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Towards Revision of Biological Diversity Act 2002

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NASC, Dev Prakash Shastri Marg, New Delhi - 110 012
Tel: (011) 25846051-52; Fax: (011) 25846054
Email: naas-mail@naas.org.in; Web site: http://www.naasindia.org

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Preface

The Convention on Biological Diversity (CBD) adopted in 1993 is a legal binding instrument to all contracting parties. India, being a party to CBD, enacted the Biological Diversity Act (BDA) in 2002 aiming at conservation of biodiversity, and its sustainable, fair and equitable use. The Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers Welfare (MoA&FW), is responsible for international cooperation and assistance in the field of agricultural research and education. The National Agricultural Research System (NARS) has benefitted through the exchange of components of agrobiodiversity, the exchange of germplasm for research has declined on implementation of the Act. Several other stakeholders too had expressed concerns on certain issues that hinder the business-as-usual and demanded revision of the Act. In this context, the National Academy of Agriculture Sciences (NAAS), organized a panel discussion on September 1, 2020 that included participants from the ICAR (Indian Council of Agricultural Research), SAUs (State Agricultural Universities), PPV&FRA (Protection of Plant Varieties and Farmers' Rights Authority), NBA (National Biodiversity Authority), CSIR (Council for Scientific and Industrial Research), DBT (Department of Biotechnology), MOEF&CC (Ministry of Environment, Forests and Climate Change), and international/inter-governmental organizations. I thank all the participants.

I hope that the recommendations will be useful while revising the BDA 2002. On behalf of the Academy, I wish to thank Dr Kuldeep Singh, Director and Dr Pratibha Brahmi Principal Scientist from NBPGR, for organizing this brainstorming session and synthesizing the observations in the form of this document. My thanks are also due to Dr P.S. Birthal and Dr Malavika Dadlani for their editorial efforts.

(Trilochan Mohapatra)
President NAAS

New Delhi

Round Table Disscussion: Towards Revision of Biological Diversity Act 2002

Chairman : Dr Trilochan Mohapatra, President, NAAS

Co-Chair : Dr P.L. Gautam, Former Chairperson NBA and PPV&FR Authority

Convener : Dr Kuldeep Singh, Director, ICAR-NBPGR

Co-Convener : Dr Pratibha Brahmi, Principal Scientist, ICAR-NBPGR

List of participants

1. Dr Anuradha Agrawal, OIC, TCCU, ICAR-NBPGR, New Delhi
2. Dr S.P. Ahlawat, Head, DPEGC, ICAR-NBPGR, New Delhi
3. Dr Sunil Archak, OIC, AKMU, ICAR-NBPGR, New Delhi
4. Dr A. Arunachalam, ICAR, New Delhi
5. Dr Navtej Singh Bains, Director Research, PAU, Ludhiana
6. Dr Shivendra Bajaj, Executive Director of FSII, New Delhi
7. Dr N. Bakthavatsalam, Director, ICAR-NBAIR, Bengaluru
8. Dr Chandish R Ballal, Former Director, ICAR-NBAIR, Bengaluru
9. Dr K.C. Bansal, Former Director, ICAR-NBPGR, New Delhi
10. Dr S.K. Barik, Director, CSRI-NBRI, Lucknow
11. Dr Shyala Bindra, PAU, Ludhiana
12. Dr Pratibha Brahmi, Principal Scientist, GEPU, ICAR-NBPGR, New Delhi
13. Dr B.S. Dhillon, VC, PAU, Ludhiana
14. Dr S.C. Dubey, Head, DPQ, ICAR-NBPGR, New Delhi
15. Dr A. Gopalakrishnan, Director, ICAR-CMFRI, Kochi
16. Dr Kavita Gupta, OIC, PME, ICAR-NBPGR, New Delhi
17. Dr Veena Gupta, Head, DGC, ICAR-NBPGR, New Delhi
18. Dr J.K. Jena, DDG, Fisheries, ICAR, New Delhi
19. Dr Pramod Joshi, Former Director, South Asia, IFPRI, New Delhi
20. Ms Namita Kamboj, UNDP, New Delhi
21. Dr J.L. Karihaloo, Former Coordinator, APCoAB, New Delhi
22. Sh. Ram Kaundinya, DG, FSII, New Delhi
23. Dr Ashok Kumar, Head, DGE, ICAR-NBPGR, New Delhi
24. Dr Yogesh Kumar, FSII, New Delhi
25. Sh. Ashwani Kumar, JS (Seeds), DACFW, New Delhi
26. Dr B. Meena Kumari, Former Chairperson, NBA, New Delhi
27. Dr Kuldeep Kumar Lal, Director, ICAR-NBFGR, Lucknow
28. Dr G.S. Mangat, Head, Department of Plant Breeding and Genetics, PAU, Ludhiana
29. Dr V.B. Mathur, Chairman, National Biodiversity Authority, Chennai
30. Sh. Kallur Subrammanyam Murali, Executive Director, MSSRF, Chennai
31. Dr Ruchi Pant, Head- Natural Resource Management and Biodiversity, UNDP, New Delhi
32. Dr K.V. Prabhu, Chairperson, PPV&FRA, New Delhi
33. Dr Deepak Prem, Bayer Bioscience, New Delhi
34. Dr V.V. Ramamurthy, PS, Div. of Entomology, ICAR-IARI, New Delhi
35. Dr J.C. Rana, NC, UN Environment GEF Project, Bioversity Int. New Delhi
36. Dr R.S. Rana, Former Director, ICAR-NBPGR, New Delhi
37. Dr Gurinderjit Randhawa, Head, DGE, ICAR-NBPGR, New Delhi
38. Dr Upasana Rani, PAU, Ludhiana
39. Dr D.L.N. Rao, ICAR-Emeritus Scientist, IISS, Bhopal
40. Sh. A.S. Rawat, Director General, ICFRE, Dehradun
41. Dr Ramkoti Reddy, FSII, New Delhi
42. Dr A.K. Saxena, Director, ICAR-NBAIM, Mau
43. Dr Arjava Sharma, Former Director, ICAR-NBAGR, Karnal
44. Dr Kusumakar Sharma, Former ADG, ICAR, New Delhi
45. Dr S.K. Sharma, Former VC, CSK HPAU, Solan
46. Dr T.R. Sharma, DDG (Crop Science), ICAR, New Delhi
47. Dr A.K. Shasany, CSIR-CIMAP, Lucknow
48. Dr Anand K. Singh, DDG (Horticulture Science), ICAR, New Delhi
49. Dr Anil K. Singh, Secretary, NAAS, New Delhi
50. Dr Ashok K. Singh, Director, ICAR-IARI, New Delhi
51. Dr Sanjay Singh, FSII, New Delhi
52. Dr Sarvjit Singh, FSII, New Delhi
53. Dr Jeyram Soundrapandi, NBA, Chennai
54. Dr Abhilasha Tripathi, Bayer Bioscience, New Delhi
55. Dr B.N. Tripathi, DDG (AS), ICAR, New Delhi
56. Dr Vandana Tyagi, OIC, GEPU, ICAR-NBPGR, New Delhi

Towards Revision of Biological Diversity Act 2002

1. Background

While the biological resources and the diversity therein are critical for sustained economic and social development, the threat to the species and ecosystems has never been so pronounced as at present. Triggered by human activities and interventions, several species have been facing an extinction. The United Nations Environment Programme (UNEP) convened an *Ad Hoc* Working Group of Experts on Biological Diversity in November 1988 to explore the need for an International Convention on Biological Diversity, and in May 1989 it established the *Ad Hoc* Working Group of Technical and Legal Experts to prepare an international legal instrument for conservation and sustainable use of biological diversity. The experts were to take into account "the need to share costs and benefits between developed and developing countries" as well as "ways and means to support innovation by local people". Its work culminated on 22 May, 1992 with the Nairobi Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity (CBD). The Convention was opened for signature on 5 June, 1992 at the United Nations Conference on Environment and Development (the Rio "Earth Summit"). It remained open for signature until 4 June 1993, and by that time it had received 168 signatories, including India. The CBD, 90 days after the 30th ratification, entered into force on 29 December, 1993. The CBD was inspired by the world community's growing commitment to sustainable development. It was a dramatic step towards the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources (https://www.cbd.int/history/).

India as a Party to the CBD enacted the Biological Diversity Act (BDA), 2002, and notified the Biological Diversity Rules (BDR), 2004. Further, being a Party to the Nagoya Protocol on Access and Benefit Sharing, 2010, the Guidelines on Access to Biological Resources and Associated Knowledge and Benefit Sharing were notified in 2014 (referred hereinafter as ABS Guidelines). *The objectives of the BDA are (i) conservation of biodiversity, (ii) sustainable use of its components, and (iii) fair and equitable sharing of benefits arising out of the use of biological resources*, commonly known as Access and Benefit Sharing (ABS). The major provisions in the CBD on benefit sharing are enshrined in Article 8(j), 15, 16 and 19 of the Convention. Though Article 8(j) of the CBD promotes sharing of benefits arising out of the utilization of traditional knowledge of indigenous and local communities, and it leaves the responsibility to achieve this objective on the domestic policies of the member countries. Article 15 of the Convention stipulates provisions regarding access to genetic resources. Article 16 focuses on access to and transfer of technology, and Article 19 deals with handling of biotechnology and distribution of its benefits.

The two main concepts in the CBD that link the legal ABS to the national level and the provider country are Prior Informed Consent (PIC) and Mutually Agreed Terms (MAT). Prior Informed Consent (PIC) refers to permission given by the competent national authority of a provider country to a user prior to accessing genetic resources, in line with an appropriate national legal and institutional framework.

The MAT refers to the agreements reached between the providers of genetic resources and users on the conditions of access and use of the resources, and the benefits to be shared between both parties (https://www.cbd.int/abs/about). The ABS serves as a compensation mechanism between the providers and the users of plant genetic resources. A brief account of the international legal instruments that shape ABS involving plant genetic resources is provided in the following section to assess the emerging global approach.

Triggered by the limitations of the voluntary Bonn guidelines in operationalizing ABS, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits arising from their Utilization to the Convention on Biological Diversity (The Nagoya Protocol, 2010) was adopted as a binding legal instrument to further facilitate access and sharing of benefits. The Nagoya Protocol sets out the rules and mechanisms for access to genetic resources and associated traditional knowledge, and supports the fair and equitable sharing of benefits arising from their utilization. Along with the basic provisions of the CBD on ABS, the Protocol forms the central body of law that defines how the ABS system should operate among countries in a bilateral exchange of biological resources. The Nagoya Protocol rephrases and makes more concrete the objectives of CBD pertaining to ABS (IEEP, Ecologic and GHK, 2012). Article 1 of the Protocol clarifies that benefit sharing includes appropriate access to genetic resources, appropriate transfer of relevant technologies, and appropriate funding. Accordingly, benefit sharing entails more than sharing a certain percentage of the profits when a product is developed on the basis of a genetic resource.[1] *The Nagoya Protocol specifies that benefit sharing arrangements shall be established through MAT between the provider and user of genetic resources, thus on a bilateral contract basis.*

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), 2004, popularly known as *The Plant Treaty*, establishes a multilateral system (MLS) of access and benefit sharing for plant genetic resources, whereby contracting parties agree to virtually pool a subset of the genetic resources of 64 crops,35 food crops and 29 forage crops (popularly referred to as Annex I crops), to be used for utilization and conservation for research, breeding and training for food and agriculture (Article 12.3(a)). The benefits arising from use of plant genetic resources are to be shared fairly through methods such as exchange of information, access to technology, capacity building, and sharing of monetary and other benefits of commercialization. The Treaty establishes a multilateral system where parties who benefit monetarily from materials from the MLS are to make a payment to a joint fund, which can be shared with all parties. Further, a *Material Transfer Agreement* (MTA) was included in the Treaty, which contains the benefit-sharing requirement under certain conditions.[2]

2. Implementation of the BDA 2002

The Government of India established the *National Biodiversity Authority (NBA)* in 2003 to implement the BDA. The provincial governments established State Biodiversity Boards (SBBs) as provided for in

[1]Grieber, Thomas, Sonia Peña Moreno, Mattias Ahrén et al. (2012) *An Explanatory Guide to the Nagoya Protocol on Access and Benefit Sharing*. Gland, Switzerland: IUCN.

[2]Moore, Gerald and William Tymowski (2005) *Explanatory Guide to the International Treaty on Plant Genetic Resources for Food and Agriculture, IUCN Environmental Policy and Law Paper No. 57*, Gland, Switzerland and Cambridge, UK: IUCN.

Section 22 of the Act, and constituted Biodiversity Management Committees (BMCs) at local level, as provided for in Section 41. Similarly, the Union Territories (UTs) are in the process of establishing the Biodiversity Councils.

The BDA regulates activities of access to biological resources and/ or associated knowledge for research, commercial utilization, bio-survey and bio-utilization (Section 3); transfer of results of research to non-Indian entities (Section 4); applying for Intellectual Property Rights (IPR) in or outside India, based on any research or information on biological resources (Section 6) and transfer of accessed biological resources (Section 20). The NBA is implementing the provisions of the BDA and BDR thereof. For more details see: http://nbaindia.org/content/25/19/1/act.html.

2.1 Agrobiodiversity and agricultural research under the aegis of DARE

The variety and variability of animals, plants, insects and micro-organisms that are used directly or indirectly for food and agriculture, include crops, livestock, forestry and fisheries. It comprises the diversity of genetic resources (varieties and breeds) and species used for food, fodder, fibre, fuel and pharmaceuticals. It also includes the diversity of non-harvested species that support production (soil micro-organisms, predators, pollinators), and those in the wider environment that support agro-ecosystems (agricultural, pastoral, forest and aquatic) as well as the diversity of agroecosystems.[3]

The Department of Agricultural Research and Education (DARE) under the Ministry of Agriculture and Farmers Welfare, (MoA&FW), Government of India is the nodal agency for international cooperation in the area of agricultural research and education. It liaises with foreign governments, UN, CGIAR (Consultative Group on International Agricultural Research) and other intergovernmental and multilateral agencies, and facilitates necessary government linkages for the Indian Council of Agricultural Research (ICAR), the apex research organization for coordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences in the entire country. India, with over 112 ICAR institutes (72 ICAR institutes, 6 Bureaus, 12 National Research Centers, 22 Project Directorates); 82 All India Coordinated Research Projects, and 74 agricultural universities has one of the largest national agricultural research systems in the world. The DARE also coordinates admissions of foreign students in Indian agricultural universities and ICAR Institutes (http://dare.nic.in/about-us/about-the-departments).

The DARE, has *inter alia*, the allocation of business for international cooperation and assistance in the field of agricultural research and education including relations with foreign and international agricultural research and education institutions and organizations (w.e.f. 1973, and as per List I of the Seventh Schedule of the Constitution of India). The international cooperation operates through the MoUs/Work Plans signed with various countries/International Organizations/Foreign Universities and Institutes with DARE-ICAR. International cooperation of this kind is generally of bilateral nature wherein the MoUs are signed either between the Government of India (represented by DARE) and the Government of another country (represented by their department handling agriculture), or

[3]FAO. 1999. *Agricultural Biodiversity, Multifunctional Character of Agriculture and Land Conference, Background Paper 1.* Maastricht, Netherlands.

between the ICAR and another foreign autonomous body/institute/university. The DARE-ICAR also participates in the MoUs/work plans signed by the Department of Agriculture, Cooperation and Farmers Welfare (DACFW). Through bilateral and multilateral cooperation, India stands to benefit by way of knowledge sharing and gaining of overall experience and exposure to the latest developments of technology in various countries, including access to invaluable germplasm resources not available in the country. These are analyzed and adopted in the Indian context with requisite modifications to suit our conditions and requirements (https://www.icar.org.in/content/international-relations).

2.2 Conservation and exchange of the components of agrobiodiversity

The General and Consequential Business allocated to DARE also includes introduction and exploration of plants, animals and fish. For exchange of genetic resources for food and agriculture (GRFA), i.e., plants, crop varieties, animal, fish, microbes and insects, ICAR declared each of its five bureaus dealing with GRFA as single-window system for import and export of these components as per extant legislation and international regulations (vide office order F. No. 8 (2) / 2011/ Cord. (Tech.) dated 19.10. 2012) for exchange of components. The five Bureaus of ICAR deal with conservation and management of plants, animals, fish, insects and microbial genetic resources.

The plant genetic resources (PGR) are the major components of agrobiodiversity important for food and nutritional security, and cover the whole gamut of genetic resources from advanced cultivars to primitive landraces, domesticates, semi-domesticates, wild and weedy relatives. The PGR activities in India were initiated in 1910 by Dr B.P. Pal through sporadic collections of wheat germplasm. Later, Dr Harbhajan Singh provided a distinct identity to the discipline of germplasm exploration, collection and maintenance. The PGR introduction and exchange programme, started in 1946 in a systematic manner with the initiation of the Plant Introduction Scheme in the Botany Division of the Indian Agricultural Research Institute (IARI), New Delhi that gradually expanded and culminated into the establishment of the National Bureau of Plant Genetic Resources (NBPGR) in 1976. Since then, a total of 277,867 accessions, comprising both of the cultivated (209,321) and wild species (37,311), have been collected. Currently, over 0.45 million germplasm accessions (including landraces) are maintained in the National Gene Bank.

In addition, a full-fledged facility, established in 1986 is available in NBPGR for *in vitro* and cryo-preservation of germplasm.

Exchange of germplasm is a major activity of the NBPGR and consequently, the Bureau entered into several joint protocols, MoUs and bilateral agreements with foreign countries/agencies on the reciprocal exchange basis.

2.3. Germplasm exchange and use post-BDA 2002

After the implementation of BDA, several issues cropped up which led to restrictions in the exchange of genetic resources, especially of PGRFA. Some important issues are as listed below:

- Decline in exchange of GRFA, which effected research (Section 3 and 4)

- Difficulty in accessing Indian agrobiodiversity by research community from other countries [Section 3 and BDA Rules 2004, 14 (1)]
- Difficulty in collection of germplasm by Indian Research Institutes (conflict of BDA and Wild life Protection Act)
- Conflict with Breeders Rights under PPV&FRA (Section 3 and 4)
- Ambiguity in some definitions (Sec 2, 3, 4)

Figure 1 and Table 1 illustrate the effect of BDA 2002 on export and import of PGRFA. ICAR-NBPGR data show a decline in the facilitated export of PGRFA under Collaborative Research Projects with permission from DARE as well as in the import of germplasm requested for research from other countries.

3. Revision of BDA 2002 and exchange of agrobiodiversity

Since the enactment of BDA 2002 and implementations of its provisions, many stakeholders have expressed their concerns on the issues that create hinderance to the business as usual. To understand these concerns, the Ministry of Environment, Forestry and Climate Change (MoEFCC) and the National

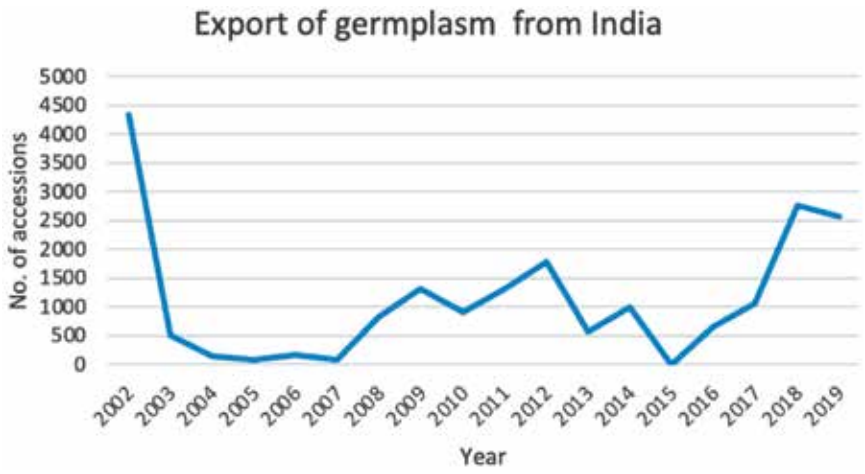

Fig. 1. Export of germplasm from NBPGR from 2002 to 2019

Table 1. Import Permits (IP) issued and materialized

Year	Number of IP issued	IP materialized	%
2015	113	26	23
2016	71	35	35
2017	88	36	36
2018	111	18	18
2019	90	26	26
Total	**473**	**126**	**27**

Biodiversity Authority (NBA) organized several rounds of consultations and came out with suggestions for amendments in the Act in February 2020. A background note to this effect was circulated for the Cabinet Secretariat Meeting on 'Revision of Biological Diversity Act 2020'. The Secretaries of the concerned Ministries and Departments, including the Secretary, DARE and DG, ICAR attended the meeting held on 24 July, 2020. Prior to the meeting, ICAR-NBPGR, having gone through the Revision of Biological Diversity Act, 2020 document, had apprised the Secretary DARE and DG ICAR that issues related to agricultural research sector have not been addressed adequately in the revised document. This meeting concluded with the remarks that Secretary, MoEFCC should hold consultations with other Departments before approaching the Cabinet. It is in this context, the Secretary, DARE and DG, ICAR desired to have a note from ICAR-NBPGR with inputs from all ICAR-Bureaus and other stakeholders on the issues related to agrobiodiversity for possible revision in the BDA before the proposed consultation. To this effect, the NAAS organized a panel discussion on September 1, 2020 under the co-chairmanship of Dr Trilochan Mohapatra, President, NAAS, and Dr P.L. Gautam, Former Chairperson NBA, and PPV&FR Authority.

Dr Mohapatra emphasized on the exchange of genetic resources among the countries, but without compromising sovereign rights of the country and the farmers. Dr P.L. Gautam emphasized the importance of BDA. However, with the passage of time, advances in technologies, and adoption of Nagoya Protocol, some amendments are required in it, and some provisions of BDA and PPV&FRA need to be harmonized. He also highlighted that although India is a hotspot of biodiversity, it is also dependent for genetic resources on other countries. Hence, the exchange of PGRs is of significance to all nations. The panelists discussed the mandate of the DARE with reference to the BDA. Agrobiodiversity is a distinct component of biodiversity and it is explicitly mentioned in the Act. A Committee on Agrobiodiversity is defined u/s 13 of the Act. This Expert Committee on Agrobiodiversity constituted by NBA has statutory and advisory role related to all matters concerning agrobiodiversity management.

The following issues were deliberated upon and decisions taken in this meeting:

- Under Section 16 of BDA, the NBA is empowered to delegate powers and functions of the Authority to any person. Hence, the regulatory powers and functions on genetic resources, genomic resources and databases should be delegated to the Secretary DARE & DG ICAR.
- The Forest Departments should provide need-based support for collection and conservation of agrobiodiversity. The SBBs need to support conservation activities taking ICAR-Bureaus on board. In addition, the crop wild relatives (CWRs) should not be treated by SBBs as commodities, as unlike other forest products CWRs have no commercial value. The areas rich in CWRs should be declared heritage sites with support from NBA/SBBs.
- The cultivated and wild aquatic bio-resources remain neglected in the BDA 2002. Though, there is a formal FAO code of conduct for conservation and utilization of fisheries, it does not appear in the BDA and BDR. For sustainable development of fisheries, regional bodies should be exempted from ABS regulations in the Act. The bio-piracy through misuse of exemption of value-added

products (e.g., unprocessed frozen), and through unregulated live ornamental fish trade may lead to access of valuable Indian fishes to freelance researchers.

- Breeders' rights provided in PPV&FRA vs. BDA, 2002 need to be exempted from permission of NBA. Section 92 of PPV&FRA clearly states that there is no possibility of overwriting by any other law. This must be taken care of while framing all other Acts and Rules. Varieties protected by PPV&FRA should not come under NBA regulations.

- Access to biological resources for research in other countries must be facilitated. Collaborative research projects under Section 5 and the Sections 19-21 of the Act, and the MoEFCC Guidelines 2006 should be in compliance with the ITPGFA. In addition, the phrase–biological resources found in India–must be clearly defined. While discussing about sharing of research results under Section 4, the issue of non-monetary considerations was raised. Also, official guidelines are needed to provide for exemption to publish. The DARE may be considered for dealing all issues related to agrobiodiversity in the Act. Need-based reciprocal exchange should also be provided for in the Act. CGIAR Centers based in India face difficulties in sending their own material to their collaborators for evaluation outside India. Breeding/seed material generated through CG centers and imported to India solely for laboratory evaluation/testing should not be treated as germplasm.

4. Recommendations

The main recommendations that emerged are as follows:

(i) Considering, that the DARE has the mandate for ***international cooperation and assistance in the field of agricultural research and education*** including relations with foreign and international agricultural research and education institutions and organizations, and has the technical capability for conservation and management of all components of agro-biodiversity (both *ex-situ* and *in situ* on farm), it may be considered to delegate powers and responsibility of regulation of all activities related to agrobiodiversity to the Secretary, DARE & DG, ICAR u/s 16 of the Act.

(ii) ***Exchange of agrobiodiversity genetic resources on reciprocal basis between India and providing countries needs to be encouraged.*** A national mechanism under DARE is required for exchange on the basis of reciprocity. India is a partner in many intergovernmental consortia for sharing aquatic resources. In case of biocontrol agents of diseases of crop plants, India has conserved many biocontrol agents, including those received from other countries. Similarly, exchange of biological material between the OIE (World Organization for Animal Health) laboratories faces many restrictions in India. Although NBA has exempted exchange of genetic resources under collaborative research projects, the exchange is limited to specific species. While India has inter-country collaborative projects with few advanced countries, it still leaves out a large number of countries, which are rich in agrobiodiversity. Reciprocal exchanges with these countries would go a long way in enriching our agrobiodiversity.

(iii) ***There is a need to formulate sector specific guidelines and rules for access, sustainable use and benefit sharing.*** It is well understood that each component of biodiversity such as wild animals, domesticated animals, livestock breeds, wild relatives of cultivated plants, farmers' varieties, aquatic resources and microbes need different management practices and have different conservation strategies**.** Therefore, a different set of guidelines is required for each component.

(iv) ***There is a need for harmonization between the PPVFRA, 2001 and BDA, 2002*** as there are issues of conflict in accessing plant varieties registered u/s 28 of the PPV&FRA, 2001 and Section 3 of the BDA 2002.

(v) ***Breeders (plant/fish/livestock) working in the National Agricultural Research System (NARS) should be treated at par with farmers and local communities, as they create public good***. The seeds of plant varieties developed by breeders of NARS are made available to farmers through various governmental and non-governmental organizations. Similarly, fish and livestock breeding demands research on large number of species for their breeding behavior, production and trade. Imposition of the required approvals will delay availability of improved varieties/breeds and therefore, will be counterproductive to the national food and nutritional security efforts.

(vi) ***Expansion of agrobiodiversity repositories***. The provisions of the NBA (order No. M.26-15/2007 –CSC dated 28th August 2008), wherein the five Bureaus of ICAR are designated as repositories of voucher samples for agriculturally important plants, animals, insects, fish, and microbes, may be expanded to include National Research Centre on Equines (NRCE) as a repository for Veterinary Type Cultures (VTCs) and National Dairy Research Institute (NDRI) for dairy microbes.

(vii) ***Exempting inter-governmental, inter-regional and India-CGIAR institutional collaborations from NBA regulations.*** DARE is the nodal agency for international cooperation in the area of agricultural research and education, and through ICAR, it has to establish inter-institutional linkages (e.g., ICAR-CGIAR and ICAR-USDA) for undertaking cutting edge science projects that involve exchange of genetic resources. Likewise, for regional collaborations, the organizations like the Network of Aquaculture Centre for Asia Pacific (NAKA) also require constant exchange of genetic resources. Under the present NBA regulations u/s 3 (2) the collaborators have to submit applications along with prescribed fee, which becomes a deterrent to inter-country programmes. Since all inter-governmental/ inter-regional/ institution projects are collaborative projects approved by the Government of India, these should be exempted from NBA regulations and allowed to continue as approved by the Government of India.

(viii) ***Revision/inclusion of definitions in BDA, 2002 and BDR, 2004.*** Some terminologies, viz., *Access, Research, Biological Resources, Agrobiodiversity, Commercial Utilization, Plant Breeding, and Occurring in India* needs to be included/amended in the Act, to accommodate developments in science and to ensure clarity in procedures.

(ix) ***Exemption from NBA regulations for sharing /depositing type specimen to international repositories.*** International collection repositories like ATCC, USA; DSMZ, Germany; JCC, Japan; NCTC, UK; CNCM, France (where researchers need to mandatorily deposit samples as per publication requirements) refuse to accept cultures from Indian resources because of the NBA regulation u/s 3(1) of the Act. In the revised ABS regulations (under consideration with MoEFCC), under Regulation II, it is provided that Indian researchers and scientists who intend to deposit novel microbial strains discovered in India in the repositories outside India for publication in journals as per the international obligation, shall provide prior intimation to the NBA in Form 'C'. However, the Note 2 of the Form 'C', states "repository concerned shall inform the user that he/she has to obtain prior approval before undertaking any research, bio survey, bio utilization, commercial utilization as per section 3 of BDA 2002 of India". ***It is recommended to retain only commercial utilization in this Note, or as suited under Nagoya Protocol***.

(x) ***Access to microbial cultures by foreign researchers for non-commercial purposes should be facilitated for easy approval preferably through an automatic / deemed approval process. If foreign researchers want to access cultures from Indian repositories, monitoring of the movement of these cultures / utilization of microbes should be done by the designated repositories in India. Designated repository is to inform the NBA in case of any violation of microbes under the BD Act.*** Failure to provide type strains/reference strains to investigators outside India has put Indian culture collections in a situation that the researchers hesitate to deposit their cultures in the Indian repositories and therefore, Indian repositories would soon be not recognized by international scientific journals/organisations for the deposition of strains mandatory for publications in reputed journals. India, thus, will lose its standing in the international scientific community.

(xi) ***There is a need to fast track the approval process at NBA.*** The research community apparently feels that the approval process for access to biological resources in India is rather long. This impedes the research output, since most research activities, especially grant- based ones, are time-and crop season-bound.

(xii) ***There is a need to build a consensus on the issue of access and benefit sharing on Digital Sequence Information (DSI) at the national level so that the unified opinion can be expressed at all levels of discussion.*** For discussion on the DSI in different international fora, the proposal of DBT to remove the word 'information' from the definition of Biological Resources need further discussion. It is also necessary to include commercialization activities subsequent to utilization of DSI in product development, in the ABS Agreements.

In addition to these specific recommendations, there are some general recommendations that need to be taken care of while revising the BDA 2002.

- There is a need to notify new guidelines on publications and revisit other existing guidelines for international collaborative research projects.

List of NTCs u/s 40 need to include new species or products derived from all components of agrobiodiversity such as plants, animals, microbes, insect and fish, such as milk, curd, honey, fish products, animal products - fresh and frozen meat and hides.

- New designated repositories need to be notified and guidelines or standard operating procedures for designated repositories on timelines and state of maintenance of voucher specimens need to be specified.