Delhi, India.
- **Raghavendra Rao, S. N., and H. S. R. Desikachar.** 1964. Pearling as a method of refining jowar and wheat and its effect on their chemical composition. *Journal of Food Science and Technology* 1:40–42.
- **Rao, K. E. P., S. D. Singh, and J. W. Stenhouse.** 1995. Grain mold resistance in guinea sorghum germplasm. International Sorghum and Millets Newsletter 36:94–95.
- **Raper, K. B., and D. I. Fennel.** 1973. The genus *Aspergillus*. New York, USA: Robert E Kreiger Publishing Co. 686 pp.
- **Ravinder Reddy, Ch.** 2004a. Alternative seed delivery systems Village based seed banks. *In* ICRISAT-Asia in-house review held at ICRISAT, Patancheru, 24-26 November 2004.

Ravinder Reddy, Ch. 2004b. Seed systems in the semi-arid tropics of Andhra Pradesh. *In* Enhanced livelihoods of poor livestock keepers through increasing use of fodder, 2-3 September 2004. ICRISAT, Patancheru, India.

Ravinder Reddy, Ch. 2005. Alternative informal seed systems models for seed security. *In* National partners workshop of fodder innovation project, 25 February 2005. ILRI, ICRISAT Centre, Patancheru, India.

Ravinder Reddy, Ch., Tonapi, V.A. Prasad, V. L and Peter Bezkorowajnyj. 2006. Integrated seed systems for sustainable food, feed and fodder security in semi-arid tropics of India. In: Strategies for millets development and utilization. 2006. (Editors: Drs. N Seetharama & Vilas A Tonapi). P 143-152 Society for Millets Research, 11-127, National Research Centre for Sorghum, Rajendranagar, Hyderabad 500 030, Andhra Pradesh, India. 232 pp. ISBN 81-89335-12-X.

Ravinder Reddy Ch, K Gurava Reddy, G Thirupathi Reddy, and SP Wani 2006. Increased Adoption of seed treatment for groundnut disease management through farmers participatory evaluation': A Micro study in Kurnool District of Andhra Pradesh, India. Manage Extension Research Review 7(1): 101-109.

Ravinder Reddy Ch, Ashok S Alur, Belum V S Reddy, P. ParthasarathyRao and CLL Gowda 2007. Building human and social capital for improving the livelihoods of small and marginal farmers in SAT regions of Asia. Paper presented in International conference on "Ethnographic Discourse of the others" during 3-5th July 2007 at University of Hyderabad, AP.India.

Reichert, R. D., C. G. Youngs, and D. Oomah. 1982. Measurements of grain hardness and dehulling quality with a multisample tangential abrasive dehulling device (TADD). Pages 186–193 in Proceedings of the International Symposium on Sorghum Grain Quality, 28–31 October 1981, ICRISAT, Patancheru, India. Patancheru 502 324, Andhra Pradesh, India: International Crops Research Institute for the Semi-Arid Tropics.

Rodriguez-Herrera, R., W. L. Rooney, D. T. Rosenow, and R. A. Frederiksen. 2000. Inheritance of grain mold resistance in grain sorghum without a pigmented testa. *Crop Science* 40:1573–1578.

Rohrbach DD, Mtenga K, Kiriwaggulu JAB, Monyo EU, Mwaisela F and Saadan HM. 2002. Comparing community seed projects in Tanzania. Local seed systems News-SADC/GTZ, Small-scale seed production project, Harare. Vol.7, No.1.

Shetty, H. S., K. L. Patkar, C. M. Usha, N. Paster, R. Kennedy, and J. Lacey. 1995. Effect of Propionic acid on the incidence of storage fungi in stored rice, sorghum and groundnut under tropical conditions. *Tropical Science*, 35:40–48.

Singh V. 1999. Traditional agro biodiversity re-introduced by farmers. LEISA, ILEIA Newsletter. Vol. 15, No. 3/4.

- **Singh, S. D. and S. S. Navi.** 2000. Garlic as a bio–control agent of sorghum ergot. *Journal of Mycology and Plant Pathology.* 30:350–354.
- **Singh, S. D., S. S. Navi, J. W. Stenhouse, and K. E. Prasada Rao.** 1995. Grain mold resistance in white grain sorghum. International Sorghum and Millets *Newsletter*. 36: 95–96.
- **Sivanesan, A.** 1987. Graminicolous species of *Bipolaris, Curvularia, Drechslera, Exserohilum* and their teleomorphs. Mycological paper No. 158. Wallingford, Oxon, UK: CAB International.
- **Standen, J. H.** 1945. *Nigrospora oryzae* (B and Br.) Petch on maize. *Phytopathology* 35:552–564.
- Stenhouse, J. W., R. Bandyopadhyay, S. D. Singh, and V. Subramanian. 1998. Breeding for grain mold resistance in sorghum. Pages 326-336 in Proceedings of the International Conference on Genetic Improvement of Sorghum and Pearl Millet, 23 to 27 Sep 1996, Lubbock, Texas, USA. USA: International Sorghum/Millets Collaborative Research Support Program.
- **Sutton, B. C.** 1980. The Coelomycetes- Fungi Imperfecti with pycindia, acervuli and stromata. Kew, Surrey, UK: Commonwealth Mycological Institute. 696 pp.
- **Tonapi VA, Elangovan M, Kalpana Sastry R, Varanavasiappan S, Visharada KBRS** and **Seetharama N.** 2004. Legislative mechanisms for conserving biodiversity and protection of IPR in India. National Research Centre for Sorghum, Rajendranagar, Hyderabad, Andhra Pradesh, India. 649 pp. ISBN 81-09335-03-0.
- **Tripp R.** 2003. How to cultivate a commercial seed sector. Paper presented for symposium Sustainable Agriculture in the Sahel, 1-5 December 2003 Bamako, Mali.
- **Turner M.** 1994. India debates expanding seed legislation. Seed World. December 1994
- Van Amstel, H., J.W.T. Bottema, M. Sidik and C.E. van Santen (ed.) 1996. Integrating Seed Systems for Annual Food Crops. In: Proceedings of a Workshop, 24-27 Oct 1995, Malang, Indonesia. CGPRT Center, Bogor, Indonesia.
- **Vasanthi, S., and R. V. Bhat.** (1998). Mycotoxins in food: Occurrence, health and economic significance and food control measures. *Indian Journal of Medical Research* 108:212–222.
- **Von Lossau A.** 2000. Support of the informal seed sector. GTZ and Center for Genetic Resources, The Netherlands (CGN).

About the Authors



Ch Ravinder Reddy

Visiting Scientist,

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru 502 324, Andhra Pradesh, India.

c.reddy@cgiar.org

Phone: +91-40-30713307/24018651;

Fax: +91-40-30713074



Dr. Vilas A. Tonapi

Principal Scientist (Seed science and Technology)
National Research Centre for Sorghum (NRCS),
Rajendranagar, Hyderabad 500 030, Andhra Pradesh, India

kajendranagar, nyderabad 500 050, Andrira Pradesir, india tonapi@nrcsorghum.res.in; vilastonapi@hotmail.com

Phone: +91-40-24015349/ 24018651

Fax: +91-40-24016378



PG Bezkorowajnyj

Manager, Fodder Innovation Project,

International Livestock Research Institute (ILRI),
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT),

Patancheru 502 324, Andhra Pradesh, India.

Phone: +91-40-30713654 Fax: +91-40-30713074



Shrishail Sharanappa Navi

Assistant Scientist II, Plant Pathology Dept 351 Bessey, Iowa State University, Ames, Iowa 50011 ssnavi@iastate.edu

Phone: 515-294-4517, Fax: 515-294-9420



N Seetharama

Director, National Research Centre for sorghum Rajendranagar, Hyderabad (AP) 500 030, India.

seetharama@nrcsorghum.res.in

Phone: +91-40-2401525 Fax: +91-40-24016378



The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a nonprofit, non-political organization that does innovative agricultural research and capacity building for sustainable development with a wide array of partners across the globe. ICRISAT's mission is to help empower 600 million poor people to overcome hunger, poverty and a degraded environment in the dry tropics through better agriculture. ICRISAT belongs to the Alliance of Future Harvest Centers of the Consultative Group on International Agricultural Research (CGIAR).

Contact Information

ICRISAT-Patancheru (Headquarters)

Patancheru 502 324 Andhra Pradesh, India Tel +91 40 30713071 Fax +91 40 30713074 icrisat@cgiar.org

ICRISAT-Bamako

BP 320 Bamako, Mali Tel +223 2223375 Fax +223 2228683 icrisat-w-mali@cgiar.org

Liaison Office

CG Centers Block
NASC Complex
Dev Prakash Shastri Marg
New Delhi 110 012, India
Tel +91 11 32472306 to 08
Fax +91 11 25841294

ICRISAT-Bulawayo

Matopos Research Station PO Box 776, Bulawayo, Zimbabwe Tel +263 83 8311 to 15 Fax +263 83 8253/8307 icrisatzw@cgiar.org

ICRISAT-Nairobi

(Regional hub ESA)
PO Box 39063, Nairobi, Kenya
Tel +254 20 7224550
Fax +254 20 7224001
icrisat-nairobi@cgiar.org

ICRISAT-Lilongwe

icrisat-malawi@cgiar.org

Chitedze Agricultural Research Station PO Box 1096 Lilongwe, Malawi Tel +265 1 707297/071/067/057 Fax +265 1 707298

ICRISAT-Maputo

ICRISAT-Niamey

Fax +227 734329

icrisatsc@cgiar.org

BP 12404

(Regional hub WCA)

Niamey, Niger (Via Paris)

Tel +227 722529, 722725

c/o INIA, Av. das FPLM No 2698 Caixa Postal 1906 Maputo, Mozambique Tel +258 21 461657 Fax +258 21 461581 icrisatmoz@panintra.com

Visit us at www.icrisat.org

ISBN 978-92-9066-502-1 Order code BOE 045 16-2007