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The Farmers' Rights Project

Background Study 4

Farmers' Rights in India

A Case Study

By Anitha Ramanna

FNI Report 6/2006

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Abstract

India is among the first countries in the world to have passed legislation granting Farmers' Rights in the form of the Protection of Plant Varieties and Farmers' Rights Act, 2001. India's experience is important due to its international contribution to negotiations on Farmers' Rights, its position as a centre of biodiversity, and the complexities of agriculture in India within which the country is attempting to implement these rights. This case study provides an overview of the state of Farmers' Rights, and opinions of over forty stakeholders in India including farmers, NGOs, industry and government representatives, on the prospects for the further realization of Farmers' Rights. India's law is unique in that it simultaneously aims to protect both breeders and farmers. The study analyses the achievements, barriers and limitations of India's approach. One of the findings is that the attempt to evolve a multiple rights system could pose several obstacles to the utilization and exchange of plant genetic resources among farmers. India has framed a unique legislation, but still faces the task of implementation, without any clear consensus among the various stakeholders on how to achieve these rights. This should serve as a signal internationally that establishing legislation is insufficient to effectively promote Farmers' Rights. An international mechanism is urgently required to promote some level of consensus on defining and implementing these vital rights. If the global community does not face up to the challenge of unambiguously articulating Farmers' Rights, what has been achieved so far in the battle to establish these rights may be lost. Such a loss would be heavy for farmers in India and other developing countries who need Farmers' Rights to protect their livelihoods, secure their access to resources, protect their rights to seeds, and, above all, lift them out of poverty.

Key Words

farmers' rights, plant genetic resources for food and agriculture, agrobiodiversity, biodiversity, India, PPVFR, FAO, ITPGRFA, access and benefit sharing, traditional knowledge, intellectual property rights, plant breeders' rights

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Contents

Tables

There is no question of Farmers' Rights
not being important. THEY ARE.
It is how we translate the rights provided to reality.
Dr. Kalpana Sastry, Principal Scientist NAARM

Farmers' Rights are most important
today for farmer's existence.
Jaipal Reddy, Farmer

Farmers' Rights should be viewed as an articulation of
the Fundamental Rights of the citizen that are
generally found in the Constitution of the country. They
are part of the citizen's right to practice any profession
or occupation without unreasonable restriction.
Sangeetha Udgaonkar, Consultant

India's law is unique in the sense that it is the first time anywhere
in the world that the rights of both breeders and farmers have
received integrated attention.
Dr. M S Swaminathan, Director, Swaminathan Foundation

What drove these three men, all cotton farmers,
to kill themselves last month? Along with 19 others in
a span of days. Taking the suicide count to over 300
in the last 10 months, 1000 plus in the last five years?
Newspaper report on farmer's suicides in India, *Indian Express*, February 5, 2006

Out of 89.35 million farmer households,
43.2 million (48.6%) were reported to be indebted.
Situation Assessment Survey of Farmers, Indebtedness of Farmer Households, Government of India, 2005

Preface

This background study is part of *The Farmers' Rights Project,* which addresses farmers' rights related to plant genetic resources, as they are recognized in the International Treaty on Plant Genetic Resources for Food and Agriculture. The Farmers' Rights Project aims to provide an empirical basis for proposals to the Governing Body of the International Treaty on the realization of farmers' rights. The first phase of the project, March 2005 – June 2006, comprises a document and literature survey, an international questionnaire survey covering 30 countries in Asia, Africa, the Americas and Europe, four in-depth country case studies on the situation of farmers' rights in Peru, Ethiopia, India and Norway respectively, and a final synthesis report. The findings are presented at a side event at the First Session of the Governing Body of the International Treaty in June 2006. Starting in March 2005, the project is being carried out by the Fridtjof Nansen Institute (FNI), supported by the Norwegian Ministry of Agriculture and Food and the Norwegian Ministry of Foreign Affairs. The GTZ Sector Project *People, Food and Biodiversity*, commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ), is contributing to the Farmers' Rights Project with two of the four country case studies, and is an important discussion partner in all phases of the project.

The present study is one of the four country case studies and provides an in depth analysis of the situation of farmers' rights in India, the barriers and options to their further realization and an overview of stakeholder perceptions in the country on the issue of farmers' rights. India is considered a particularly important country for case studies, as it is the first to adopt extensive legislation on Farmers' Rights. The study reveals key challenges in designing legislation on farmers' rights and analyses how these challenges can be dealt with in the current situation. Moreover, the study shows how important farmers' rights are to the livelihoods of small-scale farmers in contemporary India.

The case study has been written by Dr. Anitha Ramanna, Lecturer at the Department of Politics and Public Administration, University of Pune, following the joint guidelines for all the four case studies. Dr Ramanna has written various articles related to Intellectual Property Rights in agriculture. As a Fulbright scholar she was affiliated with the University of California, Berkeley and Harvard University in 1988-89, and was C R Parekh Fellow, 2005, at the Asia Research Centre, London School of Economics and Political Science.

I would like to thank the author for close and good co-operation throughout the work with the study and for a highly interesting and valuable contribution to *The Farmers' Rights Project*.

Lysaker, Norway

Regine Andersen
Project Leader
The Farmers' Rights Project
Fridtjof Nansen Institute

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Anitha Ramanna
Author

Executive Summary

The International Treaty on Plant Genetic Resources for Food and Agriculture recognizes Farmers' Rights and obliges the countries being Parties to the Treaty to protect and promote these rights. Countries, however, have not yet been able to evolve any consensus on how to define or implement Farmers' Rights. International coordination in this regard is also lacking. These are serious drawbacks that could prevent Farmers' Rights from becoming a realistic and workable mechanism. This report attempts to evolve options for the practical implementation of Farmers' Rights through a case study of India. Over forty stakeholders, including farmers, NGOs, industry and government representatives in India have been interviewed to explore methods to realize Farmers' Rights.

India is among the first countries in the world to have passed legislation granting Farmers' Rights in the form of the Protection of Plant Varieties and Farmers' Rights Act, 2001 (PPVFR). India's law is unique in that it simultaneously aims to protect both breeders and farmers. The Indian case assumes immense importance due to the country's lead in establishing a legal framework on Farmers' Rights, its international contribution to negotiations on Farmers' Rights, and the complexities of agriculture in India within which the country is attempting to implement these rights. India's case is also significant as the Indian gene centre is recognised for its native wealth of plant genetic resources.

Agriculture plays a key role in India's economy both from the point of view of employment generation as well as its share in GDP. A recent economic survey expressed concern with the decline in the share of the agricultural sector's capital formation in GDP. The dismal situation in which many farmers find themselves in India today was reflected in a study sponsored by the Government of India, known as the 'Situation Assessment Survey of Farmers' (SAS), which for the first time assessed the situation of farmers in 2003. An alarming trend has been witnessed in India in recent years with rising rates of farmers committing suicide. Newspapers echoing the 'crisis in Indian agriculture' continue to report daily incidents of suicides in various parts of the country. Several different reasons have been put forward as the cause of suicides including: mounting debt of farmers, crop failures due to overuse of pesticides, imbalances of international trade, or social and psychological factors.

Agriculture was generally excluded from intellectual property protection in India and there was no legal system of Plant Breeders' Rights or Farmers' Rights for decades. The Seed Association of India, formed in 1985, has actively promoted the need for plant breeders' rights in the country. With the adoption of the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs), bilateral and multilateral pressure was also exerted on India to establish intellectual property rights in agriculture. There was enormous protest against implementing TRIPs by non-governmental organizations and farmers' lobbies in the country. The Protection of Plant Varieties and Farmers Rights Act (PPVFR), 2001 arose amidst this controversy. The PPVFR Act initially emerged as a

result of the demands of the seed industry for breeder's rights. A chapter on Farmers' Rights was added to the Act due to pressure by NGOs.

India's PPVFR Act not only upholds farmers' rights to save, use and exchange seeds and propagating material but also attempts to enable farmers to claim special forms of intellectual property rights over their varieties. The Act grants plant variety protection on new varieties (largely modelled on UPOV), extant varieties and essentially derived varieties. Extant varieties include farmers' varieties, varieties in the public domain and varieties about which there is common knowledge. Nine rights can be said to have been given to farmers under the Act including: the rights to save, exchange and (to a limited extent) sell seeds and propagating material, to register varieties, to recognition and reward for conservation of varieties, to benefit sharing, to information about expected performance of a variety, compensation for failure of variety to perform, availability of seeds of registered variety, free services for registration, conducting tests on varieties, legal claims under the Act, and protection from infringement. The National Biodiversity Act, 2002, based on the Convention on Biological Diversity, regulates access to and use of genetic resources in India. This Act also focuses on benefit sharing, protection of traditional knowledge and prior informed consent. The Geographical Indications Act, the Patents Amendments Act and the Seed Bill also have implications for Farmers' Rights in India. The Seed Bill could restrict farmers' right to sell their seeds, and the Patent Amendment Acts could pave the way for further extensions of patentability in agriculture that may restrict farmers' rights to save, use or exchange seeds. The Geographical Indications Act may enable farmers to claim rights for agricultural goods originating in a specific region, or it could restrict access of farmers to the protected goods depending on the way it is implemented.

A large number of diverse stakeholders influence India's policy on Farmers' Rights. The views of various stakeholders on the importance, barriers and options for implementing Farmers' Rights were compiled and analyzed in this study. Forty-two interviews were conducted among representatives from NGOs and farmer's lobbies, the government, the seed industry, experts and among farmers. Interviews were conducted in various parts of India: New Delhi, Chennai, Hyderabad, Bangalore, Pune and Uruli Kanchan.

Stakeholders across various categories acknowledge the importance of Farmers' Rights nationally and globally. A majority of the respondents expressed that Farmers' Rights must incorporate rights beyond the farmer's right to save, use and exchange seeds. Various issues were addressed as important rights for farmers, such as support for inputs, access to technology and farmer's participation in decision-making. While some favoured the government as the main agency to facilitate benefit sharing, others pointed to the need for NGOs or for an independent agency to promote benefit sharing. The stakeholders place a great deal of responsibility on the Authority established to implement Farmers' Rights in India to overcome the barriers. In addition, stakeholders are looking to the Governing Body of the International Treaty to provide guidance and direction for the implementation of Farmers' Rights.

India's case holds some lessons for developing countries. Two broad approaches to defining Farmers' Rights in India reflect the options facing developing countries: 1) Farmers' Rights as a form of intellectual property rights 2) Farmers' Rights as a development right. The first approach poses Farmers' Rights as a counter to Plant Breeder's Rights and argues that if commercial breeders can acquire intellectual property over their inventions, then farmers' innovations must also be recognized and rewarded. The second encompasses a range of concerns including food security, livelihood rights, social justice and access to resources. India's policy largely adopts the first approach, but also acknowledges the second view. Many respondents to the survey felt that Farmers' Rights should move beyond ownership rights to incorporate development rights. Yet, even among NGOs, farmer leaders, and individual farmers, there were differences regarding the nature of development rights to be addressed. NGOs focused on conservation and access to seeds, while individual farmers pointed to guaranteed prices, electricity, low interest credit and reducing the role of middlemen.

The approach of defining Farmers' Rights as intellectual property rights may provide political rather than economic benefits for developing countries, whereas defining Farmers' Rights as development rights may ensure greater economic/social advantages. While defining Farmers' Rights as a kind of intellectual property rights could provide a tool for negotiating at the global level, it may not be of great utility in ensuring rights for farmers in developing countries. Legal and economic costs of establishing the system, the difficulties of legally claiming rights for farmers, and the limited returns from plant variety protection itself are some of the reasons why IPR-based Farmers' Rights approaches are unlikely to provide significant economic returns to farmers. In addition, developing countries may not gain much from seeking royalty payments for ownership of germplasm and may gain more from effectively utilizing genetic resources. Domestically, there is a need to gradually incorporate more development-oriented rights within the Farmers' Rights framework. Developing countries could attempt to forge a strategy that takes advantage of both approaches by utilizing the IPR type approach as a strategic tool to argue for Farmers' Rights globally, while domestically incorporating greater development oriented rights.

Another important lesson in defining Farmers' Rights is the need to avoid an 'anticommons tragedy'. An 'anticommons tragedy' arises when governments grant too many people rights over a resource with no one having an effective privilege of use. India's PPVFR Act is an attempt to evolve a multiple rights system that could pose several obstacles to useful utilization and exchange of resources. Developing countries need to evolve mechanisms to ensure exchange of agricultural resources as part of Farmers' Rights.

India and other developing countries could explore options to further develop the International Treaty's Multilateral System approach. The International Treaty on Plant Genetic Resources establishes a specified list of crops on which there are agreed rules for access and benefit sharing. In a sense, the Treaty attempts to redefine the principle of common heritage. India could not only support this initiative by making more

crops available on the terms and conditions of the Multilateral System, but could also explore the option of developing a parallel national system which includes crops significant for India's food security. Such systems could provide the means for promoting farmers' and breeders' access to resources.

India's ability to be one of the first countries in the world to forge a national legislation on Farmers' Rights is a significant landmark. India has evolved a unique legislation, but still faces the task of implementation. This process is likely to be fraught with difficulties not only in balancing intellectual property rights with Farmers' Rights, but also in ensuring coordination between various legislations such as the PPVFR and the National Biodiversity Act. It is also evident from the study that no clear agreement exists among the various stakeholders in terms of how to implement the Act. This should serve as a signal internationally that establishing legislations is insufficient to effectively promote Farmers' Rights.

The Governing Body of the International Treaty must now take up the task of establishing clear guidelines for defining and implementing Farmers' Rights. An international movement for Farmers' Rights would have to tread carefully to respect the sovereignty of nations while promoting global cooperation. However, Farmers' Rights must be promoted at the international level and cannot be left only to national governments to design. If each country, under Farmers' Rights, sets up barriers to access of genetic resources, limits exchange of resources, and competes to stake claims over innovations, the implications would be severe for farmers.

The Farmers' Rights movement has witnessed a long and chequered history. An international mechanism is urgently required to promote some level of consensus on defining and implementing these vital rights. If the global community does not face up to the challenge of unambiguously articulating Farmers' Rights, what has been achieved so far in the battle to establish these rights may be lost. Such a loss would be heavy for farmers in India and other developing countries who need Farmers' Rights to protect their livelihoods, secure their access to resources, protect their rights to seed, and, above all, lift them out of poverty.

Acronyms

CBD	Convention on Biological Diversity
CSIR	Council for Scientific and Industrial Research
FAO	Food and Agricultural Organization of the United Nations
FRs	Farmers' Rights
GDP	Gross Domestic Product
ICAR	Indian Council of Agricultural Research
IPRs	Intellectual Property Rights
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
ISAAA	International Service for the Acquisition of Agri-biotech Applications
MSSRF	M S Swaminathan Research Foundation
MNC	Multinational Corporation
NAARM	National Academy of Agricultural Research Management
NBA	National Biodiversity Act
NCAP	National Centre for Agricultural Economics and Policy Research
NBSAP	National Biodiversity Strategy and Action Plan
NBPGR	National Bureau of Plant Genetic Resources
NGO	Non-governmental Organization
NIF	National Innovation Foundation
PPVFR	Protection of Plant Varieties and Farmers' Rights Act
PVP	Plant Variety Protection
RFSTE	Research Foundation for Science, Technology and Ecology
SAS	Situation Assessment Survey of Farmers
SRISTI	Society for Research and Initiatives for Sustainable Technologies
SAI	Seed Association of India
TRIPs	WTO Agreement on Trade Related Aspects of Intellectual Property Rights
TBGRI	Tropical Botanic Garden and Research Institute
UNCTAD	United Nations Conference on Trade and Development
UPOV	International Convention for the Protection of New Varieties of Plants
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

1 Introduction

Farmers' Rights are currently acknowledged as a global concern, yet consensus on how to implement Farmers' Rights remains elusive. There is a certain level of acknowledgement worldwide that farmers are an important part of the economic, social and political fabric of society and require support. Growing recognition of farmers' role in agrobiodiversity conservation and innovation is particularly evident. However, there is no agreement on what should be the exact nature, scope and extent of Farmers' Rights. In 1989, the FAO Conference declared that they are 'rights arising from the past, present and future contributions of farmers in conserving, improving, and making available plant genetic resources, particularly those in the centres of origin/diversity' (Resolution 5/89). The 2001 International Treaty on Plant Genetic Resources for Food and Agriculture provides for the recognition of Farmers' Rights, but does not explicitly define them. Questions remain about whether Farmers' Rights should be seen as a form of intellectual property rights, as development rights, as measures to promote conservation of traditional varieties and farming practices, or as some combination of these. Without urgent attention towards resolving this lack of clarity, Farmers' Rights may become diluted into a theoretical and unrealistic concept. This study is aimed at addressing this issue and attempts to evolve options to ensure the practical implementation of Farmers' Rights.

India is among the first countries in the world to have passed a legislation granting Farmers' Rights in the form of the Protection of Plant Varieties and Farmers Rights Act, 2001 (PPVFR). India's law is unique in that it simultaneously aims to protect both breeders and farmers. It attempts to establish rights for farmers to register their innovations and protect extant (existing) varieties. India is a country rich in biodiversity and genetic resources. India is a leader in the developing world, negotiating at the forefront internationally to ensure protection of Farmers' Rights. These dimensions must be viewed alongside realities on the ground, such as the fact that farmers are committing suicide in alarming numbers in India. The Indian case holds important lessons for the realization of Farmers' Rights. It assumes immense importance for several reasons including: India's lead in establishing a legal framework on Farmers' Rights, India's international contribution to negotiations on Farmers' Rights and the complexities of agriculture in India within which the country is attempting to implement Farmers' Rights.

The study has been conducted utilizing both primary data consisting of interviews of various stakeholders and secondary data consisting of analysis of government documents, research papers and literature published by NGOs. Semi-structured interviews of NGOs, government representatives, farmers, industry heads and experts regarding the state of Farmers' Rights in India and suggestions for implementing Farmers' Rights have been collated and analysed. Although every attempt has been made to interview the main stakeholders, one of the limitations of the study is inability to interview all the stakeholders in a country as large as India. The study also faces the general limitations associated with the interview method. In spite of these limitations, the study presents a collection of diverse viewpoints and outlines various options for implementing Farmers' Rights.

2 Brief Summary of India's Agriculture and Current Situation of Farmers

Basic Features and Structure

Agriculture plays a key role in India's economy both from the point of view of employment generation as well as its share in GDP. Agriculture engages nearly 70% of the population and is a principal contributor to India's economic output, with an output of Rupees 2925 billion (US$ 61 billion) in 2002, accounting for nearly 25% of GDP (at constant prices basis 1993-94)[1] The sector is vast in its coverage, consisting of food grains/ cereals, fruits, vegetables and several commercial crops like oil-seeds, cotton, rubber, spices, sugar cane, jute and tobacco. While India is a dominant producer of several agricultural commodities, Indian productivity in almost all crops is far behind the world averages[2]. There are two main cropping seasons: generally, crops harvested from July to December are known as Kharif crops and those harvested from January to June are Rabi crops.[3]

India has a vast and diverse agricultural structure. A large public sector system covers various aspects of agriculture including breeding, research, production and extension services. In the public sector, the 25 State Agricultural Universities carry out seed research and breeding. The Indian Council of Agricultural Research, Department of Biotechnology and the National Seed Corporation are involved in the public agricultural seed market. The public sector component consists of two central corporations, namely, the National Seed Corporation (NSC) and State Farm Corporation of India (SFCI) and 13 State Seed Corporations (Grossman et al, 1991). India's seed industry is governed by the Agriculture Ministry, through its Indian Seeds Act. In 2002-03, production of certified seeds was 930,000 million tonnes, most of it from government-owned enterprises[4].

More than 500 private seed companies (the largest with a turnover of about $3 million at official exchange rates), 24 of them with links to multinational seed companies, and many with their own hybrid development programs are operating in India, according to a study by the World Bank in 2001.[5] Private sector investments in agriculture were estimated at 15 per cent of the total concentrating on a few crops in 2000 (quoted in Rangnekar, 2003). Prior to the 1980s, private sector firms could not play a significant role in Indian agriculture due to the restrictions on private sector investment and seed imports. The New Seed Policy announced in

[1] www.hollandinindia.org/indiabusinessguide/agro01.html - _Toc62707784).
[2] (Entire section from: www.hollandinindia.org/indiabusinessguide/agro01.html - _Toc62707784).
[3] Government of India, 'Indebtness of Farmer Households' Report No. 498 May 2005
[4] www.hollandinindia.org/indiabusinessguide/agro01.html - _Toc62707784
[5] http://lnweb18.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/EAA847661F5C30D1852567F5005D8C3D

1998 allowed large private sector entry in India across a range of crops and relaxed restrictions on seed imports (Rangnekar, 2003). Different private sector seed producers, including multinational companies (MNCs) like Novartis, Cargill and Pioneer Seeds, have been active in India for several years. A number of mergers and acquisitions between MNCs and domestic companies have taken place in India. Monsanto acquired 26% stake in Mahyco, Agrevo controls 100% of ProAgro, Emergent Genetics has acquired 74% stake in Maharashtra Hybrids and Pioneer has 51% stake in SPIC (quoted in Rangnekar, 2003).

In spite of the large formal agricultural system in India, the majority of farmers depend on informal seed systems. Formal sources (public and private sector) account for a minor proportion of the seed used by farmers. It is estimated that only about $1/10^{th}$ of the total seed requirement of farmers in all crops is met by formal institutions (Asokan et al 1990). Traditional seed supply systems, which refer to seed retained by the farmers for the following growing season and farmer-to-farmer seed exchange, are very important in India. In India, 80 per cent of the farmers rely on farm-saved seed (Economic Survey, 2005-06). A region specific study in the state of Bihar conducted by Gene Campaign (Sahai et al, 2005) found that 78 %, 69.23% and 82% of the farmers in the villages of Sitamarhi, Bhabhua and Palamau respectively use traditional seeds from their own source. The second most important source of seeds was exchange and sale of seeds among farmers which accounted for 22 %, 30.76% and 18% in the same villages respectively (Sahai et al, 2005). Only 6% of the farmers growing traditional varieties in Palamau purchase seeds from the market (Sahai et al, 2005). Formal markets did not have much of a role to play in transfer of traditional seed varieties in the areas that were studied (Sahai et al, 2005). One study of about 500 farmers in the states of Uttaranchal, Arunachal Pradesh and Meghalaya reported that the most common source of seed for farmers was saved seed, with only a minor portion of them purchasing seed (Alam, 2003).

Staple Crops, Diversity and Conservation

Table 1 depicts the area, production and yields of major crops in India. In the past 30 years India has become the world's second largest producer of rice, sorghum, groundnut, and sugarcane, and third largest producer of wheat, cotton, rapeseed and mustard and seventh largest producer of potatoes (IARI, 1995). India is also the largest producer and exporter of black tea whereas coffee, tobacco, rubber, jute, spices and marine products are other principal items of agricultural export (IARI, 1995). India has the world's largest herds of buffalo and cattle, is the largest producer of milk, and has one of its largest and fastest growing poultry sectors.[6]

It is estimated that approximately 20,000 species of higher plants alone occur in India and 160 species of cultivated plants are distributed in eight diverse agro-ecological regions of India (IARI, 1995). The Indian gene centre is also recognised for its native wealth of plant genetic resources

[6] www.ers.usda.gov/Briefing/India/basicinformation.htm

with over 800 species of ethnobotanical importance and 1200 species are known to possess medicinal and aromatic value (IARI, 1995).

Table 1: Area, Production and Yield of Major Crops in India

Crops	Area (Hectares)	Production (Million Tonnes)	Yield (Kg/Hectare)
Rice	43.9	85.2	1938
Wheat	26.4	71.0	2692
Jowar	9.8	7.8	803
Bajra	9.0	6.5	718
Maize	6.5	11.8	1817
Tur	3.4	2.4	703
Gram	6.4	5.1	796
Total Food Grains	120.8	199.4	1651
Groundnut	6.6	6.4	970
Rapeseed & Mustard	5.3	4.9	924
Soyabean	6.3	6.0	958
Sunflower	1.4	0.8	552
Nine Oil seeds	23.4	19.9	850
Sugarcane	4.3	298.5	69065
Cotton*	8.7	10.4	204
Jute and Mesta**	1.0	10.8	1944
Potato	1.3	23.6	18343
Onion	0.5	4.8	10540

Note: Normal is worked out as simple avg. estimates for 5yrs, i.e., 1998-1999 to 2002-2003

* Production in Million bales of 170kgs each

** Production in Million bales of 180kgs each

Source: Adapted from Government of India, Directorate of Economics and Statistics, *Agricultural Statistics at a Glance*, New Delhi, August 2004, p. 38

There is no available figure for the overall loss of crop diversity in India but some localized studies exist of the loss of traditional varieties (Kothari, 1994). For instance, in the Godavari district of the east Indian state of Andhra Pradesh, an estimated 95% of the rice varieties have been lost (Kothari, 1994). In northeast India, several varieties of sugarcane have given way to a single hybrid variety (Kothari, 1994). Thousands of varieties of rice, cotton, minor millets, pulses, and other crops are no longer in use (Kothari, 1994). Livestock diversity has also faced a serious threat. It is estimated that 10 (50%) of the goat breeds, five (almost 20%) of the cattle breeds, and 12 (30%) of the sheep breeds are today threatened (Kothari, 1994). One study of about 500 farmers in the states of Uttaranchal, Arunachal Pradesh and Meghalaya found that in two of the states farmers plant fewer varieties than they did in the past, implying a loss of traditional varieties (Alam, 2003).

India's interest and abiding concern in the collection and utilisation of plant genetic resources dates back to the early decades of this century though botanical accounts on available flora and the economic plants/ products had been documented much earlier (quoted in Rana and Arora 1986). The Government of India is focusing on *in situ* and *ex situ* conservation measures. To promote *in situ* conservation, the Indian government has identified fourteen biosphere reserves where tremendous changes are occurring in the habitats, and loss of biological species has become apparent (IARI, 1995). Seven of these reserves have started functioning as focus areas for promoting conservation. The Indian Council of Agricultural Research created a separate organisation known as National Bureau of Plant Genetic Resources (NBPGR) in 1976 to focus on genetic resources. NBPGR established India's first 'National Gene Bank' with national mandate for long-term conservation of germplasm (base collections) (IARI, 1995). More than 80,000 accessions of indigenous cultivars and their wild relatives have already been collected through over 300 crop-specific and region-specific explorations (Rana and Arora 1986). These represent wide variability in crops like wheat, maize, rice, minor millets, cucurbits, okra, eggplant, tuber crops, jute, cotton, ginger, sugarcane, mango, banana, jujube, citrus, black pepper, turmeric, medicinal plants and forages, besides many others (Rana and Arora, 1986). In various crops, including rice, wheat, oilseeds, horticultural and vegetable crops indigenous diversity has been utilized to develop well adapted, popular varieties (see IARI, 1995). The total germplasm holding with the National Genebank amounts to 287,028 as shown in Table 2 (NBPGR, 2005).

Decline of Agriculture in Share of GDP

The recent economic survey conducted in India expressed concern with the decline in the share of the agricultural sector's capital formation in GDP from 2.2 per cent in the late 1990s to 1.7 per cent in 2004-05. (Economic Survey, 2005-06) The survey also pointed out the low and volatile growth rates in Indian agriculture and allied sectors that was reflected in the average annual growth rate of value added in the sector declining from 4.7 per cent during the Eighth Plan (1992-1997) to 2.1 per cent during the Ninth Plan (1997-2002) (Economic Survey, 2005-06). Public investment in agriculture has been declining for the last two decades, falling from 3.4 per cent in 1980-81 to 1.3 per cent in 2000-01 as a proportion of GDP.[7] This has adversely affected the public sector investment in irrigation as more than 90% of the total public investment in agriculture is for irrigation (TISS, 2005). Instability in agriculture has led to talk of an agrarian crisis.

Land ownership**:** The overall agricultural slowdown adds to the agricultural problems faced by farmers. One of the most important of the structural issues is the issue of landholding. Table 3 reveals that the majority (61%) of the farmers in 1995-96 were marginal farmers owning less than one hectare of land.

[7] www.rupe-india.org/36/contents.html

Table 2: Status of Germplasm Accessions in the National Gene bank (-18 degree Celsius)

Crop Group	Present Status (Total)
Paddy	71673
Wheat	34275
Maize	5508
Others	9372
Cereals	**120828**
Sorghum	17483
Pearl millet	6737
Minor millet	16798
Others	2176
Millets and Forages	**43194**
Amaranth	3521
Buckwheat	293
Others	169
Pseudo Cereals	**3983**
Chickpea	15644
Pigeonpea	7520
Mung bean	2959
Others	16718
Grain Legumes	**42841**
Groundnut	11437
Brassica	7163
Safflower	6124
Others	12172
Oilseeds	**36896**
Cotton	4594
Jute	2585
Others	1426
Fibre Crops	**8605**
Brinjal	3032
Chilli	1981
Others	11905
Vegetables	**16918**
Custard apple	57
Papaya	23
Others	92
Fruits	**172**
Opium poppy	293
Ocimum	194
Tobacco	937
Others	1181
Medicinal and Aromatic Plants and Narcotics	**2605**
Coriander	296
Sowa	59
Others	198
Spices and Condiments	**553**
Pongam Oil tree	42
Others	42
Agro forestry	**198**
Lentil	1712
Pigeonpea	2523
Duplicate Safety Samples	**10235**
Total	**287028***

*The figure includes 1647 Released varieties and 6277 Genetic Stocks

**The figure includes 252 Released varieties and 207 Genetic Stocks

Source: Government of India, National Bureau of Plant Genetic Resources (NBPGR) Annual Report 2004, New Delhi, p. 33

Table 3: Distribution of Operational Holdings (hectares)

Category of Holdings	No. of Operational Holdings	
	1990-91	1995-96
Marginal (less than 1 hectare)	63389 (59.4)	71179 (61.6)
Small (1.0to 2.0 hectare)	20092 (18.8)	21643 (18.7)
Semi-Medium (2.0 to 4.0 Hectares)	13923 (13.1)	14261 (12.3)
Medium (4.0 to 10 hectares)	7580 (7.1)	7092 (6.1)
Large (10.0 hectares and above)	1654 (1.6)	1404 (1.2)
All Holdings	106637 (100.0)	115580 (100.0)

(Percentages in brackets) Source: Compiled from Government of India, Directorate of Economics and Statistics, *Agricultural Statistics at a Glance*, New Delhi, August 2004, p. 186

A study sponsored by the Ministry of Agriculture on the 'State of the Indian Farmer' pointed out that the agrarian structure in India is today characterised by predominance of small and tiny holdings that are economically non-viable (Chadha et al, 2004). Very small patches of land often at great distances make cultivation virtually impossible and small holders do not have the means to undertake even basic tilling operations (Thimmaiah and Rajan, 2004). Noting the glaring inequalities in land distribution, the study found that in all states in India a very small proportion of the holdings owned a disproportionately large amount of area (Chadha et al, 2004). At the all-India level in the early 1990s, 2.62% of the holdings owned 26.67% of area of land (Chadha et al, 2004). The average size of holdings declined from 2.28 hectares in 1970-71 to about 1.55 hectares in 1990-91 and the proportion of small and marginal holdings increased 78.20% (Thimmaiah and Rajan, 2004).

Situation of Farmers

An alarming trend has been witnessed in India in recent years with rising rates of farmers committing suicide. There are no official figures but media reports put the toll at shocking high rates. Since 1995, it has been reported that more than 25,000 farmers have committed suicides all over the country and around 3,500 have occurred over the past one-and-a-half years[8]. Newspapers echoing the 'crisis in Indian agriculture' continue to report daily incidents of suicides in various parts of the country. Andhra Pradesh, Maharashtra and Karnataka have witnessed high numbers of suicides, while reports of suicides have also emerged from agriculturally

[8] www.hindustantimes.com/news/specials/htemotions2005/anger_farmer.shtml?sid=ang. Raju Bist (2004) A price too high for Indian farmers www.atimes.com/atimes/South_Asia/FF29Df02.html

prosperous states like Punjab, often referred to as India's granary[9]. The number of suicides in the most badly affected districts, Warangal in Andhra Pradesh, reached over 600 in 2000-01 (Stone, 2002). The total numbers of suicides reported in Maharashtra, till December 2004, were 644, with most of the deaths occurring in the Vidharbha, Marathwada and Khandesh regions of the state (TISS, 2005). The government's response has mainly been to announce compensation to the relatives of victims, but even this money doesn't appear to be reaching the farmers. One study in Maharasthra found that almost 80% of the victims have not received any kind of compensation from the government (TISS, 2005).

One of the most common methods of committing suicide appears to be consumption of pesticides. The exact reason for the suicides is a matter of debate. While some studies assert that debt is a major cause, other studies point to a variety of social and psychological factors. Some NGOs state that imbalances due to international trade, exploitation by multinational corporations, and the introduction of genetically modified crops are reasons for the high suicide rates. Stone (2002) notes that the debt trap, crop failures due to overuse of pesticides, and the presence of spurious seeds are the cause of suicides. Harassment by moneylenders has also been a factor according to some studies. While the debate over the cause of suicides rages on, the death toll of farmers consuming pesticides continues to increase every day.

The dismal situation in which many farmers find themselves in India today is reflected in a study sponsored by the Government of India, which for the first time assess the situation of farmers in 2003. Planned by the Ministry of Agriculture and undertaken by the National Sample Survey Organization (NSSO), the survey was a comprehensive all India socio-economic study of farmers. Known as the 'Situation Assessment Survey of Farmers' (SAS), the study was carried out on the basis of a sample of more than fifty thousand farmer households on issues such as indebtedness of farmers, farmers' income and expenditure, and access to modern technology for farming.

The situation assessment survey reported that out of 89.35 million farmer households, 43.42 million (48.6%) were indebted. Households with 1 hectare or less of land accounted for 66% of all farmer households and about 45% of them were indebted (Government of India, May 2005). The results of these surveys show the dreadful condition of farming households, be it in their income, expenditure or indebtedness, according to Dr. Narayanamoorthy (2005). He points out that the survey reveals that annual net income of a farmer household comes to only Rs. 2,387 (approximately US $ 52) at the all-India level and that in some states the annual expenditure on cultivation is higher than annual income from cultivation (Narayanamoorthy, 2005)! This clearly suggests, according to him, that farmers are in severe distress and the income that they get from all sources is not even enough to meet the consumption expenditure of the households. The possible reasons why farmers are not getting adequate remun-

[9] Raju Bist (2004) A price too high for Indian farmers
www.atimes.com/atimes/South_Asia/FF29Df02.html

eration from their produce include: sharp deceleration in the growth of prices of many agricultural commodities and increase in the cost of cultivation after the introduction of reforms; use of spurious seeds; dominant role of the middlemen because of which farmers are not even able to get 40% of the money that consumer pays for agricultural commodities; lack of institutional credit which leads to over 42% of the rural credit coming from moneylenders charging exorbitant rates of interest (Narayanmoorthy, 2005). One of the SAS reports also indicates that given a choice 40 per cent of the farmers would quit agriculture and take up some other career (Narayanamoorthy, 2005). As one editorial in a newspaper points out (P. Sainath Hindu, 18 November 2005) the SAS surveys reveal the extent of poverty in India and demonstrates the dismal state of India's farm households.

The National Commission on Farmers, set up in 2004 to suggest an action plan for farmers, in its recent report also takes note of the SAS survey. The Commission, headed by Prof. M S Swaminathan, submitted three interim reports in 2004-05 and recently submitted the fourth report. This report calls for the formulation of a comprehensive National policy for farmers with a view to give an all-round boost to Indian agriculture by providing the farmer necessary advisory, technical, farm credit and marketing services.[10] The report points out that the average size of the farm is decreasing and this is increasing both costs and risks for farmers resulting in farmers become indebted.[11]

3 State of Farmers' Rights

The Emergence of Farmers' Rights in India

Protection of Plant Varieties and Farmers Rights Act (PPVFR), 2001

This is the main law in India dealing with Farmers' Rights. The Act emerged from a process of enormous debate and could be passed after about five revisions were made to the draft. The PPVFR Act initially emerged as a result of the demands of the seed industry for breeder's rights. A chapter on Farmers' Rights was added to the Act due to pressure by NGOs.

Agriculture was generally excluded from IPR protection in India and there was no legal system of Plant Breeders' Rights or Farmers' Rights for decades. 'Common heritage' or the principle of free exchange based on the view that the major food plants of the world are not owned by anyone and are a part of our human heritage governed genetic resources. Farmers were free to use, share and exchange seeds and since breeders could not acquire plant variety protection, there was no system of benefit sharing or compensation.

[10] http://news.webindia123.com/news/Articles/India/20060413/305802.html

[11] http://news.webindia123.com/news/Articles/India/20060413/305802.html

The initial demands for IPRs in agriculture arose with the change in policy that allowed private sector entry into the seed sector with the New Seed Policy of 1988. The Seed Association of India, formed in 1985, first actively promoted the need for plant breeders' rights in India. With the conclusion of the TRIPs agreement there was also external pressure on India to establish PBRs in India. India's public sector had initially objected to plant variety protection partly because it would enable private companies to take advantage of breeding material developed by the public sector, but this stance underwent a change due to the changing role of the private sector and the relationship between the public and private sectors (Seshia, 2001). Enormous protest against implementing TRIPs, and introducing PBRs, arose from non-governmental organizations and farmers' lobbies in India. Their most effective and forceful argument was that the IPR system as outlined in TRIPs recognizes only agricultural innovations of breeders and corporations, but ignores informal innovations of farmers and communities, especially in developing countries. They asserted that TRIPs and western IPR regimes promote 'bio-piracy' as they only recognize formal innovations and ignore indigenous knowledge systems. Bio-piracy refers to the utilization of traditional knowledge or resources by industrialized nations to create profitable products without compensation. TRIPs allows countries to establish 'effective sui generis' systems, but many developing countries are implementing even higher standards than the minimum requirement, such as UPOV 1991. Developing countries are also subject to pressure to implement higher standards from TRIPs plus agreements, including regional trade agreements[12].

In the background of this debate on plant breeders' right in India, the government formulated a draft of a bill to grant PBRs in 1993/94. The draft led to enormous controversy in spite of the government's attempts to take into account the various demands of the actors while framing the bill. The bill provided for plant breeders' rights through provisions based on UPOV. The first draft of the bill also contained a clause on community rights and farmers' rights. The farmers right under this draft included farmers' right to save, use, exchange propagating material of seed and benefit sharing. There was no concept of farmers' rights as ownership rights or rights to register their varieties in this draft.

The bill was opposed both by NGOs and industry and with this impasse the government began the process of revising the draft. The Ministry of Agriculture prepared a second draft in 1996 and a third one in 1997. The third draft added the words 'Farmers' Rights' in the title and was labeled the Plant Variety Protection and Farmers' Rights Act. NGOs, however, criticized both of the bills for not providing adequate protection to farmers. NGOs claimed that benefit sharing was vague under the bill, there were no farmer's representatives in the Authority, and there was no system for registering farmers' varieties.

The process of accommodating the interests of various actors began with another draft introduced in Parliament in 1999 (Protection of Plant Varie-

[12] Thanks to Regine Anderson for pointing this out.

ties and Farmers Rights Bill) and sent to a Joint Committee of Parliament (JPC). The Joint Committee traveled across the country gathering the views of NGOs, industry, scientists and farmers lobbies on the bill. Incorporating the demands of various actors, the Joint Committee redrafted the bill in 2000 and the new version was introduced in Parliament. The Joint Parliamentary Committee's main revision was the inclusion of a separate chapter on Farmers' Rights. In 2001, the bill was passed and made into a law.

The final version of the bill was largely accepted by the major stakeholders. Industry understood that the concept of farmers' rights as seen as an alternative IPR system actually reinforces their position on IPRs and enables them to gain plant breeders' rights in India. NGOs accepted the bill as it provided for a mechanism for granting protection for farmers' varieties on par with breeders' varieties.

One can categorize nine rights accorded to farmers under The Protection of Plant Varieties and Farmers Rights Act, 2001 (PPVFR) (Bala Ravi, 2004):

Rights to Seed: The farmer's right to save and exchange seed has been one of the major demands of the farmers' right movement. India's Act aims to give farmers the right to save, use, exchange or sell seed in the same manner he/she was entitled to before the Act. However, the right to sell seed is restricted in that the farmer cannot sell seed in a packaged form labelled with the registered name[13]. (Implications of this provision are discussed in section 3.5)

Right to Register Varieties: Farmers like commercial breeders can apply for IPR over their varieties. The criterion for registration of varieties is also similar to breeders (distinctness, uniformity, stability) but novelty is not a requirement. The ability to gain IPR type rights over farmers' varieties is a unique aspect of India's law. Farmers' variety is defined as 'a variety which has been traditionally cultivated and evolved by farmers in their fields; or is a wild relative or landrace of a variety about which the farmers possess common knowledge'. The plant breeder's right granted on farmers' varieties provides the exclusive right to produce and market the seed of registered varieties (Bala Ravi, 2004).

Right to Reward and Recognition: The Act provides for establishing a National Gene Fund. Through the National Gene Fund, farmers that have played a role in conservation of varietal development of plants can be recognized and rewarded. The fee collected from breeders who are

[13] Section 39 (iv) of the Act provides that, 'a farmer shall be deemed to be entitled to save, use, sow, resow, 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 purposes 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.'

required to pay for benefit sharing is to be deposited in the National Gene Fund. The money collected under the National Gene Fund can be used for support and reward farmers engaged in conservation. The Act provides this general provision to promote conservation but does not provide further specifications regarding the method. The Authority set up under the Act is left with the task of operationalizing this right.

Right to Benefit Sharing: The Act proposes the setting up of a centralized National Gene Fund through which benefit sharing would be facilitated. The Authority is required to publish the registered varieties and invite claims for benefit sharing. The Act states that any person or group of persons or firm or governmental or nongovernmental organization can submit its claim of benefit sharing. The rewards from the gene fund can only be given to a farmer/community who can prove that they have contributed to the selection and preservation of materials used in the registered variety (Mauria, 2004).

Right to Information and Compensation for Crop Failure: Section 39 (2) of the Act provides that the breeder must give information about expected performance of the registered variety. If the material fails to perform, the farmers may claim for compensation under the Act. This provision attempts to ensure that seed companies do not make exaggerated claims about the performance (yield, pest resistance) to the farmer. It enables farmers to apply to the Authority for compensation in case they suffer loses due to the failure of the variety to meet the targets claimed by the companies.

Right to Compensation for Undisclosed use of Traditional Varieties: In cases where it is established that the breeder has not disclosed the source of varieties belonging to a particular community, compensation can be granted through the Gene Fund. Any NGO, individual or government institution may file a claim for compensation on behalf of the local community in cases where the breeder has not disclosed traditional knowledge or resources of the community.

Right to Adequate Availability of Registered Material: The breeder is required to provide adequate supply of seeds or material of the variety to the public at a reasonable price. If after three years of registration of the variety, the breeder fails to do so, any person can apply to the Authority for a compulsory licence. Compulsory licenses revoke the exclusive right given to the breeder and enable third parties to produce, distribute or sell the registered variety.

Right to Free Services: The Act exempts farmers from paying fees for registration of a variety, for conducting tests on varieties, for renewal of registration, for opposition and for fees on all legal proceedings under the Act. (Bala Ravi, 2004)

Protection from legal infringement in case of lack of awareness: Considering low literacy levels in the country, the Act provides safeguards against innocent infringement by farmers. Farmers who unknowingly violate the rights of a breeder shall not be punished if he/she can prove that they were not aware of the existence of breeder's rights.

National Biodiversity Act (NBA), 2002

The Act is based on the Convention on Biological Diversity (CBD) and focuses on regulating access to and use of genetic resources in India. One of the main intentions of the Act is to establish India's sovereign right over its genetic resources by setting up administrative regulations for foreigners and Indians to access genetic resources. The Act establishes a National Biodiversity Authority at the centre, State Biodiversity Boards in each of the states, and Local Biodiversity Funds at the local level.[14] The main provisions of the NBA are:

Regulation of Access and Use of Biodiversity: The following require prior approval of the National Biodiversity Authority: 1) Persons who are not citizens of India to access biological resources for commercialization or research 2) Any person to sell the results of research relating to biological resources to foreigners 3) Any person to apply for IPRs on products based on biological resources. Prior intimation must be given to the State Biodiversity Board for accessing biological resources for commercial use by any person except local people (including growers and cultivators of biodiversity).

Benefit Sharing: The National Biodiversity Authority is to determine benefit sharing arising out of the use of biological material. While granting approvals for access and use of biological material, the Authority is required to ensure 'equitable sharing of benefits'. This is to be done on mutually agreed terms between the persons applying for approval, local bodies and those filing claims for benefit sharing. Benefit sharing can be implemented in any of the following ways: 1) Joint IPRs to the National Biodiversity Authority or the benefit claimants 2) transfer of technology 3) establishing research and development units in areas where it would benefit those claiming benefits 4) Involving scientists, benefit claimants and local people in research and development in biological resources 5) setting up of venture capital fund for aiding the cause of benefit claimers 6) payment of monetary compensation and non-monetary benefits to the benefit claimers as the National Biodiversity Authority may deem fit. If the reward is monetary, the Authority can order the amount to be deposited into the Biodiversity Fund or paid directly to individuals or organizations.

Conservation of biological resources: The Act sets out that it is the duty of the government to promote *in situ* and *ex situ* conservation.

Respect and protect knowledge of local people: The Act states that the government should try to protect local knowledge as advised by the Authority and this may include registration of such knowledge.

Prevent bio-piracy: The Authority has the power to oppose IPRs internationally on biological resources or knowledge related to biological resources obtained from India. This enables the Authority to prevent foreigners

[14] India has a federal structure with powers divided between the national (centre) and states.

from acquiring patents or other forms of IPRs on products derived from resources originating in India. India's experience with bio-piracy where the authorities had to battle patents relating to resources from India such as turmeric, neem and basmati filed in the US, has led to India's desire to establish an institutional mechanism to guard against bio-piracy.

Geographical Indications of Goods (Registration and Protection) Act, 1999[15]

The Act aims to provide protection for goods (including agricultural goods) that originate in a specific territory or region. The protection is provided for 10 years with possibility for renewal. Although not dealing specifically with farmers, it will have an impact on farmers in terms of protection that can be granted for agricultural commodities. It can be used to protect the rights of farmers but it may also restrict access of farmers to the protected goods depending on the way it is implemented.

In addition to these laws, NGOs and others have been promoting various drafts of bills such as the Community Intellectual Rights Act (Shiva), Convention of Farmers and Breeders (Sahai and Gene Campaign) and some experts have been trying to formulate a traditional knowledge bill. While none of these drafts have been introduced in Parliament or any policy making body, it is important to note that NGOs are active in designing and advocating such bills.

Implementation Stage: The legislations are still in a very preliminary stage in terms of implementation in India. The institutions (such as the Protection of Plant Variety and Farmers' Authority or the Biodiversity Authority) that are given the mandate to implement the laws are still in the process of being established. In fact, the Chairpersons of both these bodies were recently appointed. Dr. S. Nagarajan heads the Protection of Plant Variety and Farmers' Authority in Delhi while Dr. Kanniyan heads the Biodiversity Authority in Chennai. The infrastructure, officers and other logistical aspects of these institutions are now in the process of being established. As one NGO representative pointed out, even appointing the Chairperson of the PPVFRA was a difficult process fraught with opposition and had to be pushed by the NGOs.

The interpretation of these Acts and the interrelationship between the Acts will be an important factor in determining the impact. The jurisdictions of these laws and their spheres of operation are yet to be clearly marked out. Dr. Tiwari (Director, NAARM) asserts that the genetic resource concern got reflected in the PPVFR because it was enacted prior to the Biodiversity Act. He points out that the PPVFR Act should only be for finished varieties and not for genetic resources. However, as pointed out by others, it may not be possible to distinguish between varieties and genetic resources this way. Basic issues such as these would have to be decided upon. While some public and private sector organizations have begun preparing for the registration of varieties under the Act, no public data on applications are available at present. NGOs have already started

[15] www.patentoffice.nic.in/ipr/gi/gi_act.PDF

pointing towards aspects of the legislation, sometimes in innovative ways. For example, the clause on right to compensation under the PPVFR is being promoted by NGOs to demand compensation for cotton crop failures that have led to a number of farmer suicides in India recently. The government has sanctioned some monetary compensation to families of farmers committing suicide but not under the PPVFR Act.

The process of implementation will not be smooth and may be fraught with difficulties. The experience with the National Biodiversity Strategy and Action Plan (NBSAP), a programme to design state level plans as envisaged by the National Biodiversity Act is a case in point. Launched in 2000 to establish plans for the conservation and equitable use of biological diversity it featured an unusual partnership. The Plan was coordinated by three bodies from different sectors: an NGO (Kalpraviksh), government (Ministry of Environment and Forests) and an industry association (Biotech Consortium India Ltd.). While several drafts of the report, including various materials used in developing plans were prepared, the government did not publish the report, leading the NGO to release the report on its own. (Kalpraviksh, Securing India's Future, 2005). It is not clear whether the Ministry would now undertake the task of implementing the report.

In terms of an actual benefit sharing agreement that has taken place in India only one example stands out. This deal occurred prior to the Act in India, so it cannot be considered an outcome of the legislation. Although it does not deal with crop genetic resources, the agreement is considered a model to be emulated by some. The agreement was between the TBGRI (Tropical Botanic Garden and Research Institute), which is a centre for plant research established by the state government of Kerala, and the Kanis, who are a tribal nomadic community in Kerala. The deal evolved through a complex process involving various actors (see Anuradha, 2000) and emerged when a group of scientists through some Kanis found a plant having medicinal properties that were used by the Kanis. The Kanis were hesitant to reveal the information as it was considered sacred but later on did so to the scientists. Ultimately a drug known as Jeevani with anti-stress and other properties was developed by a company based on the plant through a transfer agreement between TBGRI and the company signed in 1995. It was also decided that the Kani tribals would receive 50% of the license fee as well as 50% royalty obtained by TBGRI on sale of the drug. While some claim this is a model benefit sharing deal, several others point to its unfairness in terms of amount of money given to the Kanis, the lack of a participatory approach in not consulting the Kanis for use, and the inability of the government to coordinate the deal in an effective manner.

The National Innovation Foundation (NIF) can be highlighted as one initiative that aims to promote benefit sharing in India. The NIF is promoted by SRISTI, an NGO, and the CSIR (Centre for Scientific and Industrial Research), a public sector body in India. The NIF aims to foster and promote grassroots innovations. It provides recognition and rewards (in the form of prizes and cash) to rural artisans and farmers who have developed innovative ideas or products. SRISTI aims to set up a database of rural innovations through the Honeybee Network. It also attempts to

promote benefit sharing by pursuing avenues for commercialization of innovations and channelling the royalties back to the farmers/communities.

NGOs and government bodies at the national, state and local level are in the process of documenting resources (see table 4). The People's Biodiversity Registers are a significant initiative in this regard. These documentation activities could form a basis for determining benefit sharing in the future.

Table 4: Documentation Activities in India

Activity and Year Launched	Agency	Description
National Biodiversity and Strategy Action Plan, 1999	Ministry of Environment and Forests, UNDP, Kalpraviksh and Biotech Consortium India Limited	Assessment and stocktaking of biodiversity-related information at national, local and state levels
National Innovation Foundation, 2000	Department of Science and Technology and IIM, Ahmedabad	Register and support grassroots innovations
Biodiversity Plan	Government of Karnataka	State laws regarding biodiversity
Biodiversity Plan	Government of Kerala	State laws regarding biodiversity
Mission Mode Project on Collection, Documentation and Validation of indigenous technical knowledge	Indian Council of Agricultural Research	Documentation and registration of traditional knowledge
Traditional Knowledge Digital Library	Council of Scientific and Industrial Research	International Library on traditional knowledge
People's Biodiversity Registers, 1995	Foundation for Revitalization of Local Health Traditions	Records the status, uses and management of living resources
Honeybee Network, 1996	Sristi	Document innovative practices of farmers/artisans
Database	Swaminathan Foundation	Document contributions of tribal groups for securing benefits
Documentation	Research Foundation, Green Foundation, Gene Campaign	Documenting and collecting traditional knowledge/resources
Village Registry, 1997	Pattuvam Village, Kerala	Produced a registry of genetic resources within their village and declared it their property

Source: Compiled from Government of India, Ministry of Environment and Forests, National Biodiversity Strategy and Action Plan: Guidelines and Concept Papers, 2001; www.sRissti.org; www.mssrf.org; www.frlht-india.org; Kerala Biodiversity Conservation Order, Draft, 1999; Karnataka Subgroup on Biodiversity, 1999; Claude Alvares, 'An Indian Village bucks GATT over control of genetic resources', Third World Resurgence, 1997.

The state of farmers' participation in decision-making processes: Theoretically, farmers in India can be part of the decision-making bodies. In practice, however, it appears that farmer's lobbies or individuals who claim to represent farmer's interests speak for the farmers rather than the

farmers themselves. With such a diverse range of agricultural interests, it is also hard to pinpoint who should represent farmers in decision making bodies. The legal framework relating to Farmers' Rights stipulates that farmers are to be represented in the regulatory bodies established under the Acts. The PPVFR Act states that 'one representative from National or State level farmers' organization' nominated by the Central Government is to be a member of the Authority established under the Act. In addition, within the Standing Committee established to 'advise the Authority on all issues including Farmers' Rights' one of the five members appointed by the Chairperson 'shall be a member who is a representative from a farmers' organization'. The Biodiversity Act doesn't mention farmer representatives directly, but does provide that members of the Authority shall include 'conservers, creators and knowledge-holders of biological resources'. These representatives have not yet been nominated. How far the appointment of these nominees will result in real participation of farmers in decision-making bodies is also difficult to judge. S. Bala Ravi, (Advisor Biodiversity, M.S. Swaminathan Research Foundation) points out that since there is only one seat to represent farmers in the PPVFR Authority, there is a high chance that the nomination to this seat by the Government of India may be influenced by political considerations. He feels that this, by itself, does not weaken the intent of law makers, if the nominated farmer representative takes a well balanced pro-farmer position on matters of interest transacted by the Authority. According to him a similar situation could arise in the case of nominations of the tribal organization and women's association related to agricultural activities in the Authority.

The participation of farmers during the formulation of India's PPVFR Act was not significant. While some farmers lobbies were consulted by the Joint Parliamentary Committee that designed the PPVFR Act, other stakeholders such as NGOs, public sector and private sector institutions played a more prominent role in policy formulation. It was mainly representatives of farmers lobbies, at times representing large scale rather than small-scale farmers that were included. Even some of these representatives such as Chengal Reddy (Chairman, Federation of Farmers Associations) points out that their organization is never consulted at the policy level. In terms of anticipated influence, it would appear that farmers' lobbies would be able to get their voices heard in a limited manner, but not the views of individual small or marginal farmers. In our survey of nine farmers, none had heard of India's law on Farmers' Rights. It is also important to note that various actors attempt to translate the interests of the farmers within their own frameworks. In the case of GM cotton, for example, pro and anti-GM lobbies based their arguments on evidence of farmer's choice for or against the technology, without probing into the nuances of farmer's interests. (See Ramanna, 2006)

The state of farmers' practice of saving, using, exchanging farm saved seeds and propagating material: It is interesting to note that in India the same Act that protects Farmers' Rights also grants plant breeders' rights. Therefore the PPVFRA must again be referred to when discussing restrictions on Farmers' Rights. The Act grants plant variety protection on: new varieties (largely modelled on UPOV), extant varieties and essentially derived varieties. Extant varieties include farmers' varieties, varieties in the

public domain and varieties about which there is common knowledge. The provision of extant varieties doesn't find any parallel in intellectual property frameworks and is an attempt to grant rewards for past innovations. (Srinivasan, 2003) The provision for essentially derived varieties introduced in UPOV 1991 extends plant variety protection to varieties whose genetic content or pedigree is not fundamentally distinct from that of the protected variety. In the Indian context, this provision has been adopted to provide protection for varieties developed by the public sector that are acquired and slightly modified by private sector.

The question of whether the Act would restrict the rights of farmers to use and sell IPR protected seeds can really be answered only when it comes into force. Most analysts agree that sale of seeds in a generic form that is not labelled would be allowed, but that farmers could not become competitors with breeders by selling seed under a brand name. Some authors claim that this would enable farmers to carry on with current practices without any severe restrictions. Others disagree with this, pointing out that granting IPR itself will lead to further privatisation of the seed sector and this in itself poses a threat. Some analysts have pointed out that the definition of 'branded' seed is unclear and since firms can identify a seed by its genetic makeup rather than the brand name, firms who intend to assert their IPR over their varieties could do so (Ghose, 2003). There are also those who state that there is no way of enforcing any such restriction. The right to sell seed was one of the most heavily contested points in developing India's legislation. Seed companies appear to have compromised during the framing of the legislation, but their positions may not be as accommodative during the implementation stage. Some representatives of the seed industry noted in the survey that farmers have a right to exchange but not to sell seed.

Other legislations and policy proposals must also be considered when analysing restrictions on Farmers' Rights. ***The Patent Act of 1970 that explicitly excluded agriculture from being patentable was amended in 1999, 2002, and 2005.*** The amendments pave the way for product patents on agrochemicals and patents on micro organisms. Although plants and seeds are to be exempted, some analysts point out that it may in effect lead to extension of patents into agriculture. The amendments provide for two provisions that limit patents that are relevant in the Farmers' Rights context: traditional knowledge is not patentable and the patent applicants must disclose the source and geographical origin of biological material in the specification, when used in the invention. India's application to the UPOV body must also be noted here, as some NGOs have argued that such a step negates Farmers' Rights.

Various NGOs assert that the new Seed Bill, introduced but not yet passed by Parliament, negates the pro-farmer aspects of the PPVFR. The ***Seed Bill, 2004*** proposes to replace the existing 1966 Seeds Act which governs seed trade. The bill attempts to introduce the concept of mandatory registration of seeds. In other words, all marketed seed and planting material, whether domestic or foreign, will have to be registered (GRAIN, 2005). This is a significant change from the existing law, which sought to regulate the quality of only a limited number of varieties notified under the law (GRAIN, 2005). While it doesn't specifically restrict

rights of farmers to save, use, exchange or sell seeds, the Seed Bill could have implications for such activities as farmers cannot sell their seeds if they do not meet the standards of registration. The wide powers given to seed inspectors and the ambiguity in the legislation have been criticized by NGOs as they fear such provisions may be used to regulate farmer's local sales such as in village fairs. Dr. Suman Sahai points out that as the public has no opportunity to object to registration and it could result in varieties of dubious performance being registered without giving people a chance to oppose such grants.[16] In addition, there are no provisions for ensuring benefit sharing post commercialization in the bill[17]. According to NGOs other problems with the bill include: consolidation of the private seed industry, easing entry of genetically modified crops into India, and rise in price of seeds as a result of costs incurred for registration (GRAIN, 2005).

Other policy pronouncements to be noted are the Draft Biotechnology Policy, 2005 which promotes biotechnology for India's agriculture. The draft does not propose any restrictions in Farmers' Rights but the implications of introducing genetically engineered crops for farmers must be carefully analyzed. Proponents of biotechnology assert that genetically modified (GM) crops have the potential to solve India's agricultural problems, while opponents argue that it has negative implications for farmer's livelihoods. India approved the commercialization of one genetically modified crop, Bt cotton, but only after years of debate. The approval also came *after* it was reported that Bt cotton was already planted (illegally) in the western Indian state of Gujarat. A powerful rights oriented position of 'GM as farmer's choice' emerged following the Gujarat incident with the rationale that if the farmers want the technology, what right does the government have to deny them GM crops? But the complex and contextual nature of farmer's views on GM crops have been reduced to simplistic pronouncements on acceptance or rejection of technologies (see Ramanna, 2006). Whether Bt cotton proves beneficial to a farmer or not is dependent on a number of complex and interrelated factors. Their experiences with Bt cotton reflect their individual conditions and perceptions which must be taken note of when arguing that a particular technology is 'farmer's choice'.

One recent study on 'Access to Modern Technology for Farming' conducted by the Government of India as part of the SAS found that the overall picture of farmers accessing modern technology was not very promising (Government of India, 2005b). According to the study, nearly 60% farmer households had not accessed any source of information on modern agricultural technology during the last 365 days from when they were interviewed (Government of India, 2005 b).

We asked farmers in our survey about their practices of farmers in saving, using and exchanging seed. The survey sample being small, the responses are illustrative rather than representative. Among the nine farmers inter-

[16] www.genecampaign.org 'The Controversial New Seed Bill' Press Release, no date.
[17] Ibid.

viewed, seven said they exchange seed with farmers and only two of them stated that they do not exchange seeds. Some of them qualified that this exchange is on a payment basis and is not free exchange. Mr. Jaipal Reddy (Farmer, Andhra Pradesh) stated that nobody gives seeds freely. According to one farmer, it is a common practice to exchange seeds with other farmers and that farmers are always on the lookout for new varieties. Another farmer stated that he only exchanges in the case of onions and not any other crop. Mr. Tupe (Farmer, Maharashtra) stated that only guaranteed seeds and varieties are exchanged.

Farmers provided varied responses to the question of difficulty in accessing seeds and information about new varieties. While few reported that they had experienced difficulties in getting access, some stated that it was quite easy. One farmer stated that no one gives new varieties/seeds and the government officials also do not inform them about new varieties/seeds. Another farmer stated that he does get information from TV and from government agricultural officers. Mr. Kanchan (Farmer, Maharashtra) stated that it is difficult to get information when a farmer develops a new variety because an ordinary farmer doesn't have good networks like companies do. He expressed that ICAR (Indian Council of Agricultural Research) was doing a good job in this regard. One farmer stated that there were no problems in getting new varieties, especially if one works with agro companies. Another farmer noted that corrupt officials are a hindrance for getting access to new varieties, but the government extension shops were a source of information. Mr. Jaipal Reddy (Farmer, Andhra Pradesh) said it was easy to get varieties/ seeds but there was no guarantee on the quality and yields. He prefers to get them from the public sector as the cost is lower.

The state of support to farmers in developing countries who conserve plant genetic resources for food and agriculture: Legislative provisions have been devised by the government to support farmers in conservation in theory. In actual practice, NGOs appear to be promoting such activities in India. The PPVFR Act and the National Biodiversity Act state that protection and rewards for those conserving genetic resources should be provided, but more in terms of intent rather than any specific stipulations. Recognition and rewards for individual farmers or communities for conservation efforts are to be channelled through the National Gene Fund under the National Biodiversity Act, but there are no conditions laid down for identifying such recipients neither under any time frame nor any mention of amounts to be granted. The focus of NGO initiatives at present is on documenting knowledge and establishing seed banks. Several NGOs such as Navdanya, Gene Campaign, Green Foundation and Swaminathan Foundation aim to promote conservation of traditional varieties and some have set up gene banks.

4 Stakeholder perceptions on Farmers' Rights

Description of Stakeholders

A large number of diverse stakeholders influence India's policy on Farmers' Rights. The range of actors is vast including national NGOs, local level grassroots groups, seed industry associations, farmer's lobbies, and government departments. The wide variety and number of stakeholders in India's agricultural scenario cannot be completely represented in one study. However, an attempt has been made here to focus on the major stakeholders in the debate on Farmers' Rights in India. We begin with a description of stakeholders in various categories: NGOs, farmer's lobbies, government and industry.

NGOs

Non-governmental organizations in India have been the prominent actors in promoting Farmers' Rights in India. The major arguments for Farmers' Rights stem from demands to counter TRIPs (Trade Related Intellectual Property Rights Agreement). TRIPs is criticized by NGOs as they claim it would restrict the ability of farmers to save and exchange seed, ignores the innovations of farmers and promotes the exploitation of landraces and naturally occurring organisms. In addition, NGOs asserted that granting IPRs would result in a rise in the price of seeds and have negative implications for biodiversity. NGOs differed in the emphasis they placed on the content of Farmers' Rights: while some saw it as a development right opposite to IPRs, others saw FRs as IPR type of rights. There was no unified position on the content of FRs, but together the various NGOs formed a powerful force demanding some form of FRs in India.

One of the most vocal NGOs against TRIPs is the *Research Foundation for Science, Technology and Ecology (RFSTE)* headed by Dr. Vandana Shiva. The Foundation was established by her in 1982 and is involved in research, advocacy and action for the protection and conservation of biodiversity, indigenous knowledge and people's rights[18]. Vandana Shiva is a prominent national and international activist against the IPR regime. Her organization has played a significant role in promoting Farmers' Rights and Community Rights in India. The initial drafts of the PPVFR in India were heavily criticized by the Foundation for not emphasizing Farmers' Rights and alternative proposals for the draft were made by the Foundation. Vandana Shiva has also filed petitions in Indian courts on various matters relating to IPRs. Navdanya was started as a program of the Research Foundation for science, Technology and Ecology (RFSTE) with the aim of biodiversity conservation to support local farmers, rescue and conserve crops and plants that are being pushed to extinction and make them available through direct marketing[19]

Gene Campaign is another prominent NGO involved in promoting Farmers' Rights in India. Established in 1992 by Dr. Suman Sahai as an

[18] www.vshiva.net
[19] www.vshiva.net

organization concerned about food and livelihood security, it currently has a presence in 17 states of India.[20] Gene Campaign has been one of the major NGOs that demanded that Farmers' Rights must be part of any *sui generis* legislation. Gene Campaign has played a role at the policy making level on Farmers' Rights and has also proposed an alternative to UPOV known as CoFAB (Convention of Farmers and Breeders).

The *M. S. Swaminathan Research Foundation (MSSRF)* is an organization that has a great deal of influence at the policy level with regard to Farmers' Rights. Prof. M S Swaminathan, the founder of the organization, is a renowned scientist and international figure in the field of Farmers' Rights. Dr. Swaminathan played a central role during the FAO debates that led to the birth of Farmers' Rights. M. S. Swaminathan Research Foundation (MSSRF) was registered in 1988 as a non-profit Trust.[21] The MSSRF submitted drafts of the legislation on breeder's and Farmers' Rights to the Government of India and also suggested that farmers be included in the title of the PPVFR Act. The MSSRF further submitted drafts for the rules to implement the Act. Therefore, the MSSRF has occupied the central position in terms of NGO influence over the legislation in India. The Foundation has also produced a *Manual on Farmers' Rights* that is to serve as a tool for implementing Farmers' Rights in India.

GREEN Foundation, headed by Dr. Vanaja Ramprasad, focuses on conservation of biodiversity. GREEN foundation activities include reviving traditional storage and exchange of seeds through community seed banks and the revival of traditional agricultural methods reintroduced in conjunction with modern organic techniques.[22] The GREEN Foundation is also active in lobbying and advocacy and has been able to have some impact on policies at the state level in Karnataka.

Kalpavriksh, an NGO that focuses on environmental issues, promotes biodiversity conservation. Mr. Ashish Kothari of Kalpraviksh has critically evaluated the PPVFR and raised awareness that the Act would not promote food security. The NGO was also part of the National Biodiversity and Strategy Action Plan initiated by the government.[23]

The Foundation for Biotechnology Awareness and Education (FBAE) headed by Mr. Devinder Sharma, was launched in 2001. It is a registered, non-profit, grass-root, society formed to support sustainable development through biotechnology, by promoting biotechnology awareness and educaion. It was established with a view to influence public policy makng to ensure safety and wider utilisation of biotechnology.

Society for Research and Initiatives for Sustainable Technologies (SRISTI), meaning creation, was born in 1993 essentially to support the activities of the Honey Bee Network to respect, recognize and reward the

[20] www.genecampaign.org
[21] www.mssrf.org
[22] www. greenconserve.com
[23] www.kalpavriksh.org/

creativity at grassroots. Based in the Indian Institute of Management Ahmedabad, SRISTI, headed by Dr. Anil Gupta, is a registered charitable organization that is devoted to empowering the knowledge rich-economically poor people by adding value in their contemporary creativity as well as traditional knowledge. The objectives were: systematically documenting, disseminating and developing grassroots green innovations, providing intellectual property rights protection to grassroots innovators, working on the in situ and ex situ conservation of local biodiversity, and providing venture support to grassroots innovators. SRISTI manages the Honey Bee database of innovations, and supports the publication of the Network's newsletter in three languages, English, Hindi and Gujarati[24].

Farmers' Lobbies

Here we highlight only the lobbies that have played a role in the policy debate on Farmers' Rights. How far these lobbies actually represent farmers' interests is a point of debate. These lobbies have also worked with NGOs to promote their positions. The *Shetkari Sangathan*, a farmers lobby based in Maharashtra established around 1979-80, is headed by Dr. Sharad Joshi, currently a Member of Parliament. The lobby essentially takes a pro-liberalization stance. *Federation of Farmers Associations,* headed by Chengal Reddy, is based in Hyderabad. In 2002 this lobby along with the industry body, the Confederation of Indian Industry (CII) launched the Indian Farmers and Industry Alliance (IFIA), a unique alliance between industry and farmers. *Karnataka Rajya Raitha Sangha* (KRRS) stands in opposition to these two organizations. Established in 1980 by the late Dr. M.D Nanjundaswamy, the lobby opposes the WTO and the extension of IPRs in agriculture.

Farmers

Although farmers are the main stakeholders in terms of the impact of Farmers' Rights, they have not been able to play an important role in influencing policy. It is important to probe the interests of farmers to understand how they can play a more significant role in the policy process. A comprehensive survey of farmers is outside the purview of this study, particularly in a country of the scale of India. We have undertaken a small study of farmers in villages about 50 kilometers from the city of Pune. Eight farmers from Uruli Kanchan were interviewed. Uruli Kanchan has a population of around 50,000 and the major crops grown there include grapes, sugarcane, and vegetables. One more farmer from Hyderabad was also interviewed, taking the total to nine farmers.

Government Bodies

India has a large bureaucratic system for implementing agricultural policies. We focus here on a few of the relevant bodies, as it is not possible to cover all of them in this study. Two recently established organizations are the focal points for Farmers' Rights in India. The *Protection of Plant Variety and Farmers' Authority* is the main organization entrusted with

[24] www.sRissti.org/cms/about_sRissti

the task of implementing the PPVFR Act. Established under the PPVFR Act in New Delhi, its Chairperson, Dr. Nagarjan was recently appointed in 2005. The *National Biodiversity Authority* is established under the National Biodiversity Act. The main task of this body is to implement the National Biodiversity Act. With its headquarters in Chennai, the chairperson of the Authority is Dr. Kanniyan.

The main governmental body to deal with agriculture in India is the *Ministry of Agriculture.* It comprises of three Departments, namely, Department of Agriculture and Cooperation, Department of Agricultural Research and Education/Indian Council of Agricultural Research, and the Department of Animal Husbandry and Dairying. The Ministry of Agriculture is given the mandate to undertake all possible measures to ensure timely and adequate supply of inputs and services such as fertilizers, seeds, pesticides, agricultural implements and also provides agricultural credit, crops insurance and ensures remunerative returns to the farmer for his agricultural produce.[25] The *Indian Council of Agricultural Research* (ICAR) is the apex body of the country for promoting agricultural research, education and extension education. It has the mandate to coordinate agricultural research and development programmes and develop linkages at national and international level with related organizations to enhance the quality of life of the farming community.[26] The body played an important role in the formulation of the PPVFRA Act and will also be actively involved in its implementation. Operating under the ICAR is the *National Bureau of Plant Genetic Resources* (NBPGR) which is the nodal organization in India for exchange, quarantine, collection, conservation, evaluation and the systematic documentation of plant genetic resources. It was established in 1976 in its present set up although the activities were initiated in 1946.[27] Another constituent of ICAR is *The National Academy of Agricultural Research Management* (NAARM) was established in 1976, in Andhra Pradesh, to promote management in agricultural research and education.[28]

The Council of Scientific & Industrial Research (CSIR) is the premier industrial R&D organization in India and was constituted in 1942 by a resolution of the then Central Legislative Assembly. Today CSIR with 38 laboratories is recognised as one of the world's largest publicly funded R&D organisations having linkages to academia, R&D organisations and industry. The CSIR has been actively involved in opposing patents on basmati and turmeric. It is also establishing a database on traditional knowledge with WIPO.[29]

Industry

Three industry lobbies can be noted here, the first of which is most significant on the Farmers' Rights issue. The *Seed Association of India*

[25] www.agricoop.nic.in
[26] www.icar.org.in
[27] nbpgr.delhi.nic.in/
[28] icar.naarm.ernet.in/
[29] www.csir.res.in/

(SAI) founded in 1985, was one of the initial promoters of plant variety protection in India. SAI aims to represent the seed industry at the policy making level by cultivating links with the government (Seshia, 2001). SAI played an important role in promoting plant variety legislation in India through activities such as organizing seminars. A significant meeting it organized was in 1989 which laid the grounds for a consensus on the need for plant variety protection in India (see Seshia, 2001). The *Confederation of Indian Industry* is one of the apex business associations in India with a direct membership of over 5800 companies.[30] With its reorganization in 1992, it emerged as an important industry body supporting IPR reform to comply with TRIPs. The *Federation of Indian Industry* (FICCI), established in 1927, is the largest and oldest apex organization of Indian business.[31] FICCI has established an International Institute of Intellectual Property Development (IIPD) which aims at promoting use of IPR as a strategic tool for business.

The following section provides a summary of the responses of various stakeholders to the survey.[32] We attempted to interview the major actors involved in the Farmers' Rights debate in India including stakeholders from all the categories mentioned above. However, the list of stakeholders does not claim to represent the entire range of actors that have played an important role in Farmers' Rights in India. Wherever possible, we have tried to fill this gap by referring to published material by stakeholders whom we could not interview personally. Forty-two interviews were conducted in the following categories:[33] six representatives of NGOs and farmer's lobbies; five from government; three industry representatives; nineteen experts and nine farmers. Interviews were conducted in various parts of India: New Delhi, Chennai, Hyderabad, Bangalore, Pune and Uruli Kanchan. The majority of these were conducted through personal semi-structured interviews along with a few that were conducted via e-mail. In addition, a group discussion with respondents from various categories was held at NAARM which provided for a lively exchange of views. Two questionnaires were formulated: one for experts, government, industry and NGOs and another for individual farmers which was translated into Marathi (see Appendix II for the questionnaires).

Stakeholders' perceptions on the contents of Farmers' Rights

The question regarding the content of Farmers' Rights yielded a variety of responses. Individual farmer responses were in stark contrast to the

[30] www.ciionline.org

[31] www.ficci.com

[32] The response to the survey was extremely positive. Respondents provided an enormous amount of information, viewpoints and suggestions. We have tried to summarize these here, but could not include all the responses in detail.

[33] These categories should not be considered rigid divisions. Some stakeholders belong to more than one category. Individual scientists and officers who worked for public sector or other organizations were categorized as experts rather than representatives of their organizations. Views of all respondents expressed here must be considered personal and not representing official positions of the organizations with which they are affiliated.

views of other stakeholders as the farmers emphasized more basic development rights. The question also led to debates on how to define the term *farmer*. Seed industry representatives stated that the farmer should be defined as a cultivator not as a businessman. Dr. Siddiq (ex Deputy Director General (CS) ICAR) also pointed out that referring to the farmer as a businessman could be dangerous. He added that it is difficult to draw the line between a farmer and a scientist and expressed concern about how this would affect farmer cultivators. The PVPFR Act provides a unique definition of farmer recognizing the farmer as a cultivator, conserver and breeder (Bala Ravi, 2005).

One view on the content of Farmers' Rights was that they should uphold the ***existing rights*** of farmers, i.e., benefits they currently receive should not be curtailed. Respondents from various groups pointed out that farmers' ***right to save and exchange seed*** should not be restricted. Dr. Rengalakshmi (Scientist, Swaminathan Foundation) added that in addition to existing rights ***support for inputs*** and ***promotion of farmers as conservers*** and managers of agro biodiversity were important. Dr. Pal (Scientist, NCAP) stated that in addition to traditional rights of saving and exchange, ***rights on genetic resources, rights to information***, and ***consumer rights*** should also be included in Farmers' Rights.

Leaders of farmer's movements and some experts emphasized the role of the government in ensuring farmer's ***access to technology***. Dr. Joshi (Founder, Shetkari Sangathan) stated that the right of farmers to have access to all technology should be included in Farmers' Rights. Mr. Reddy (Chairman, Federation of Farmers Associations) stressed that the government should play a role in subsidizing technology. Dr. Rao (Scientist, NAARM) felt that transfer of technology was more important than rights.

Some respondents felt that Farmers' Rights must include ***farmer's participation in decision making.*** As Dr. Narayanamoothy (Professor, Gokhale Institute of Politics and Economics) stated, 'Every policy should have a farmers' representative and they should be real farmers' representatives'. Dr. Deshpande (Professor, Institute for Social and Economic Change) pointed out that as there is no direct involvement of Farmers' groups in the Authority and it largely consists of bureaucrats, there exits the possibility of lack of consideration of Farmers' interests.

Those with experience and expertise in the field of Farmers' Rights emphasized a more ***comprehensive type of rights,*** at times ***contrasting it with UPOV***. Dr. S. Mauria (Assistant Director General, Intellectual Property Rights and Policy, Indian Council of Agricultural Research) points out that the subject of 'Farmers' Rights' emerged as a reaction to the emphasis on IPRs in WTO negotiations. Extensive debates in India led to several provisions in India's PPVFR Act including: 'Extant Varieties', 'Essentially Derived Varieties', 'Farmers' Rights', 'Benefit sharing' 'Compulsory License', and 'Researchers' Rights'. He further states that it is not the 'rights' but the 'availability of quality seed' to the poor farmers that is important. Some link FRs with ***food security and livelihood of farmers.*** Mr. Devinder Sharma (Forum for Biotechnology and Food Security) points out that the rights and obligations of companies must be regulated to check exploitation of farmers. NGOs emphasize a broad

range of rights including ***conservation, livelihood concerns, access to seeds, water*** and ***land rights*** as being important for Farmers' Rights.

Individual farmers focused on basic needs. As all the farmers we interviewed stated that they were not aware of Farmers' Rights, we first asked them what problems they faced in agriculture and how they thought Farmers' Rights could address these problems. The majority of the farmers pointed out the need for ***adequate electricity***. It was clear that the lack of power was a major hindrance in the area where we interviewed the farmers as power shutdowns for eight hours daily was the norm! Insufficient power supply is a chronic problem in several parts of rural India.

A number of farmers stated that securing ***guaranteed prices*** for their produce should be part of Farmers' Rights. Economic insecurity due to various factors such as climatic conditions, insufficient water supply, and lack of capital appeared to be major issues of concern. Mr. Reddy (Farmer, Andhra Pradesh) makes an interesting comparison when he states that farmers should be entitled to ***job security*** in the same manner as government employees. He further notes that the rising number of farmer suicides in India is due to lack of steady income. Mr. Kanchan (Farmer, Maharashtra) feels the government should pass a law to ensure a minimum rate for each crop. He points out that farmers don't receive the payment entitled to them from sale of their produce as middlemen get most of the profit. ***Reducing the role of middlemen***, ***providing means to ensure healthier crops, and provision of low interest rate credit*** are some of the factors they want included in FRs. Mr. (Farmer, Maharashtra) alluding to the growing disparities, stated that ***infrastructure must be equally divided between the rural and urban areas.***

Interesting questions on the basis of Farmers' Rights itself also emerged from discussions with the respondents. Dr. Chaturvedi (Fellow, Research and Information Systems) questioned whether Farmers' Rights would ultimately benefit just the large farmers and whether farmers really required such rights. He also pointed out the difficulty in defining Farmers' Rights in India where traditionally the emphasis has been on duties rather than rights. Asserting rights represents a cultural shift in India's policy regime, he noted. One civil servant pointed out, interestingly, that we use rights when we feel threatened. He questioned whether there was something that the farmers felt threatened by, which could be alleviated with these rights. He noted that the farmer is basically concerned with realization of produce, mimizing risk and reliable input, but that FRs appeared to be a pre-emptive move against future threat perceptions.

Three further specific questions on the content of FRs were posed to the respondents: 1) Should Farmers' Rights be viewed as IPRs? 2) How should benefit sharing be established? 3) Should farmers have rights to freely sell seed?

Should Farmers' Rights be viewed as IPRs?

It was clear that this question was a very difficult one to answer for the respondents. Most of them did not give a clear 'yes' or 'no' response, and some of them simply evaded the question. As farmers were asked the

question in a slightly different manner, their responses are summarized separately.

Only five respondents (four experts and one representative from an international association) clearly indicated that ***FRs could be viewed as an IPR type of right***. Dr. Despande (Professor, Institute for Social and Economic Change) stated, 'Farmers Rights' should be dealt as IPRs rather than reward mechanism. The functioning of the reward mechanism may be *ad hoc* and cannot be transparent'. Dr. Chaturvedi (Fellow, RIS) stated that we have no other option but to view FRs as IPRs, but that this approach has its own difficulties as there are no precedents to view Farmers' Rights as IPRs. Dr. Kalpana Sastry (Principal Scientist, NAARM) pointed out that IPRs as rewards would not lead to the furthering of rights.

Some of the respondents felt that if ***there was innovation, then FRs should be seen as IPRs***, while others added that in addition to IPR type rights, FRs should also encompass other aspects such as conservation. Dr. Rengalakshmi (Scientist, Swaminathan Foundation) noted that the system has to be developed in the context of farmers. She elaborated that if it is a new variety, then it should receive necessary legal rights, and if an individual farmer is involved in managing traditional genetic resources, it is essential that the farmer is recongnized within the community. According to her, ***Farmers' Rights should serve to motivate farmers*** and can be in the form of financial support. Dr. Pal (Scientist, NCAP) expressed that FRs are 'IPRs plus ***sustaining traditional seed system and conservation of biodiversity***'**.** Dr. Joshi (Founder, Shetkari Sangathan) noted that while FRs should be seen as IPRs if innovation exits, there should be a deliberate strategy to enable the creation of new varieties, and that discovery and innovation should not be confused. Dr. Mashelkar (Director, CSIR) stated that, '...incentives in the form of the Gene Fund only affirm these rights as reward mechanisms. Therefore, we not only need to recognize the traditional knowledge of farmers through mechanisms such as access and benefit sharing but at the same time we need to encourage and promote IPRs for new innovations.'

Eight of the respondents emphasized that ***Farmers' Rights were different from IPRs.*** Some respondents stated that Farmers' Rights are ***collective rather than individual rights***. Dr. Vandana Shiva (Director, Research Foundation) pointed out that IPR is a private right, preventing others from use but that FRs should be multidimensional including rights to conservation, biodiversity, producers, right to affordable input, equity, justice, and foremost ***right to access to affordable high quality reliable seeds***. She also pointed out that FRs are much broader than IPRs as they are collective rights as farmers are groups not individuals. Dr. S. Bala Ravi (Advisor (Biodiversity), M.S. Swaminathan Research Foundation) felt that Farmers' Rights are dissimilar to the western concept of IPRs. According to him, Farmers' Rights, particularly the right on seeds, are fundamental to the generation and conservation of genetic diversity. The innovation of farmers in the improvement of crop plants is largely done at community level and over a period of time with incremental innovations, he states. The western system of IPR, he notes, promotes monopoly of the innovator on few varieties and market competition. According to him,

this eventually decimates genetic variability, enhances genetic uniformity and vulnerability, and endangers the agricultural system. Few respondents felt that Farmers' Rights initially emerged as a reaction to IPRs, but FRs need not continue to be confined to IPRs. Dr. Suman Sahai (President, Gene Campaign) pointed out that the current Indian law is basically an anti-IPR legislation and that its context must be widened.

Some respondents pointed out the difficulties in establishing FRs as IPRs. Ms. Anuradha (Lawyer, New Delhi), noted that the PPVFR Act establishes that farmers can apply for a plant breeders right in a similar manner as breeders, but satisfying each of the requirements to qualify as a breeder may not be practical for many farmers in India without external support and guidance. Few respondents felt that there was limited scope for farmers to innovate, particularly with the growth in new technology. Indigenous innovations may not always be relevant to modern technology. One respondent also pointed out that the concept of rights was based the individual, not communities, and community based rights would be difficult to enforce.

Some respondents asserted that the purpose of FRs must be kept in mind in defining Farmers' Rights. Mr. Ashish Kothari (Kalpraviksh) states that FRs need to viewed from the point of ***security of the farming community*** and that the rights should be set up without compromising the ***traditional community spirit.*** According to one respondent, we should have Farmers' Rights because farmers are impoverished and ***to increase productivity and incomes.*** Sangeetha Udgaonkar (Legal Consultant, IPR) provides interesting insight in stating that, 'I believe that Farmers' Rights should be viewed as an articulation of the Fundamental Rights of the citizen that are generally found in the Constitution of the country. They are part of the citizen's right to practice any profession or occupation without unreasonable restriction. They should be automatic, and the fact that they have to be set out in so many words shows that Plant Breeders' Rights (as presently understood) give breeders unreasonable powers that encroach on farming communities.'

For farmers, the question was posed slightly differently by asking about 'ownership rights' over varieties produced by farmers rather than IPRs, as many were not familiar with the term. All the nine farmers that were interviewed stated that farmers should receive some form of ownership rights. Mr. Dadasaheb (Farmer, Maharashtra) stated the farmers should have ownership rights over their varieties because companies take the original material from farmers and sell them at a higher rate. Ms. P. Kanchan (Farmer, Maharashtra) responded that farmers should definitely have ownership rights over their varieties. She explained that middlemen raise the price of fruits/vegetables and sell it at higher prices to consumers, whereas farmers receive only one-fourth of that price. Mr. Tupe (Farmer, Maharashtra) contradicting some prevailing opinions about identifying farmer innovators, pointed out that even in jointly owned family farms, it is possible to know who has evolved a new variety as each farmer is given a designated plot. Mr. Kanchan (Farmer, Maharashtra) stated that farmers should have ownership rights, but that it was not easy to produce new varieties, and that if money and opportunity were provided, this could enable farmers to innovate. But he also emphasized that

farming in India even today was not a profit making venture. He also asserted that innovation is not solely dependent on education, indicating that the poor, uneducated farmer should not be ignored. He stated that ample water and all other resources are required for a good harvest.

How should benefit sharing be established?

The respondents were asked to state whether benefit sharing should be facilitated through a central fund by the government, negotiated between farmers and corporations directly or through other mechanisms. As farmers may not be familiar with the term benefit sharing, they were asked whether compensation should be paid when companies use farmer's seeds/material to produce improved varieties.

NGO representatives and experts had varied opinions on who should be the agency to facilitate benefit sharing, while most of the farmers felt that the government must play an active role. Six of the respondents (three experts, one leader of a farmer's lobby, a representative of industry and a respondent from UNCTAD) stated that the ***government must be the primary agency*** to facilitate benefit sharing. The reasons for this included that farmers are not able to negotiate or that it would be impractical on a private individual basis. Dr. Kalpana Sastry (Principal Scientist, NAARM) stated that the implementation of benefit sharing should involve all the stakeholders, be handled by the government, and kept outside the purview of international agencies.

Sharply divergent views emerged on benefit sharing. Two of the respondents felt it could be ***negotiated between the company or organization and the farmer.*** Dr. Rao (Scientist, NAARM) felt that the benefit sharing could be negotiated between the farmer and a corporation and that government could step in only if public sector is involved. Dr. Narayanamoothy (Professor, Gokhale Institute) stated that India has not had a very favorable experience with establishing contracts with companies. Firms may not always honor the contract with farmers and in some cases in India companies have not paid the agreed upon price to farmers, according to him. One expert felt that negotiations for benefit sharing between a company and farmers wouldn't be workable and while NGO involvement was essential, it should not be left to the government.

Ms. Udgaonkar (Consultant, IPR) asserted that an ***independent authority*** was required to manage benefit sharing. She noted that this authority should be able to assist farmers, corporations or anyone interested in benefit sharing and that it should have the power to act on behalf of the farming community in cases where the community has not been clearly identified. She also stated that benefit sharing should not be restricted to money only but could take other forms, such as training in breeding techniques or conservation schemes. One respondent from the government suggested that benefit sharing could be facilitated through ***co-operatives*** or Krishi Vigan Kendras (government agricultural extension agencies). Dr. S. Bala Ravi (Advisor (Biodiversity), M.S. Swaminathan Research Foundation) suggests that perhaps the *Panchayat* (local government) bodies could represent communities wherever specific community or communities cannot be clearly identified for any of the entitlements

provided in India's Act. He points out that there are also instances of very popular farmers' varieties being cultivated across State or national boundaries which makes it difficult to trace their origin. The case of Basmati, which is a farmers' variety is a good example according to him. He states that there are also situations where we indeed do not realise the economic potential of farmers' varieties. For example, he notes, only during the tsunami in 2004, the importance of saltwater tolerance present on some of the farmers' varieties of rice came to be known, even to the rice scientists. He notes that it is better if benefit sharing is facilitated through a central mechanism such as the National Gene Fund with the help of an expert committee under the Authority with well defined criteria and built in flexibility to enhance fairness, equity and efficiency. Here, he states, an honest declaration of the pedigree of registered varieties to the limits of farmers' varieties/land races assumes importance. While he admits that with increasing complexity in breeding involving multiple parentage and lengthy pedigree of modern plant varieties, there can be genuine difficulties in determining benefit sharing, he feels that award of benefit should not be too complex.

Benefit sharing should be done on a ***collective rather than individual basis*** according to many respondents. According to some respondents, no farmer had contributed alone to innovation. Respondents also felt that conflicts would arise if rewards were granted to individual farmers. According to Dr. S. Nagarajan (Chairperson, Protection of Plant Variety and Farmers' Authority), the farming society at large would be given rewards under India's law and not necessarily any individual farmer. He stated that 'The community of farmers who developed such variations and protected the field level diversity would be recognized, encouraged, promoted and appreciated under the provisions of the Gene Fund (…) that reward would be to increase the efficiency of socially relevant systems which they badly need (…)'. Dr. Sahai (President, Gene Campaign) pointed out that the Gene fund should not be used for administrative purposes. She suggested that part of the Fund could be utilized for conservation and for the rest there could be a system of bidding such as exists for research grants. She also pointed out that communities who have conserved should be the beneficiaries. In terms of rewarding farmers, Dr. Sahai explained that in a study conducted by Gene Campaign, farmers asked for everything which they found lacking (electricity, water, land) and this should be respected.

The ***difficulties in operationalizing benefit sharing*** were expressed by various respondents. The fact that communities were dispersed meant that it would be difficult to identify beneficiaries or even to define or deal with communities. ***Documenting as a critical activity*** linked to benefit sharing was emphasized by some respondents. Documentation is considered important for benefit sharing as it would help to identify communities who play an important role in conservation, and provide a written record of communities' resources. Dr. Lalitha points out that both central fund and deals between farmers and corporations have their own merits and demerits in terms of benefit sharing. But the first initiative towards this according to her, is to create a database to list the local land races. Dr. S. Bala Ravi (Advisor (Biodiversity), M.S. Swaminathan Research Foundation) notes that unless the Government of India provides a big

corpus fund to the National Gene Fund, it is unlikely to generate sufficient resources for effective intervention in the conservation of agricultural biodiversity in the country. At the same time, he feels, it is important that much of the resources trickling into the Fund have to be utilized to promote conservation, including reward and recognition to eligible farmers and communities. Ms. R. V. Anuradha (Lawyer, New Delhi) stated under the PPVFR Act, there is no obligation on the Authority to investigate and proactively identify the farmers/communities who would be entitled to benefits from a registered variety. Instead, she points out, the Act places an unrealistic burden on the farmer to review the notice of registration published by the Authority, and then make a claim for receiving benefits.

A few respondents were sceptical of the concept of benefit sharing. Dr. Sharad Joshi (Founder, Shetkari Sangathan) felt that seeking rewards for past innovations or activities was impossible, and that National Gene Fund would benefit only the self-seeking NGOs that claim to have expertise in the field. Dr. Vandana Shiva (Director, Research Foundation) stated that the Gene Fund idea emerged a long time ago when IPRs in agriculture didn't exist. In context of biopiracy, she claims that benefit sharing is illegal and should be discontinued. A representative of the seed industry stated that farmers do not give their material free of cost so there was no need for benefit sharing. Mr. Devinder Sharma (Forum for Biotechnology and Food Security) asserted that benefit sharing is a dead concept, and that the rewards granted under it were so meager that it actually amounted to exploitation.

A majority of the farmers expressed that some compensation should be given to the farmers when companies access resources from them and that the government should play an active role to facilitate this process. Mr. Kanchan (Farmer, Maharashtra) noted that in other countries, farmers are given royalty, but that in India it would be difficult to facilitate these type of payments. Ms. Pratibha Kanchan (Farmer, Maharashtra) emphasized that there should be no middlemen. Mr. Reddy (Farmer, Andhra Pradesh) asserted that contracts between companies and farmers need to be made legally effective as they are sometimes not adhered to or the companies attach many conditions.

Should farmers be allowed to freely sell seed?

Experts and government representatives had a variety of opinions on the issue, and some referred to India's law as providing farmers the right for farmers to sell non-branded seed. NGOs and farmers were not asked this question as it was clear that they strongly support farmer's rights to sell seed.

Some respondents agreed that there should no restrictions on rights of farmers to sell seed. Ramaswami (Professor, Indian Statistical Institute) stated that we have no option but to allow the farmers this right as it was impractical to consider restricting right to sell seed. One respondent pointed out that ***agriculture in India is an issue of livelihood*** rather than a commercial business so there should be no restrictions on any benefits. From market economy point of view, according to Mr. Vishal Katariya (IPR Chair, University of Pune), we cannot have two different positions

for companies and for farmers, so the farmer should be able to sell seed. Dr. S Bala Ravi (Advisor, Biodiversity, Swaminathan Foundation) stressed farmer's rights to sell seed in the manner they had been traditionally doing.

Seed industry representatives and one expert were in favor of allowing ***exchange of seeds but not the right to sell.*** Dr. Kumar (Director, Prabhat Agri Biotech Ltd.) pointed out, interestingly, that the right to sell seeds would actually benefit middlemen and traders and it would actually provide space for them to exploit farmers. Dr. Chaturvedi (Fellow, Research and Information Systems) also pointed out the problem of privileges going to those who weren't farmers. He stated that farmers should not be allowed to sell seed and a certificate should be required for selling seeds as this would check the problem of spurious seeds. Dr. Narayanamoothy (Professor, Gokhale Institute) claimed that there are many restrictions on farmers in practice. He elaborates that in India there are barriers between states which prevent farmers from selling from one state to another. Policies are inconsistent, for example, the same crop is at times allowed for export and other times restricted (Dr. Narayanamoorthy).

Some of the respondents stated that farmers had a ***right to sell seed but with restrictions.*** Dr. Kalpana Sastry (Principal Scientist, NAARM) stated that farmers should be allowed to sell, use, and exchange seed but with restrictions depending on the crop and that the value of the crop in terms of trade, sustainability and biodiversity implications. Dr. Lalitha (Associate Professor, Gujarat Institute of Development Research) claimed that while restrictions would affect access to technology, some restrictions may be imposed on large-scale farmers but even this may be difficult to implement. According to Ms. Sangeetha Udgaonkar (Consultant IPR) the farmer should be restricted from any kind of commercial sale of the IPR protected seed provided that it is the original seed that he bought from the breeder. Regarding the produce of his farm he should be allowed to sell them as second generation or third generation seeds. However, she asserted that giving a right of control over future generations of the same seed to a plant breeder is wrong, once the seeds have been sold, irrespective of whether the breeder is a seed company or farmer.

Stakeholders' perceptions on the achievements with regards to Farmers' Rights in own country:

Fourteen respondents comprising NGO representatives and experts explicitly mentioned India's law as the most significant achievement with regard to Farmers' Rights. Dr. Sahai (President, Gene Campaign) referred to India's law as a '*path breaking legislation',* the only one in the world with Farmers' Rights that even incorporates elements of the CBD. According to Dr. (Director, CSIR), 'The Indian Act is one of the first of its kind to grant formal rights to farmers thus increasing their *self-reliance* (emphasis mine). The Indian Act specifies public interest requirement and compulsory license provisions while taking care of breeder's rights and thus succeeds in striking a balance between farmers and breeders rights. Benefit sharing and constitution of Gene Fund are novel features

of the Indian Act. The Act also provides protection to essentially derived varieties.'

Some respondents emphasized the role of civil society, the awareness regarding farmer's concerns and the enormous debate and discussion that have taken place in India on Farmers' Rights. Dr. Nagarajan (Chairperson, Protection of Plant Variety and farmers' Authority) expressed that in India the discussion about Farmers' Rights has been going in for about eight years, and this has created awareness and stimulated people. He also noted that progressive farmers are being identified by the National Innovation Foundation and that NGOs have become active in biodiversity conservation. Dr. Chaudhary (National Coordinator, ISAAA) stated that the process of establishing Farmers' Rights led to a great deal of discussion in Parliament on the status of the farmer, perhaps even more than on any other seed bill. According to Ms. Sangeetha Udgaonkar (Consultant, IPR), 'A major achievement has been to enact the Farmers' Rights provisions into law. Thus the debate has not been left at the stage of discussions but has crystallized into legally enforceable rights being enacted. This has been achieved because of considerable participation by civil society in the drafting process, and because the members of the legislature were open to and willing to accept suggestions from the public. The Farmers' Rights provisions in India have resulted in an alternative model of plant variety protection that reflects a developing country perspective and is available to other countries that are required to enact plant variety protection legislation.'

Specific aspects of India's legislation were focused upon by some of the respondents. Dr. Deshpande (Professor, Institute for Social and Economic Change), stated that Art. 39 (4) of the law which states that farmers shall be allowed to save, use, exchange his/her farm produce is an important clause that should be noted by many, including researchers. Dr. Lalitha (Associate Professor, Gujarat Institute of Development Research), stated that protection granted to extant and farmers varieties is very important in protecting Farmers' Rights and that these two kinds of varieties are not protected anywhere else.

The framing of India's law on Farmers' Rights, many agreed, was an achievement, but the ***implementation of the law would reveal its real impact***. Dr. Kalpana Sastry (Principal Scientist, NAARM) said it was too early to speak about the benefits of India's law. Dr. Bala Ravi (Advisor Biodiversity, Swaminathan Foundation) stated that the Act provides few other important rights to farmers but with regard to farmers' right on selling seeds, the Act has neither granted the farmers anything new, nor taken away what they had been practicing traditionally. Dr. Narayanamoorthy (Professor, Gokhale Institute) felt that we haven't achieved much in India because ***farmers and even academicians don't even know about the Act.*** He stated that it has not penetrated into the farming community because there is ***no farmers' movement***. Ms. R. V. Anuradha (Lawyer, New Delhi) pointed out that India's Act was more for breeders and that for farmers it may only be of nominal value. She stated that the legal framework and intent were there, but that the real test of Farmers' Rights would come in its implementation. Mr. Abhijit Das (Senior Trade Officer, UNCTAD) called the Act an ***abridged form of Farmers' Rights***

which fulfilled more of India's multilateral obligations rather than being of value to farmers domestically.

Some NGO representatives pointed out the enormous opposition in India against the law on Farmers' Rights. The enactment of this law, therefore, is a major step. Dr. Vandana Shiva (Director, Research Foundation) said although the law was not perfect, at least it provided a definition of Farmers' Rights and stalled opposition against implementing Farmers' Rights. Dr. Sahai (President, Gene Campaign) pointed out that the seed industry had ensured that the law was put on hold after it was passed in Parliament, but that NGOs had managed to put pressure for its enactment which came in the form of a notification in November 2005.

Scepticism regarding India's achievements in establishing Farmers' Rights also exists. Seed industry representatives, for example, did not feel that India had accomplished much. One farmer leader stated that although India's law introduces some discipline in IPRs, he was not happy with India's legislation because it only established authorities. These authorities, he pointed out, work in an adversarial court hearing method, by which their main function is to screen applications for IPRs or for accessing bio-resources, enable a mechanism for objections to be raised against any applications, and based on this, determine whether to grant or reject applications. Mr. Ashish Kothari (Kalpraviksh), felt that from a narrow point of view looking at global trends we could say India is the only one with Farmers' Rights in its PVP law, but he was sceptical on whether it would really help farmers and considered it only a half way step.

Stakeholders' perceptions on barriers to Farmers' Rights in own country

One of the main barriers identified by the stakeholders was *lack of awareness and knowledge about protecting Farmers' Rights*. An official with the public sector graphically illustrated farmer's lack of awareness in India. A recent government survey found that less than 10% of the farmers had heard of the WTO, he noted. Regarding Farmers' Rights he asks, how can a farmer act upon his rights when he/she doesn't even know about those rights? Even supposing that a farmer is aware of his/her rights, it would not be easy for him/her to exercise his/her right as there is no organization through which s/he could do so. He pointed out that only 2.2% of the farmers are members of any farmer's organization according to a study by the government.

Mr. Das (Senior Trade Officer, UNCTAD) also notes that while some farmers' groups may be aware of the WTO negotiations, poor farmers are not. Related to this is the issue of ***farmer's representation and involvement*** in policy making. Stakeholders pointed out that adequate representation of the farmers in the policy making bodies has not been provided for. Identifying farmer's representatives is also not an easy task, particularly when several NGOs or lobbies claim to represent them. It is also interesting to note that some leaders heading farmer's lobbies of large scale farmers expressed skepticism of NGOs and stated that farmer's groups rather than NGOs should be involved in negotiating for Farmers' Rights.

A second aspect that various respondents pointed to was ***difficulties with implementation***. Dr. Despande (Professor, Institute for Social and Economic Change) notes that India's law on FRs doesn't address important issues such as the role of State governments. He notes that while ***the national government is given powers to establish the Farmers' Rights Authority, many issues need to be sorted out at the state level and agriculture is a state subject***[34] Dr. Chaudhury (National Coordinator, ISAAA) felt there were limitations in enforcement of the Act and he questioned, will the state listen to what the centre says? Dr. Masheklar (Director General, CSIR) stated, '(…) problems in implementation may involve identifying claimants for benefit sharing and getting breeders, most likely multinational companies, to reconcile to fair use of seeds'. Two experts noted the barriers of mindset in implementing Farmers' Rights, 'with the conviction and belief that farmers deserve to be protected' (Dr. Kalpana Sastry, Principal Scientist, NAARM). Dr. Nagarajan (Chairperson, Protection of Plant Variety and Farmers' Authority) notes that one barrier is to translate the law into an acceptable transparent mechanism acceptable to society. Dr. Ramaswami (Professor, Indian Statistical Institute) highlighted the problem of *transaction costs*. He noted that the definition of rights in India's law shouldn't be so structured as to make economic activity itself impossible. Requiring permission for each action would lead to very high transactions costs, he asserted. One farmer representative noted that ***existing agricultural laws are not working effectively***. Dr. Lalitha (Associate Professor, Gujarat Institute of Development Research) adds that it is difficult 'to establish suitable local authorities that will enforce and monitor protection'. The difficulty of enforcement of the legislation was also pointed out, particularly, according to one expert, in a country with ineffective institutions.

A third barrier identified focused on ***vested interests or corruption***. Corruption, either due to government intervention or the role of middlemen, could form a barrier to implementation of the Act. The existence of informal cartels operating even in vegetable markets was pointed out. It was also pointed out that groups claiming to represent farmers' interests are not easy to judge as there is a very diffused political interest. Pressure from MNCs and commercial interest who could oppose FRs was noted, but others felt that as the Indian seed market is large enough for all different types of players, such opposition should not arise.

Farmers' inability to assert their rights was another barrier. There are enormous legal obstacles for farmers to defend themselves. The law in India is based on farmers asserting their rights. As Ms. Sangeetha Udgaonkar (Consultant, IPR) points out, 'The farmer/community must apply to the Authority for benefit sharing. This assumes that they are aware than an application for a plant breeders' right has been made. The farmer has no means of obtaining this information except by obtaining access to the gazette where the publication has been made. The farmer/community would also have to be literate and alert and understand the meaning of the publication in order to make a benefit sharing application. Such an appli-

[34] Under India's federal structure, powers are divided between the centre and state in various fields. Agriculture comes under the jurisdiction of the states.

cation might also be burdensome for a farmer to undertake.' Dr. Lalitha (Associate Professor, Gujarat Institute of Development Research) states that while commercial breeders may be successful in getting their varieties protected under the Act, farmers may not be able to do so as they may not be able to meet the criteria of distinctness, uniformity and stability.

The impact of IPR laws, TRIPs and other seed laws were stressed. In addition to patents and other laws, the Seed Bill proposed (but not passed) by the Indian government was particularly mentioned as a barrier to implementation of FRs. According to Dr. Suman Sahai (President, Gene Campaign), the Seed Bill could counter everything in the Farmers' Rights law because the Seed Bill stipulates a system of registration contrary to farmer's interests. In addition, while the Authority decides compensation to be granted to farmers, the Seed Bill proposes that the process must go through the district courts. Seed industry representatives, however, disagree with this and feel the Seed Bill is a progressive step that specifies that farmers and breeders must meet certain quality standards. The attempts to establish UPOV as an 'effective' *sui generis* system in TRIPs was also mentioned as a barrier. Lack of international norms was pointed out as a barrier because unless the developed countries also initiate such legal mechanisms, national legislations have limited use due to their international implications. (Dr. Mashelkar, Director, CSIR)

Legal conflicts could result from the regime which could be a barrier. It would be difficult to resolve the issue of counterclaims for varieties under the Act as there would be many applications for one variety. Dr. Satheesh Kumar (Director, Prabhat Agri Biotech Ltd.) questioned how the issue of multiple applicants for each variety could be resolved. Dr. Siddiq (ex Director General, ICAR) states that ***national interest is not equivalent to farmer's interests*** but that we fought issues like Basmati at the national not farmer level. ***It is also difficult, as pointed out by some respondents, to identify the communities who are responsible for innovation and conservation of varieties***.

Several other barriers were also highlighted. Some respondents drew attention to the ***divide between large and small farmers that exists in India***. Dr. Chaturvedi (Fellow, Research and Information Systems) elaborated on the dangers of placing farmers in one category as there are so many different types of farmers. For example, he notes, some farmers in India are linked directly with the value chain right up to supermarkets in the West such as Sainsburys. Dr. Deshpande (Professor, Institute for Social and Economic Change) pointed out that the ***Act doesn't provide sufficient deterrents for eliminating the sale of spurious seed***. Dr. Shard Joshi (Founder, Shetkari Sanghathan) felt that there was no point in creating new administrative mechanisms for clearance of new varieties and that even the existing machinery should be confined to effects on environment and human/animal life. As far as the farmers are concerned, according to him, they would decide the economic worthwhileness of using any variety. Dr. Tiwari (Director, NAARM) pointed out that the clause in the PPVFR for declaring expected performance of a variety will come down very heavily on public breeders.

According to Dr. Rengalakshmi (Scientist, Swaminathan Foundation), in the 70s Universities had a close relationship with traditional communities as they were one of the main sources for germplasm. Today, this is shifting as the institutions get most of their material from both national and international sources. Public sector is also not supporting conservation and management of traditional varieties enough according to Rengalakshmi. She narrated an interesting example where recently, after the tsunami hit South India, new varieties were damaged but traditional varieties (about 7-8 paddy varieties) survived, yet the government was supporting other varieties and not the traditional ones.

Stakeholders' Perceptions on overcoming the barriers to promoting Farmers' Rights in India

The stakeholders were asked to point out ways in which the earlier barriers they identified could be overcome. The role of the government, particularly the Authority established to implement Farmers' Rights, was considered very important for removing barriers to FRs. Stakeholders pointed out that the Authority must initiate a process of taking the message to the people and that the government could play an important role by demystifying the process, disseminating information, and assessing whether civil society groups were accurately representing farmers interests.

An interesting suggestion for disseminating information by Mr. Abhijit Das (Senior Trade Officer, UNCTAD) was to demonstrate the benefits of IPRs through the use of media such as All India Radio. According to Ms. Sangeetha Udgaonkar (Consultant, IPR), 'The Authority should itself inquire into the rights of the relevant farmers/community based upon the disclosure of origin requirements in the application for plant breeders' rights. It should ensure that, in addition, the news of the application being made is advertised extensively in that area, in addition to the regular method of publication. The farmer/community should be permitted to make their benefit-sharing application in their own local language, in the form of a simple letter sent to the Authority, instead of filling in forms. Relevant details can, if necessary, be gathered by the Authority by making an inquiry for the purpose of determining benefit sharing.'

Various suggestions were also given emphasizing the role of communities and research institutions. Dr. Sachin Chaturvedi (Fellow, Research and Information Systems) noted that research needed to be restructured and agricultural universities should establish linkages to share farmer's experiences. At present, he notes, the exchange was only one way focusing on dissemination to the farmers. Dr. Bharat Ramaswami (Professor, Indian Statistical Institute) suggests that documenting farmers' knowledge would help to decide what IPRs not to grant. He suggests that one mechanism for distributing resources could be to levy an IPR tax on companies which could be a fraction of their turnover and this could be channeled back into R & D. However, he points out, transaction costs must be considered and there is a need to think about small companies. Dr. Bhagirath Chaudhary (National Coordinator ISSAAA, South Asia) states that it is important to reduce interest rates on loans to farmers and also monitor the utilization of such loans. Dr. Lalitha (Associate Profes-

sor, Gujarat Institute of Development Research) suggests that there should be a relaxation on criteria for registering farmer's varieties.

Dr. Mashelkar, head of the CSIR, described in detail WIPOs and India's initiative in setting up a traditional knowledge database. WIPO's Inter-Governmental Committee on Intellectual Property Rights, Genetic Resources, Traditional Knowledge and Folklore established in 2000, has held eight meetings to date, he notes. One of the objectives of the Committee is to establish international binding/non-binding, *sui generis* legal instruments for protection of traditional knowledge, but, according to him, though there is progress, international consensus is yet to be awaited. He reveals that India has established a Traditional Knowledge Digital Library for the Indian system of medicines with 10 million pages of information and through this project India has been able to make an impact on the International Patent Classification (IPC) System by extending to 200 the sub- groups under IPC on medicinal plants. India has also developed a Traditional Knowledge Resource Classification for Ayurveda, Unani, Siddha and Yoga, which has about 20,000 such sub-groups and WIPO has agreed to link this with the IPC, he states. According to him, this will ensure high level of quality examinations on all patent applications based on traditional knowledge. He suggests that it will be useful if similar classifications systems get developed in the area of bio-diversity which should subsequently be integrated and/or linked to IPC so as to enhance the quality of examination of patent applications which are based on genetic resources.

Stakeholders were asked to identify ways in which farmers could be involved in the process of establishing Farmers' Rights in India. Many of the respondents expressed that it is important to involve farmers and this required educating the farmers about their rights. Dr. Mashelkar (Director, CSIR) emphasizes, 'The farming communities have a storehouse of knowledge about their flora and fauna, their habits, habitats and the like and it is only logical and in consonance with natural justice that they are given a greater say as a matter of right in all mattes regarding the study, extraction and commercialization of biodiversity.' Dr. Lalitha (Associate Professor, Gujarat Institute of Development Research) notes, 'Farmers can be involved in the process of establishing farmers rights provided the capacity building of the farmers in making them aware of their rights and regulations takes place. This can go a long way in checking acts of bio-piracy and in recognizing farmers varieties and extant varieties.'

Establishing farmers' lobbies is also important, and this requires mechanisms to ensure genuine farmer representatives are promoted. As Dr. Deshpande (Professor, Institute for Social and Economic Change) elaborates, 'It is necessary to recognize a few farmers' groups across the country and representatives of these groups could be called for discussions. These representatives should be genuine farm leaders and not affiliated strongly to political parties. FAO can have a Farmers' Rights website to disseminate the information across globe.' Ms. Sangeetha Udgaonkar (Consultant, IPR) further adds, 'The views of the farmers should be actively canvassed by neutral persons (who do not belong to seed companies or to farmers' unions). The farmers would need to be first educated in the meaning of IPR and the implications of these different rights

(not just patents and plant breeders' rights – trademarks on seeds, for example, would also be relevant) and then asked whether they personally would have any problems. Such problems could be addressed in the framing of Farmers' Rights. The kind of rights and their scope may vary in detail from country to country.' Dr. S. Mauria (Assistant Director General, Intellectual Property Rights and Policy, Indian Council of Agricultural Research) pointed out that there is need for having a small group of people who really understand the manner in which the concept of 'Farmers' Rights' should be expanded. He recognized the difficulties in rewarding farmers though provisions of benefit sharing in the Indian law, which again, according to him, is a reason to select a few people really committed to the cause of realization of Farmers' Rights. One respondent stated that as farmers are not aware of legal issues it is better to leave it to the leaders of the farming community of members of Parliament.

Some examples of farmer's involvement in other issues that have relevance for Farmers' Rights were also mentioned. Dr. Narayanamoorthy (Professor, Gokhale Institute) narrated the mobilization of farmers on the issue of water rights. Here, farmers came together to negotiate when they realized it would be in their interests. Similarly, he points out, farmers would slowly get involved and coordinate their efforts once they understood that Farmers' Rights is in their interest. Mr. Abhijit Das (Senior Trade Officer, UNCTAD) also provides an interesting example of the use of the media by UNCTAD to identify farmers for discussions on trade matters. He explains that UNCTAD first located farmers groups by placing an advertisement in newspapers. The response to this, he adds, was quite remarkable as various farmer groups contacted them soon after the advertisement was released. The meetings that were held with farmers who contacted UNCTAD were also quite well received, particularly as they tried to include discussions in local languages.

Stakeholders were also asked to comment on the role of the public sector in establishing Farmers' Rights, and whether they perceived problems if the public sector became a major holder of IPRs in agriculture. The important role of the public sector was agreed upon by the respondents. According to Dr. Mashelkar (Director, CSIR), 'Though there has been considerable investment for agricultural research from the public sector, the contribution is decreasing as compared to private sector investment, especially in developed countries, who otherwise are supporting through agricultural subsidies, which is an issue of concern to farmers in developing countries. Public sector funding of crops has to be enhanced for effective reach to farmers in developing countries.' If the public sector does not play an important role, diversity would be lost, as the private sector would focus only on areas where profit was assured. Ms. Sangeetha Udgaonkar (Consultant, IPR) explains, 'It is possible the the public sector would become just like the private sector in terms of seeking maximum personal financial benefits out of research and distribution of seeds. This could result in a shift of emphasis from what is most needed for the country to what is most profitable or marketable for that individual or institution. This could be controlled, to a substantial extent, by allocating public sector research funds according to national priorities.'

Public sector's handling of IPR is a debatable topic. While some stakeholders such as Dr. Vandana Shiva (Director, Research Foundation) feel it would be dangerous for public sector to acquire IPRs, other respondents felt it may be necessary as a preventive measure. Dr. Ramaswami (Professor, Indian Statistical Institute) explains that IPR may be necessary as a defensive measure for public sector institutions (to prevent others from patenting). However, he emphasizes, it should not be a means of revenue as it is financed by the taxpayer and should be available to all. Dr. S. Bala Ravi (Advisor (Biodiversity), M.S. Swaminathan Research Foundation) notes that in the public sector needs to have a policy different from private sector on protecting plant varieties. He feels that the public sector should ensure that the additional financial burden required for establishing and transacting an IPR protected technology is not passed on to farmers, making the technology inaccessible to them. The public sector, he advises, should rather strategise for easy access and assimilation of technology to farmers. However, he notes, whenever the public research bred varieties are exported, adequate care to control its legal right has to be taken under instruments like a Memorandum of Understanding or Material Transfer Agreement with concerned parties. Dr. Narayanamoorthy (Professor, Gokhale) emphasizes that as far as possible public sector should bring knowledge into public domain and in some cases they may need to negotiate in public interest. If necessary, he states, the public sector could register the variety and then place it in the public domain. One bureaucrat feels that if scientific work is done in public sector they should be able to acquire IPRs to prevent others from patenting the innovation. But he also notes that the government doesn't have the option of revenue and the farmer should be first. Another respondent felt it was positive for public sector to move towards IPR but it would depend on the crop and that crops essential for food security should be treated differently.

Stakeholders' perceptions on necessity of promoting Farmers' Rights in own country

Twenty-two respondents stated that it is very important to promote Farmers' Rights in India. Mr. Jaipal Reddy, a farmer who recently initiated a farmer's organization put it succinctly: Farmers' Rights are most important today for farmer's existence because farmers are confused and most of the farmers are illiterate.

According to Dr. S. Mauria (Assistant Director General, Intellectual Property Rights and Policy, Indian Council of Agricultural Research), the Supreme Court of India, in different case laws, if viewed comprehensively, has expanded and interpreted the 'Fundamental Right to Life and Liberty' in Article 21 of the Constitution of India to have a much wider connotation. In this manner, according to him, 'Farmers' Rights' thus should also be developed on a much wider canvass, and should ultimately lead to farmers' real empowerment. The Indian PPVFR Act of 2001 limits 'Farmers' Rights' according to him, to the right on their (Farmers') varieties, and should be considered just one small forward step. Dr. Kalpana Sastry (Principal Scientist, NAARM) also strongly emphasizes

that 'there is no question' of Farmers' Rights 'not being important. THEY ARE. Its how we translate the rights provided to reality'.

Various reasons were put forward for the importance of FRs. One main reason is that India is the importance of agriculture in India. Dr. Lalitha (Associate Professor, Gujarat Institute of Development Research) stated, 'In an economy where a sizeable section of the population is dependent on agriculture (…) Farmers' Rights are important. These rights should basically allow them to use the farm saved seeds, exchange or sell such seeds.' Dr. Narayanamoorthy (Professor, Gokhale Institute) asserts that Farmer's Rights are important in India because for years farmers have been price 'takers' and not price 'makers' and poor farmers need to be able to determine price. Dr. Pal (Scientist, NCAP) states that FRs are extremely important because farmers have conserved and improved upon genetic resources and seeds. Dr. Rengalakshmi (Scientist, Swaminathan Foundation) feels we need FRs to promote and recognize farmer's innovations and to promote biodiversity conservation.

Mr. Ashish Kothari (Kalpraviskh) notes that farmers need to have a legislative back up to protect their interests, knowledge and skills. Mr. Das (Senior Trade Officer, UNCTAD) feels that FRs are extremely important because the right to food security and livelihood is linked to Farmers' Rights. Ms. Sangeetha Udgaonkar (Consultant IPR) notes that FRs are of 'critical importance in ensuring that Plant Breeders' Rights are accepted' and that in India 'there is a past history of food being used as a tool by more developed countries to force compliance with their demands. They are also important to prevent a situation arising whereby the regular, day-to-day practice of the majority of the population—growing and selling crops—would become criminal overnight. It is important to ensure that the grant of a new right to some does not destroy the centuries-old rights of others.'

Two experts from public sector institutions felt that Farmers' Rights were important on a limited scale. FRs with respect to resale would not be very important in the future because of the developments in agriculture, but benefit sharing and documentation would be important. One civil servant felt that having FR is good, but we need to question whether the need for Farmers' Rights arose from among the farmers themselves. Industry representatives expressed that the seed business would be adversely affected if farmers are seed producers rather than seed growers.

One economist and one scientist in a public sector institution questioned the need for IPRs or FRs. Dr. Rath (Director, Indian School of Political Economy) expressed that it was more important to focus on irrigation or land reforms and that we must keep IPRs out of agriculture. Questioning the logic of granting IPRs in agriculture, Dr. K. C. Bansal (Professor, ICAR) did not see the reason for making food more expensive. He emphasized that IPR should not be linked to food, particularly for the resource poor people of the developing nations.

Stakeholders' perceptions on the necessity of promoting Farmers' Rights internationally

While many respondents agreed that promoting Farmers' Rights internationally was important, they also pointed out the difficulties involved.

Mr. Ashish Kothari (Kalpraviskh) said FRs were definitely needed at the international level and that India cannot act entirely on its own because of economic interdependence. According to Dr. S Tiwari (Director, NAARM) one of the greatest lacunae is that there is no global forum for Farmers' Rights. Dr. Sharad Joshi (Founder, Shetkari Sanghathan) also agreed that FRs can not be left entirely to the national authorities as it would result in conflicting trends. Ms. R. V. Anuradha (Lawyer, New Delhi) expressed that promoting Farmers' Rights internationally places extra jurisdictional pressure on countries to uphold Farmers' Rights. The experience with traditional knowledge in India demonstrates the importance of utilizing international mechanisms to promote domestic changes, according to her. Dr. Chaudhary (National Coordinator, ISAAA) stressed that while we need to promote FRs internationally, the government must be careful not to restrict the international flow of technology. One farmer said there was a need for an international movement and another stated that export regulations are very strict and it is expensive to conform to those standards, for example, in grapes.

Differences between developing and developed countries limit the ability to promote Farmers' Rights internationally according to some respondents. Dr. Narayanamoorthy (Professor, Gokhale Institute) noted that Asian farmers are different from their counterparts in developed countries and that it is difficult for them to come together to negotiate. Dr. Deshpande (Professor, Institute for Social and Economic Change) stated that although there can be a common framework for Farmers' Rights internationally, the details would have to be different due to the different R & D (Research and Development) structures across countries. In addition, he notes, the role of public and private agencies and institutional structures differ across countries. Dr. Rengalakshmi (Scientist, Swaminathan Foundation) pointed out that not all countries are adhering to the International Treaty because developed countries policies are different from developing countries. Ms. Sangeetha Udgaonkar (Consultant IPR) points out that countries are under pressure to adopt UPOV-style laws, although the TRIPs sui generis clause does not technically require it.

One NGO representative expressed that it was better to focus on the national level, because internationally it would have to incorporate all the stakeholders' interest and this would result in a compromise. Another expert felt internationally it would not be possible to establish Farmers' Rights and at best, farmer's bodies could be given some forum to express their views like NGOs in the sidelines of WTO meetings.

Stakeholders' suggestions on what the Governing Body should do in this regard

The main suggestion given by many respondents was that ***guidelines and models for implementing Farmers' Rights*** must be established by the Governing Body.

FAO should emulate the way the Secretariat on Biodiversity has developed access and benefit sharing guidelines and develop guidelines for implementing Farmers' Rights (Ms. Anuradha, Lawyer, New Delhi). One of the biggest tasks, according to Dr. Chaudhury (National Coordinator, ISAAA), will be to frame guidelines for material transfer agreements and benefit sharing. Dr. Suman Sahai (President, Gene Campaign) feels that the Governing Body can help to develop models by funding work in different contexts and allow models to evolve. She suggested that experiences in three different continents could be studied to find the most expansive interpretation of Farmers' Rights. One respondent suggested that indicators on FRs could be developed and that benefits could be given to countries that perform well in implementing FRs. Dr. Ramaswami (Professor, Indian Statistical Institute) suggested that the Governing Body could bring some clarity on the concept of Farmers' Rights by explaining how community rights could be implemented and enforced and who would be the authority to judge infringement. He felt that intellectually rigorous work must be done by the FAO without pandering to various interest groups and the pros and cons of various strategies could be outlined while disseminating information about the most effective model. One industry representative felt that FAO could draw some boundaries within which rights should be established, and that the 'sui generis' system should not be interpreted as a right without limits.

There is a need for ***information dissemination*** about varieties and complete transparency about the scientific varieties, and a website containing such information would be useful (Dr. Deshpande, Professor, Institute for Social and Economic Change). Mr. Chengal Reddy (Chairman, Federation of Farmers Associations) stated that information about FAO activities must be disseminated to the local level. The body must also make decisions in a collective manner, and ensure equal representation of countries in decision-making.

Promoting consultations and common approaches was another point stressed by some stakeholders. Some Experts and NGO representatives felt that Farmers' Rights should be included in the WTO as it is a very powerful institution. FAO should push for acceptance of the Treaty in the WTO. The issue of FRs should also be related to the Agreement on Agriculture in the WTO so that the contradictions could be resolved (Mr. Ashish Kothari, Kalpraviskh). The Governing Body should encourage some regional level co-operation in South Asia so that countries could exchange views regarding their experiences because of the existing commonality of resources, according to Dr. Rengalakshmi (Scientist, Swaminathan Foundation). Developing common legal systems at the regional level is important and for this, some kind of body should be set up so that regular meetings could take place (Dr. Rengalakshmi, Scientist, Swaminathan Foundation). According to Ms. Sangeetha Udgaonkar

(Consultant, IPR), building linkages with international treaties such as Bonn Guidelines, CBD, Cartaghena Protocol would be useful and cross-sectoral consultations must be focused upon as the issue of FR extends beyond agriculture. If an international organization could endorse the Farmers' Rights concept as being perfectly acceptable within TRIPS, this would enable countries to assert themselves in the face of the pressures from the seed lobbies. (Ms. Sangeetha Udgaonkar, Consultant, IPR)

Assisting in implementation was another suggestion. The governing body should implore countries like the US to be involved (Dr. Kalpana Sastry, Principal Scientist, NAARM), endorse the concept of FRs, and act as a facilitator for countries trying to set up these rights. One of the most urgent tasks according to some was that FAO must increase ***funding***. Dr. Mashelkar (Director, CSIR) stated that, 'FAO must encourage funding from donor community to increase research by public institutions in developing countries. Measures must aim to protect and promote Farmers Rights. Also there is a need to address the issue of agriculture subsidies on a uniform basis.'

Some suggested that FAO must focus on ***ensuring exchange of materials***. More crops must be brought in to the multilateral system and the governing body must look into how far the needs of countries can be met by the multilateral system. S. Bala Ravi (Advisor (Biodiversity), M.S. Swaminathan Research Foundation) points out that exchange of genetic resources across national boundaries and even between public and private research system with countries has become very restrictive after the Convention on Biological Diversity (CBD), the WTO agreement on Trade Related aspects of Intellectual Property Rights (TRIPS) and increasing instances of biopiracy. He notes that in this context the FAO mediated International Treaty on Plant Genetic Resources for Food and Agriculture assumes high importance, because it seeks to provide multilateral access to the plant genetic resources of crop species included in its ambit. One expert noted that the open source movement in software must be explored by the FAO to evaluate how such models could be applied in agriculture and biotechnology. He felt that the push for ensuring greater openness of technology is emerging in various fields and it would also take place in agriculture.

The importance of ***making technology easily available*** was highlighted by Dr. Lalitha (Associate Professor, Gujarat Institute of Development Research), 'The process of establishing Farmers' Rights should not lead to restricting access to new technology that would help in providing food security in developing countries where in the limited available land productivity needs to be increased to meet the demand for food. For instance, Golden Rice is protected by many patents. Inventions of this type that are marred by multiplicity of patents will actually lead to the situation of "Tragedy of Anticommons". Hence the role of the FAO should be to make technologies easily accessible to developing countries like the days of green revolution.'

FRs must be seen in a larger perspective and must not limit the notion to farmers' varieties only according to Dr. S. Mauria (Assistant Director General, Intellectual Property Rights and Policy, Indian Council of Agri-

cultural Research). According to him, Farmers' Rights should be developed both as a legal (right on farmers' varieties) and political right. He felt the governing body must come out in full ***support of India's law*** and should provide financial and technical resources to implement it. Mr. Das (Senior Trade Officer, UNCTAD) suggests that perhaps the FAO could evolve something like a ***multilateral agreement against hunger***, and Farmers' Rights should form a part of such an agreement. According to one expert, seed prices should not be determined by the private sector and the FAO can take the lead in setting prices.

5 Success Stories

Successful examples of implementing Farmers' Rights, it appears, are limited. Most of the stakeholders revealed that they were not aware of any success stories. Some of the respondents noted that India was taking the lead on Farmers' Rights and that India's law stands out in many respects and is receiving worldwide attention. It was noted, however, that only after India's law is implemented could we really begin to evaluate its success. In contrast to well-established farmers organizations in other countries, in India's political representatives advocate farmer's viewpoints and these may not be properly articulated, according to one expert. Few of the respondents did point out some specific examples of success stories in India. Mr. Das (Senior Trade Officer, UNCTAD) suggested that the programmes of the All India Radio for farmers (Krishi Samachar) provided a variety of information on weather, crops, good practices, fertilizers, pesticide use and received wide attention from farmers all over the country. One respondent pointed out that some farmer lobbies in India were at least successful in demanding higher prices for their produce.

NGO Activities in India

NGOs have taken a lead in documenting and conserving genetic resources and traditional knowledge in India. They have also taken steps to recognize and promote farmers/communities efforts in conservation and agricultural innovation. One expert mentioned that NGOs activities in recognizing farmers through the media, distributing prizes to innovative farmers, holding melas (gatherings/fairs) to promote farmer's varieties, serves as a real source of encouragement to farmers. The Honeybee Network is laudable according to one expert and it could provide clues for implementing Farmers' Rights. Dr. Vandana Shiva (Director, Research Foundation) pointed out the activities of Navdanya. Mr. Ashish Kothari (Kalpraviksh) asserted that in the formal sector there were very few successes stories but that in the informal sector people's initiatives such as the work of the Deccan Development Society deserve mention. The Deccan Development Society has done commendable work in reviving and documenting traditional knowledge of women farmers and has focused on empowering communities using a holistic approach rather than narrowly focusing on seeds, according to him. They have also attempted to link up with the consumers. Apart from the NGOs mentioned by the respondents, there are a number of NGOs in India focusing on Farmers' Rights. These NGOs fall into two broad categories: NGOs that focus more on conservation in promoting Farmers' Rights and NGOs that focus on promoting extension of IPR type rights to farmers.

Navdanya, Gene Campaign, GREEN Foundation, are some of the examples we can mention here of NGOs that focus on conservation of farmer's varieties. As outlined by Dr. Vandana Shiva who heads the campaign, Navdanya focuses on three activities: 1) conservation of diversity 2) supporting farmers as producers with a focus on organic farming 3) seeking better negotiations for fair trade. Navdanya promotes collective rights rather than IPRs and is engaged in documenting farmer's varieties. SRISTI's Honeybee Network and FRLHT (Foundation for Revitalization of Local Health Traditions) are two prominent examples of NGOs promoting IPRs for local innovations. The Honeybee Network aims to protect the intellectual property rights of grassroots innovators. By working with grassroots innovators, SRISTI's Honeybee Network attempts to recognize, reward and promote experimentation and value addition to local innovations. The Honey Bee Network, headed by Dr. Anil Gupta of Indian Institute of Management, Ahmedabad, documents and promotes IPRs for grass roots innovations. The idea behind the network is that IPRs could be beneficial to India as long as they were also extended to local innovations. Dr. Gupta states, 'SRISTI has been campaigning to defend the intellectual property rights of Third World farmers. True, the present property right arrangements do not leave much scope for improvement, but we cannot defend the rights of individual farmers or communities on moral grounds unless we also respect the rights of scientists and inventors in developing and developed countries'.[35]

The M S Swaminathan Foundation is focusing on collection and utilization of resources. For this purpose it has also established a seed bank and a database of agricultural information that could be useful to farmers.

Farmers were asked about government or NGO programs that they found particularly beneficial. The reaction was quite negative in that many of them stated that there was no real help from any agency. Few farmers mentioned that subsidies granted by the government for fruit crops, flower plantations and drip irrigation schemes were beneficial. However, others stated that they hadn't been able to avail of the subsidies or had no information about subsidy schemes. Various farmers mentioned that though subsidies exist, the benefits are claimed by the middlemen and don't reach the farmers. Mr. Reddy (Farmer, Andhra Pradesh) felt that government programmes are good but they are not reaching the farmer because the middlemen are deriving the benefits. He notes that fertilizer subsidies are utilized by the industry rather than reaching the farmers.

India's Law

The Indian law on Farmers' Rights is considered successful (at least partially) by many stakeholders. While opinion is divided on the implications of the law between those who see it as progressive and those who question its real impact on farmers, most observers would agree that the ***process*** of developing the legislation could provide lessons. Firstly, it is probably the first time when the rights of farmers received such wide attention and debate both within and outside Parliament. Secondly, the

[35] http://csf. Colorado.edu/sristi/papers/patentonneem.html

government was forced to initiate wide-ranging dialogue with various stakeholders, as it could not manage to pass the legislation without their demands being met. The Joint Parliamentary Committee established to study the issue travelled across the country and met NGOs, academicians, farmers lobbies, industry representatives and ultimately produced a draft of the bill that had a separate chapter on Farmers' Rights. This process of consultation appears to be continuing with the Authority now attempting to involve various stakeholders in implementing the law. Thirdly, some stakeholders were able to be part of the policy making process, at least to a limited extent. However, it must also be noted that farmers' lobbies and NGOs spoke for the farmers and only prominent groups could voice their demands. Individual farmers, (particularly small or marginal farmers) and local NGOs were not consulted or made aware of the bill.

6 Analysis

Stakeholders across various categories in India acknowledge the importance of Farmers' Rights nationally and globally, but no consensus has emerged in India on the method to implement Farmers' Rights. The lack of focus regarding the content and approach to Farmers' Rights is a serious drawback that requires urgent attention. While a majority of the respondents expressed that Farmers' Rights must incorporate rights beyond the farmer's privilege (right to save, use seed), there were differences on what type of issues must be tackled under Farmers' Rights. Many respondents felt that Farmers' Rights should move beyond IPRs to incorporate development rights. Yet, even among NGOs, farmer leaders, and individual farmers, there were differences regarding the nature of development rights to be addressed. NGOs focused on conservation and access to seeds, while individual farmers pointed to guaranteed prices, electricity, low interest credit and reducing the role of middlemen. There was no clear agreement in terms of the agency or the method to facilitate benefit sharing. A number of barriers to implementing Farmers' Rights were mentioned by the respondents, but few options for overcoming these barriers. The stakeholders place a great deal of responsibility on the Authority established to implement Farmers' Rights in India to overcome the barriers. In addition, stakeholders are looking to the Governing Body of the International Treaty to provide guidance on resolving this lack of direction regarding Farmers' Rights. The Indian case study could shed some light on the path forward.

Lessons from the case study of India

The first step to evolving clarity could be to evaluate which broad approach to defining Farmers' Rights would be most beneficial for developing countries. Two broad approaches to defining Farmers' Rights in India reflect the options facing developing countries: 1) Farmers' Rights as a form of IPRs 2) Farmers' Rights as a development right. The first approach is an attempt to revise the intellectual property rights regime embodied in TRIPs, while the second is a much broader strategy. India's policy largely adopts the first approach, but also acknowledges the second view. India's PPVFR Act tries to extend IPR type rights to both breeders and farmers, and the NBA stipulates sovereign rights over

genetic resources. Some unique provisions in these Acts such as: the right of farmers to compensation in case of crop failure, the right of farmers to adequate supply of registered material, and measures to promote conservation and benefit sharing can be seen as an attempt to promote Farmers' Rights as development rights. The approach of defining Farmers' Rights as IPRs may provide political rather than economic benefits, whereas defining Farmers' Rights as development rights may ensure greater economic/social advantages.

The approach of viewing Farmers' Rights as IPRs seeks to gain from farmer's innovations and from genetic resources originating in developing countries. It poses Farmers' Rights as a counter to Plant Breeder's Rights and argues that if commercial breeders can acquire intellectual property over their inventions, then farmers' innovations must also be recognized and rewarded. Farmers' Rights are posited as a new type of right *within the discourse on property* and not as an attempt to contest breeders' rights per se (Borowaik, 2004). The aim of developing such rights is not just to privatize more public goods in a similar manner as breeder's rights, but to promote a whole range of concerns of farmers' historical contributions and community and shared knowledge (Borowaik, 2004). Promoting ownership is also seen as a means to ensure conservation of varieties. Proponents of this approach also stress protecting rights of farmers to save, use and sell seed (in a limited manner) and benefit sharing as a means of rewarding and recognizing farmers. Viewing Farmers' Rights as a type of IPR right also incorporates concerns with India's strategic interests in the area of genetic resources. According to this view, India is under threat from bio-piracy, therefore the common heritage regime must be abandoned and replaced with an ownership right system over genetic resources through which gene rich countries like India could gain. Here, Farmers' Rights are equated with India's national interest: India's national ownership of genetic resources is a protection of *farmers'* interests.

The economic gains from adopting FRs as IPRs are not easily perceivable for India or for its farmers. The strategy accepts the regime of plant breeder's right as a trade off for granting Farmers' Rights, but with enormous legal and administrative costs. Several respondents to the study pointed out that the legal and practical difficulties for farmers in meeting the criteria for registering varieties under India's PPVFR Act. The possibility also exits of other actors (states, public sector, NGOs) claiming rights on behalf of farmers. India's PPVFR Act allows NGOs to file claims on behalf of farmers, and also enables the public sector and the state to assert ownership rights over varieties[36]. Srinivasan (2003) concludes in his study of Farmers' Rights that IPR-based Farmers' Rights approaches are unlikely to provide significant economic returns to farmers or farming communities. According to him, as plant variety protection

[36] Section 28 (1) 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 (PPVFR, 2001).

itself allows only very limited appropriability of returns in the first instance, it would be difficult to secure gains for farmers through IPR type Farmers' Rights (Srinivasan, 2003). The option of attempting to channel returns to farmers through a central fund, may also not yield high returns to farmers. Some of the stakeholders in the survey, including government representatives themselves, acknowledged that very little money would actually flow into the National Gene Fund and Biodiversity Fund established under India's Acts. Srinivasan (2003) also notes that the amounts generated through a levy on plant variety protection certificates are likely to be quite modest in relation to the funds required for the conservation of agro-biodiversity.

India may not be able to secure high monetary benefits from asserting sovereign rights over its genetic resources. In a study of gains from implementing Farmers' Rights through royalty payments earned from improved sales of germplasm, Pachico (2001) concludes that most countries in the South would have far more to gain from increases in productivity due to utilizing germplasm, than they would from receiving royalty payments for the ownership of germplasm. In a case study of common beans, Pachico (2001) finds that high-income gene-poor countries in the North would indeed make payments under a royalty model system to low-income gene-rich countries in the South, but the magnitude of these payments would be quite modest. Much greater payments would flow between gene-poor regions of the South to a few gene-rich countries (Pachico, 2001). It must also be questioned whether we can equate gains for *countries* from opposing bio-piracy or asserting rights over genetic resources, with rights for *farmers*. In addition, rewarding and recognizing farmers for their contribution goes beyond tracking how much their innovations/material have been a part of patents or other IPRs.

Farmers' Rights modeled on IPR type ownership rights may be completely out of tune with what the farmers on the ground really require. As one government representative in the survey pointed out, the demand for Farmers' Rights as currently defined has not emerged from the farmers themselves. It is not that farmers do not want recognition and rewards for their innovations, but their primary concerns are development rights such as basic rights to water, land, power and markets. Some would argue that these issues must be addressed under different mechanisms and not under Farmers' Rights. But such an interpretation not only misses the point of *Farmers' Rights*, but also excludes participation of most farmers because of their lack of awareness regarding IPRs. It would also not be easy to build such awareness due to the complex and legalistic nature of IPRs. Another danger of defining FRs as IPRs, according to Borowaik (2004), is that it may end up helping to legitimize asymmetries by creating the impression that there is parity among competing rights: breeders and farmers have parallel rights platforms to get their fair shares. However, he notes, reality is much more asymmetrical and such systems could promote a further shift away from farmer-centered agriculture (Borowaik, 2004). A related issue is the impact of policies on what Stone (2004) calls agricultural skilling, or the process of acquiring information and adopting management practices derived from that information. Skill obviously plays a role in all farming, but its importance in developing countries agriculture is often underestimated (Stone, 2004). According to Stone

(2004), 'The skill at the heart of smallholder farming is not simply knowledge of plants and agronomic processes, or proficiency at agricultural tasks, but more generally the farmer's ability to execute a *performance* based on agronomic knowledge, farm management strategy, prediction of a range of factors, and manipulation of socially mediated resources.' The policy of defining Farmers Rights as IPRs may restrict the process of acquiring and interpreting information crucial for agricultural skilling, which would be detrimental to farmers and Indian agriculture.

Yet the strategy of defining Farmers' Rights holds important political benefits for developing countries and this must be acknowledged. The strategy provides a powerful counterpoint to the IPR regime embodied in TRIPs. As Borowaik (2004) points out, '(…) Farmers' Rights advocates work toward such a transformation of a normatively very powerful language. While they may have lost much in terms of the struggle against the commercial model of development, if they are able to achieve recognition through the language of rights, they may yet have gained in terms of having opened up new conceptual pathways for recognizing the needs and claims of otherwise marginalized populations'. The strategy has enabled developing countries to adopt a unified position in the WTO negotiations by clearly articulating the exclusionary nature of intellectual property regimes.

The second approach of viewing Farmers' Rights as development rights also comes with its share of costs and benefits. It encompasses a range of concerns including food security, livelihood rights, social justice and access to resources. It is an attempt to move beyond TRIPs and is thus more of a pro-active approach. The attempt to situate Farmers' Rights within the development discourse has not received as much attention as the approach of viewing Farmers' Rights as IPR type rights. It is also very vaguely defined and can include a variety of issues ranging from economic, social to political. Biodiversity conservation, benefit sharing and rights of farmers to save, use and sell seed are seen as important for ensuring the development of farmers in this approach. The real advantage of viewing Farmers' Rights as development rights is in its potential to focus on the economic and social needs of farmers. The benefit of the approach is that it could link up the Farmers' Rights campaign with various diverse movements and issues. Its main limitation is that the attempt to incorporate so many rights within the scope of Farmers' Rights runs the danger of diluting the concept to an unworkable one in practice. It is also difficult to choose which development rights should be given priority and who should define these rights. However, as prospects for economic gain from defining FRs as IPRs is dim, it may become necessary to move towards a development oriented definition.

Internationally, developing countries may be able to secure greater benefits by strategically employing Farmers' Rights within the IPR discourse to demand more access to public goods, rather than further extending IPR protection. In global negotiations, the Farmers' Rights campaign may also have a lot to learn from the IPR issue in pharmaceuticals. The access to medicines campaign, unlike the FR strategy, called for a limitation or reduction in the scope of patent protection. The AIDS drugs campaign drew on human rights and compulsory licensing discourses to insist that

the right to life trumps property rights (Borowaik, 2004). In comparison, the access to medicines campaign has been able to forge some significant victories in practical terms, whereas the Farmers' Rights movement appears still to be struggling with ways to fit Farmers' Rights into the existing IPR regime.[37] Developing countries must also carefully consider how the movement could be linked with the WTO negotiations in agriculture. While defining Farmers' Rights as IPR type rights could provide a tool for negotiating at the global level, it may not be of great utility in ensuring rights for farmers in developing countries. Domestically, the focus must be on gradually incorporating more development-oriented rights within the Farmers' Rights framework. In this manner, developing countries could attempt to forge a strategy that takes advantage of both approaches to defining Farmers' Rights.

Another important lesson in defining Farmers' Rights is the need to ***balance ownership rights with measures to promote access and sharing of resources to avoid an 'anticommons tragedy'***.[38] An 'anticommons tragedy' arises when too many parties independently possess the right to exclude others from utilizing a resource (Aoki 1998). It occurs when governments grant too many people rights over a resource with no one having an effective privilege of use. Expressed in non-realized economic value, an anticommons tragedy takes the form of underutilization rather than overuse of a resource (Buchanan and Yoon 1998). Heller and Eisenberg (1998) pointed out the potential for an anticommons situation in patents in biomedical research due to the existence of too many owners holding rights to previous discoveries which could constitute obstacles to future research and lead to fewer useful products for improving public health.

India's PPVFR Act is an attempt to evolve a multiple rights system. While the Act is based on the important principle of distributing ownership rights in a fair and equitable manner, the assigning of multiple rights could pose several obstacles to useful utilization and exchange of resources. The attempt to extend IPR protection in this manner may lead to a number of claims over a variety. For example, let us take the plant breeder who applies to register a new variety. If breeding the new variety requires use of a material (variety) over which any one of the other stakeholders holds a right and can enforce it, the plant breeder must bargain and pay for its use. Among four stakeholders (breeder working for private company; breeder working for public institution; NGO; farmer or farming community), each holding one of the types of rights there are 16 possible combinations of stakeholders or claims. The situation becomes even more complex when we consider that in many cases more than one material is used to breed a new variety, and that additional actors may have gained ownership rights over them previously so that overlapping claims result. Some actors are also less capable of asserting their rights and will be left out – and these are likely to be farmers and their communities. For these

[37] See Sell and Prakash (2004) for an analysis of the NGO campaigns' success in countering TRIPs and promoting access to HIV/AIDS medicines.

[38] This section is mainly abstracted from Ramanna and Smale, (2004) Rights and Access to Plant Genetic Resources under India's New Law Development Policy Review, 2004, 22 (4): 423-442.

stakeholders, the costs of claims may be too high. If the bargaining fails because transaction costs are prohibitive or enforcement infeasible, especially for some stakeholders, the result could be lack of investment and under-utilization of crop genetic resources as inputs.

The new regime may also change the nature of existing relations of exchange. If it becomes possible for farmers to register their varieties under the Act, they may have an incentive to charge for their use rather than sharing resources freely among other farmers. Historically, public research institutions in India provided seed varieties to individual farmers, but under the new regime they may seek to charge for use of their materials by private companies rather than giving them away to farmers. They would also have greater incentive to transfer material to actors who would pay for their use rather than giving them away to the international agricultural centres. Any disruption or impediment to these flows caused by property rights claims could be detrimental to the very biodiversity the law seeks to protect and to the livelihoods of smallholder farmers who maintain it, who are found primarily in India's rain-fed environments. If under-utilisation of plant genetic resources results, the Act will have negative consequences for sustaining crop productivity and for the welfare of the very farming communities it seeks to compensate. Developing countries need to evolve mechanisms to ensure exchange of agricultural resources as part of Farmers' Rights[39].

Another important lesson that could be drawn from India's experience is the ***need for wide ranging consultations with various stakeholders for establishing laws on Farmers' Rights.*** The Indian legislation could not be passed in Parliament (several drafts were rejected) until a series of consultations were held across the country and incorporated into the policy. This process of consultation led to the inclusion of various innovative aspects in India's policy. India's experience also reveals the importance of carefully designing the stakeholder dialogues. The Indian law resulted from a political bargaining process that attempted to appease and include the interests of a number of stakeholders within the property rights framework. Developing countries have to guard against the trap in which Farmers' Rights becomes a legal and political contest for various stakeholders to promote their interests. The outcome should not be a situation where the law aims to satisfy all actors, but does not fully take into account the implications for its target group, namely, the farmers themselves. Involving individual small-scale farmers (rather than only farmer's lobbies) in the consultations could prove valuable. Stakeholders that may oppose certain aspects of Farmers' Rights must also be included in the discussions. Seed industry representatives in the survey expressed that they would support only exchange of seed and not the right to sell seed for farmers because they felt this would benefit the middlemen and not the farmers. Their views need to be taken into account, at least to understand how to ensure that farmers, and not the middlemen, gain from Farmers' Rights.

[39] An interesting provision in a draft of the Biodiversity and Community Knowledge Protection Act of Bangladesh (1998) provides recognition of innovators who chose to place their inventions in the public domain rather than seek exclusionary rights. See www.grain.og/brl_files/bangladesh-comrights-1998-en.pdf

Defining a clear role for the public sector is of importance when establishing Farmers' Rights. The implementation of Farmers' Rights would rely heavily on public agricultural institutions, so they need to be given a clear mandate as well as adequate funds. A serious issue that requires attention is the purpose and activities of public sector agricultural research institutions in relation to intellectual property. The crucial question is whether the public sector should change their strategies and become holders of IPRs and if so, whether it should only be to prevent bio-piracy or as a means of revenue. Most of the respondents in the survey stated that the public sector should utilize IPR as a defensive measure, if required, and not as a means of revenue. In the Indian case, it appears that various public sector institutes have undergone a dramatic shift. The Council of Scientific and Industrial Research (CSIR) with its chain of 40 laboratories, for example, has proactively acquired IPRs and played a crucial role in creating an atmosphere that supported patent reform in India. While this may make the public sector more competitive, it will certainly have implications for research and the relationship between the public sector and farmers. In addition, the public sector must be able to step in when the market fails. Byerlee (2000) focusing specifically on agricultural biotechnology, points out that due to various types of market failures, the public sector will have to play an important role in serving resource-poor farmers, at least in the initial stages.[40] He notes that public research is often crucial to reduce the cost of entry for private firms and that once a competitive private sector is operating, the public sector can redirect those resources towards farmers and environments that are not being targeted by the private sector.[41] India and other developing countries need to frame unambiguous guidelines for the public sector in relation to IPRs, keeping in mind that public agricultural research institutions can play a vital role in ensuring access and sharing of resources.

Barriers to the Realisation of Farmers' Rights in India

One of the main barriers to achieving Farmers' Rights is the ***'top down' rather than 'bottom up' approach to implementing Farmers' Rights in India***. Farmers' Rights are defined and established by the decision makers at the national level without adequate mechanisms to incorporate regional and local perspectives. Farmers may be represented by farmers' lobbies or NGOs but will not directly be able to voice their demands. This is a serious shortcoming that may lead to the interpretation of Farmers' Rights in ways that may not really benefit the farmers. It may also enable more powerful groups (large farmers, influential NGOs) to promote their interests while marginalizing small farmers and grass roots community organizations.

Another barrier to achieving Farmers' Rights is the ***lack of adequate policy measures to promote effective utilization of germplasm.*** The policy towards Farmers' Rights in India focuses more on asserting and assigning ownership rights, than on measures to utilize traditional knowledge and genetic resources for the development of farmers.

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[40] Byerlee (2000), p. 9.
[41] Ibid.

A third barrier that must be evaluated is the ***economic, political and social condition of farmers***. The Farmers' Rights debate at times appears to neglect the complex problems facing farmers today. In the attempt to extract rents for farmer's innovations, the Farmers' Rights issue sometimes gets reduced to a legal struggle to codify benefit sharing. While this is also important, it must not become the dominant discourse, ignoring the tasks required to improve the economic, political and social conditions of small farmers.

Developing ***coordination between various legislations and various bodies*** is another serious difficulty in India. There are a number of institutions that are focusing on promoting India's agriculture and development of farmers. While each organization focuses on one particular aspect, the overall picture is not clearly evaluated by any one body. The lack of one clear and comprehensive policy aimed at benefiting farmers is a serious shortcoming. Evolving co-ordination between the PPVFR and the Biodiversity Act is an enormous task in itself, let alone ensuring linkages between these Acts and agricultural policies. The complexity is further highlighted by the fact that one Authority is vested with the task of implementing two completely different systems of breeder's and Farmers' Rights.

Another barrier to implementing Farmers' Rights in India is the perception by some that the ***growing significance of the service and information technology sectors in India reduces the importance of agriculture in India's economy***. Some argue for corporate agriculture asserting that small-scale agriculture is no longer profitable and that small farmers should quit farming. However, this analysis misses important aspects of agriculture's importance in the Indian economy in terms of employment, food security, export potential and livelihood concerns.

The ***lack of resources and attention given to the public sector*** is another hurdle to be crossed. Public sector institutions appear cash strapped even to maintain resources. In addition, the relationship of the public sector with the farmers is changing as the public sector begins to focus more on earning revenue from public-private partnerships. The implementation of Farmers' Rights would require a strong public sector having integrated linkages with farmers.

Options for the further realisation of Farmers' Rights in India

India has been able to move forward, it appears, in deriving political and strategic advantages from defining Farmers' Rights as IPRs. ***Attention now needs to be given to securing economic and social gains for farmers through defining Farmers' Rights as development rights***. Evolving a development-oriented definition of Farmers' Rights requires a consensual approach, which is currently not prevalent in India. One option to begin to build such a consensus would be to initiate dialogues with stakeholders. Individual farmers as a category of stakeholders have not been the focus of discussions on Farmers' Rights. Therefore, ***one option could be to start with a large-scale survey among individual farmers across India.*** This could serve as a means of promoting awareness among farmers as well as to solicit farmer's needs and concerns. While it is

important to build awareness about IPRs and benefit sharing, ***the primary aim should not be only to 'educate' farmers.*** The responses from the farmers in the survey revealed that the reality on the ground might be very different from prevailing assumptions about the needs of farmers. Farmers in the survey expressed the importance of assuring prices and checking the role of middlemen, and the need to provide the environment conducive to promoting innovation. If farmer's inputs are not included in defining Farmers' Rights, we run the risk of ignoring certain crucial issues. These responses could also be supplemented with wide ranging consultations across the range of stakeholders in India on how to promote a development-oriented definition of Farmers' Rights.

A second option could be to ***link up the implementation of Farmers' Rights with various other legislations and campaigns based on the discourse of rights***, such as the Right to Information Act recently passed in India. Another example could be the Right to Food Campaign, a struggle with which Farmers' Rights should logically be integrated.

India must also consider how to prevent an anticommons tragedy by promoting sharing of resources. India and other developing countries could further develop the International Treaty's Multilateral System approach. The International Treaty on Plant Genetic Resources establishes a specified list of crops on which there are agreed rules for access and benefit sharing. In a sense, the Treaty attempts to ***redefine the principle of common heritage***. Rather than declaring all genetic resources as the sovereign right of nations, it tries to ensure that crops important for food security are part of a Multilateral System. India could not only support this initiative by including more crops in the Multilateral System, but could also explore the option of ***developing a parallel national system*** which includes crops significant for India's food security. The national and international systems could be linked in some ways and could provide scope for ensuring sharing and access to resources. While India and other developing countries have ratified the Treaty, their domestic policy frameworks reflect the provisions of the Convention on Biological Diversity and Plant Variety Protection laws more than the International Treaty. The International Treaty is the original foundation for Farmers' Rights internationally and may therefore be of greater value in implementing Farmers' Rights domestically.

Lessons for the international implementation of Farmers' Rights

The Governing Body of the International Treaty must now take up the task of establishing clear guidelines for defining and implementing Farmers' Rights. An international movement for Farmers' Rights would have to tread carefully to respect the sovereignty of nations while promoting global cooperation. However, Farmers' Rights must be promoted at the international level and cannot be left only to national governments to design. If each country, under Farmers' Rights, sets up barriers to access of genetic resources, limits exchange of resources and competes to stake claims over innovations, the implications would be severe for farmers. Lack of coordination between countries and regions in framing Farmers' Rights could lead to an anticommons tragedy on a global scale. India and

other developing countries are faced with a dilemma in defining and implementing Farmers' Rights. On the one hand, they are interested in acquiring IPRs and asserting ownership rights over genetic resources and farmer's innovations. On the other hand, they must ensure access to resources for farmers and public sector institutions. An international forum to promote cooperation and useful sharing of resources is required to enable developing countries to emerge from this dilemma.

The Multilateral System established under the International Treaty provides a useful starting point. The strategy of denoting a specified list of crops, or the list approach, could be effectively promoted and expanded. Not only the list of crops included but also the ways in which such resources could be opened up to the public domain should be explored. Political pressures and opposition would certainly exist, and some level of awareness building to convince parties that it is in their interest to ensure access to resources would be required. It would also not be easy to operationalize, but there could be many options to the list approach (see Broggio ed, 1998). The system should also not be reduced to a mechanism to provide free access to resources for the private sector without an onus share, as feared by some NGOs (GRAIN, 2005). The International Treaty could serve as a foundation for moving towards a development-oriented definition of Farmers' Rights.

Conclusion

The Farmers' Rights movement has witnessed a long and chequered history. That it has taken years to establish a binding agreement may be disheartening, but the fact the momentum was not lost and the Treaty finally emerged, should be a source of inspiration. India's ability to be one of the first countries in the world to forge a national legislation on Farmers' Rights is a significant landmark. The Indian case provides important lessons for other countries in establishing Farmers' Rights, and demonstrates the complex and contentious issues that must be tackled to implement Farmers' Rights. The fact that agreement on defining and implementing Farmers' Rights has not emerged in India, even after establishing a law on Farmers' Rights, should serve as a signal internationally that establishing legislations is insufficient.

A global mechanism is urgently required to promote some level of consensus on defining and implementing Farmers' Rights. Attention must now turn to the brass tacks of how to achieve Farmers' Rights. The political and strategic gains of defining Farmers' Rights as IPR type rights must be accompanied by measures to ensure economic benefits by focusing on Farmers' Rights as development rights. Farmers' Rights must also incorporate mechanisms to promote access and sharing of resources rather than only ownership rights. Farmers themselves must be seen as important stakeholders in policy making. If the global community does not face up to the challenge of unambiguously articulating Farmers' Rights, what has been achieved so far in the battle to establish Farmers' Rights may be lost. The nuts and bolts on the machinery for driving Farmers' Rights forward must now be fitted. Without proper direction, the Farmers' Rights movement itself may come to a grinding halt.

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Appendix I List of People Interviewed

NGO's/Farmers' Lobbies

Name and position	Organization and location	Date of interview
Mr. Chengal Reddy, Chairman	Federation of Farmers Associations, AP, Hyderabad	28 November 2005
Mr. Ashish Kothari, Member	Kalpavriksh, Pune	28 January 2006
Dr. Vandana Shiva, Founder	Research Foundation for Science Technology and Ecology (RFSTE), New Delhi	9 December 2005
Dr. Suman Sahai, President	Gene Campaign, New Delhi	10 December 2005
Mr. Devinder Sharma	Forum for Biothechnology and Food Security, New Delhi	10 December 2005
Mr. Sharad Joshi M.P. Rajya Sabha, Founder	Shetkari Sanghatana, KCC, New Delhi	12 December 2005

Government

Name and position	Organization and location	Date of interview
Dr. Tiwari, Director	National Academy of Agricultural Research Management (NAARM), Hyderabad	29 November 2005
Dr. Nagarajan, Chairperson	Protection of Plant Variety and Farmers' Authority, New Delhi	8 December 2005
Dr. Mauria, Assistant Director General,	Intellectual Property Rights and Policy, Indian Council of Agricultural Research, New Delhi	12 December 2005
Dr. Rajiv Mehta, Member Secretary	Commission for Agricultural Costs and Prices, ICAR, New Delhi	12 December 2005
Dr. R. Mashelkar, Director	Council for Scientific and Industrial Research (CSIR), New Delhi	8 December 2005 (via e-mail)

Industry

Name and position	Organization and location	Date of interview
Dr. P. Sateesh Kumar, Director	Prabhat Agri Biotech Ltd. , Hyderabad	28 November 2005
Dr. Kataria	Seed Association of India, New Delhi	7 December 2005
Mr. G. Hari Narayana	Ganga Kaveri Seeds, Pvt. Ltd., Hyderabad	29 November 2005 (Group Discussion at NAARM)

Experts

Name and position	Organization and location	Date of interview
Dr. Hanumant Rao, Scientist	NAARM, Hyderabad	29 November 2005
Dr. Suresh Pal, Scientist	National Centre for Agricultural Economics and Policy Research (NCAP), New Delhi	3 January 2006 (via e-mail)
Dr. K C Bansal, Professor and Principal Scientist	National Research Centre on Plant Biotechology, Indian Agricultural Research Institute, New Delhi	8 December 2005
Dr. Kalpana Sastry, Principal Scientist	National Academy of Agricultural Research Management (NAARM), Hyderabad	26 January 2006 (via e-mail)
Prof. M.S Swaminathan (see next column for positions)	Chairman, National Commission on Farmers, Govt. of India; President, Pugwash Conferences on Science and World Affairs; and Chairman, M S Swaminathan Research Foundation	25 November 2005

Name and position	Organization and location	Date of interview
Dr. S. Bala Ravi, Advisor, Biodiversity	M. S. Swaminathan Research Foundation, Chennai	25 November 2005
Dr.Rengalakshmi, Scientist	M S Swaminathan Research Foundation, Chennai	25 November 2005
Dr. A Narayanamoorthy, Reader	Gokhale Institute of Politics and Economics	19 November 2005
Dr. Siddiq (see next column for positions)	Hon. Chair Distinguished, Centre for DNA Fingerprinting and Diagnostics; Hon. Chair Professor- biotechnology Acharya N.G Ranga Agri. University; Ex National Professor (ICAR) & Deputy Dir. General (CS) ICAR, Hyderabad	29 November 2005 (Group Discussion at NAARM, Hyderabad)
Dr. Bhagirath Chaudhary, National Coordinator	ISAAA South Asia Office, New Delhi	8 December 2005
Dr Sachin Chaturvedi, Fellow	Research and Information System for Developing Countries (RIS), New Delhi	9 December 2005
Mr. Abhijit Das, Senior Trade Officer	UNCTAD, New Delhi	9 December 2005
Dr. Bharat Ramaswami, Professor	Indian Statistical Organization (ISI), New Delhi	10 December 2005
Ms. R V Anuradha, Lawyer	New Delhi	12 December 2005
Dr. Rath, Director	Indian School of Political Economy, Pune	23 December 2005
Prof R.S Deshpande, Professor	Institute for Social and Economic Change, Bangalore	18 November 2005 (via e-mail)
Ms. Sangeetha Udgaonkar, Independent Consultant	Bangalore	5 December 2005 (via e-mail)
Dr. N. Lalitha, Associate Profesor	Gujarat Institute of Development Research, Gujarat	21 December 2005 (via e-mail)
Mr. Vishal Katariya, IPR Chair	University of Pune, Maharashtra	20 January 2006

Farmers

Name	Place	Date of interview
Mr. Sopan Sakharam Kanchan	Uruli Kanchan, Maharashtra, India	5 November 2005
Mr. Dada Saheb Dorge	Bhandgaon, Taluka Daund, District, Pune, Maharashtra, India	5 November 2005
Mr. Shankar Ramdas Harpule	Taluka Daund, District, Pune, Maharashtra, India	5 November 2005
Mr. Mangal Harpule	Taluka Daund, District, Pune, Maharashtra, India	5 November 2005
Ms. Pratibha Mahadev Kanchan	Uruli Kanchan	5 November 2005
Mr. Datta Gyanba Tupe	Uruli Kanchan	5 November 2005
Ms. Jayshree Dattatrey Tupe	Uruli Kanchan	5 November 2005
Mr. Suresh Sakharam Kanchan	Yavatmal, District Pune, Maharashtra	5 November 2005
Mr. Jaipal Reddy	Hyderabad	29 November 2005

Appendix II Survey Questionnaires

Survey Sheet for Experts

1. Please describe any role you have played in formulating/ implementing/ providing suggestions for Farmers' Rights in India or internationally.

2. How important do you think Farmers Rights are in India and internationally and why?

3. What do you think should be included in Farmers Rights?

4. What do you see as the main achievements of Farmers Rights in India? What has been achieved and how beneficial would you say these achievements have been?

5. What are the main limitations of Farmers Rights in India? What are the main barriers to Farmers Rights in India?

6. How do you think these limitations/barriers can be overcome?

7. Do you think it is best to view Farmers Rights as reward mechanisms or as IPRs? Should they be different to IPRs and if so how?

8. How should the benefit sharing mechanisms be established? (through a central fund held by government or through deals between farmers and corporations, or other mechanisms)

9. Should farmers be allowed to freely sell, use, exchange IPR protected seed? Should there be restrictions and if so, what kind?

10. What role do you see for the public sector in implementing farmer's rights in India? Do you see any problems if public sector also becomes a major holder of IPRs in agriculture (in research priorities or distribution of seeds to farmers)?

11. Have you come across any achievements (success stories) in establishing Farmers Rights in India or other countries? How can any of these measures be translated in India and internationally to better implementation of Farmers' Rights?

12. How can farmers be involved in this process of establishing Farmers Rights both in India and internationally?

13. What do you see as the main problems in establishing Farmers Rights internationally and how can they be overcome?

14. What are the suggestions you would like to give to the Governing Body in the FAO on implementing Farmers Rights? What should be the role of the FAO in this regard?

Survey Sheet for Farmers (Was translated into Marathi language)

Name_____

M/F Age_____ Family Size_____

Years of Farming Experience_____Farm Size_____

Crops Grown _____ Irrigation (% irrigated)_____

Education_____

Annual Income from Farming_____ Income other than farming_____

Role in Farmers Lobby or Panchayat_____

1. Have you heard about the law on Farmers' Rights in India? Do you have any idea about the concept of Farmers' Rights? Has any organization or NGO spoken to you about Farmers' Rights?
2. What type of problems do you face in farming and how do you think a concept such as Farmers Rights could be established to solve those problems?
3. Do you share/exchange seed with other farmers?
4. If a company requests some of your seeds/material and uses it to make improved varieties from which they earn profit do you think some compensation should be given to you? If yes, should it be negotiated with the company directly or should it be collected and distributed by the government?
5. If any farmer is able to create a new variety do you think he/she should be able to have some type of ownership right on that variety (for example, register it with the government and earn profits every time it is sold)
6. Do you have difficulty in accessing materials (such as seeds/new varieties) required for farming? How do you learn about new varieties and how do you get them?
7. In India's law on Farmers' Rights, what type of issues should be included & how can they be implemented?
8. Who should be the authority to formulate and implement Farmers' Rights in India?
   Which organization (government, NGO or international body) do you think is best for ensuring that you receive new varieties and compensation for your agricultural innovations?
9. What role should India play in an international movement to establish Farmers' Rights?
10. What do you think about an international movement to establish Farmers' Rights? Would it be useful? What suggestions would you have for an international body to establish Farmers' Rights?
11. In what ways is the government helping you with regards to actual funds, subsidies? And how much beneficial has it proved to you?
12. Are there any schemes sponsored by government or NGOs that has been especially useful for you which could be included in the Farmers' Rights concept?

Appendix III Extracts of Laws and Policies

Protection of Plant Varieties and Farmers' Rights Act, 2001 (extracts)

39. (1) Notwithstanding anything contained in this Act, -

(i) a farmer 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 if the application contains declaration as specified in clause (h) of sub-section (1) of section 18;

iii) a farmer 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 Gene Fund. Provided that material so selected and preserved has been used as donors of genes in varieties registrable under this Act;

(iv) a farmer shall be deemed to be entitled to save, use, sow, resow, 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 purposes 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 of any organization of farmers, the breeder of such variety shall disclose to the farmer or the group of farmers or the organization 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, the farmer or the group of farmers or the organization of farmers, as the case may be, may claim compensation in the prescribed manner before the Authority and the Authority, after giving notice to the breeder of the variety and after providing him an opportunity to file opposition in the and after providing him an opportunity to file opposition in the prescribed manner and after hearing the parties, 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 organization of farmers, as the case may be.

40. (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. (1) Any person or group of persons (whether actively engaged in farming or not) or any governmental or nongovernmental organization 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 or any variety for the purpose of staking a claim on behalf of such village or local community.

(2) Where any claim is made under sub-section (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 organization 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 inquiry as it may deem fit, that the variety with which the report is related has been registered under the provisions 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 nongovernmental organization which has made claim under sub-section

(1) as it may deem fit.

(4) Any compensation granted under sub-section (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.

Gene Fund

42. 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. Notwithstanding anything contained in sub-section (6) of section 23 and section 28, where an essentially derived variety is derived from a farmers' variety, the authorization under sub-section (2) 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. A farmer or group of farmers or village community shall not be liable to pay any fees in any proceeding before the Authority or Registrar or the Tribunal or the High Court under this Act or the rules made thereunder.

45. (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 sub-section (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 organization 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 expenditure of the scheme relating to benefit sharing framed under section 46.

46. (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 sub-section (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 utilization, 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 utilization 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).

National Biodiversity Act, 2002 (extracts)

Certain persons not to undertake Biodiversity related activities without prior approval of National Biodiversity Authority.

3. (1) No person referred to in sub-section (2) shall without previous approval of the National Biodiversity Authority obtain any biological resource occurring in India or knowledge associated thereto for research or for commercial utilisation or for bio-survey and bio- utilisation.

(2) The persons who shall be required to take the approval of the National Biodiversity Authority under sub-section (1) are the following, namely:-

(a) a person who is not a citizen of India;
(b) a citizen of India, who is a non-resident as defined in clause (30) of section 2 of the Income-tax Act, 1961;
(c) a body corporate, association or organisation-
  (i) not incorporated or registered in India; or
  (ii) incorporated or registered in India under any law for the time being in force which has any non-Indian participation in its share capital or management.

Results of research not to be transferred to certain persons without approval of National Biodiversity Authority.

4. No person shall without the previous approval of the National Biodiversity Authority, transfer the results of any research relating to any biological resources occurring or obtained from India for monetary consideration or otherwise to any person who is not a citizen of India or a body corporate or organisation which is not registered or incorporated in India or which has any non-Indian participation in its share capital or management. Explanation.--For the purposes of this section, 'transfer' does not include publication of research papers or dissemination of knowledge in any seminar or workshop, if such publication is as per the guidelines issued by the Central Government. Sections 3 and 4 not to apply to certain collaborative research projects.

5. (1) The provisions of sections 3 and 4 shall not apply to collaborative research.
projects involving transfer or exchange of biological resources or information relating thereto between institutions, including Government sponsored institutions of India, and such institutions in other countries, if such collaborative research projects satisfy the conditions specified in sub-section (3).

(2) All collaborative research projects, other than those referred to in sub-section (1) which are based on agreements concluded before the commencement of this Act and in force shall, to the extent the provisions of agreement are inconsistent with the provisions of this Act or any guidelines issued under clause (a) of sub-section (3), be void.

(3) For the purposes of sub-section (1) collaborative research projects shall,-

(a) conform to the policy guidelines issued by the Central Government in this behalf;
(b) be approved by the Central Government.

Application for intellectual property rights not to be made without approval of National Biodiversity Authority.

6. (1) No person shall apply for any intellectual property right by whatever name called in or outside India for any invention based on any research or information on a biological resource obtained from India without obtaining the previous approval of the National Biodiversity Authority before making such application:
Provided that if a person applies for a patent, permission of the National Biodiversity Authority may be obtained after the acceptance of the patent but before the sealing of the patent by the patent authority concerned.
Provided further that the National Biodiversity Authority shall dispose of the application for permission made to it within a period of ninety days from the date of receipt thereof.

(2) The National Biodiversity Authority may, while granting the approval under this section, impose benefit sharing fee or royalty or both or impose conditions including the sharing of financial benefits arising out of the commercial utilisation of such rights.

(3) The provisions of this section shall not apply to any person making an application for any rights under any law relating to protection of plant varieties enacted by Parliament.

(4) Where any right is granted under law referred to in sub-section (3), the concerned authority granting such right shall endorse a copy of such document granting the right to the National Biodiversity Authority.

Prior Intimation to State Biodiversity Board before obtaining biological resource for certain purposes.

7. No person who is a citizen of India or a body corporate, association or organisation which is registered in India shall obtain any biological resource for commercial utilisation or bio-survey and bio-utilisation except after giving prior intimation to the State Biodiversity Board concerned: Provided that the provisions of this section shall not apply to the local people and communities of the area, including growers and cultivators of biodiversity, and vaids and hakims, who have been practising indigenous medicine.

Determination of equitable benefit sharing by National Biodiversity Authority.

21. (1) The National Biodiversity Authority shall while granting approvals under section 19 or section 20 ensure that the terms and conditions subject to which approval is granted secures equitable sharing of benefits arising out of the use of accessed biological resources, their by-products, innovations and practices associated with their use and applications and knowledge relating thereto in accordance with mutually agreed terms and conditions between the person applying for such approval, local bodies concerned and the benefit claimers.

(2) The National Biodiversity Authority shall subject to any regulations made in this behalf determine the benefit sharing which shall be given effect in all or any of the following manner, namely:--

(a) grant of joint ownership of intellectual property rights to the National Biodiversity Authority, or where benefit claimers are identified, to such benefit claimers,
(b) transfer of technology;
(c) location of production, research and development units in such areas which will facilitate better living standards to the benefit claimers;
(d) association of Indian scientists, benefit claimers and the local people with research and development in biological resources and bio-survey and bio-utilisation;
(e) setting up of venture capital fund for aiding the cause of benefit claimers;
(f) payment of monetary compensation and other non- monetary benefits to the benefit claimers as the National Biodiversity Authority may deem fit.

(3) Where any amount of money is ordered by way of benefit sharing, the National Biodiversity Authority may direct the amount to be deposited in the National Biodiversity Fund: Provided that where biological resource or knowledge was a result of access from specific individual or group of individuals or organisations, the National Biodiversity Authority may direct that the amount shall be paid directly to such individuals or group of individuals or organizations in accordance with the terms of any agreement and in such manner as it deems fit.

(4) For the purposes of this section, the National Biodiversity Authority shall, in consultation with the Central Government, by regulations, frame guidelines.

Central Government to develop National strategies, plans, etc. for conservation, etc., of biological diversity.

36. (1) The Central Government shall develop national strategies, plans, programmes for the conservation and sustainable use of biological diversity including measures for identification and monitoring areas rich in biological resources, promotion of *in situ* conservation and *ex situ* conservation of biological resources, incentives for research, training, public education to increase awareness with respect to biodiversity.

(2) Where the Central Government has reason to believe that any area rich in biological diversity, biological resources and their habitats is being threatened by overuse, abuse or neglect, it shall issue directives to the concerned State Government any technical and other assistance that is possible to be provided or needed

(3) The Central Government shall, as far as practicable wherever it deems appropriate, integrate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

(4) The Central Government shall undertake measures,--

(i) wherever necessary, for assessment of environmental impact of that project which is likely to have adverse effect on biological diversity, with a view to avoid or minimise such effects and where appropriate provide for public participation in such assessment,

(ii) to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology likely to have adverse impact on the conservation and sustainable use of biological diversity and human health.

(5) The Central Government shall endeavour to respect and protect the knowledge of local people relating to biological diversity, as recommended by the National Biodiversity Authority through such measures, which may include registration of such knowledge at the local, State or national levels, and other measures for protection, including *sui generic* system. *Explanation.*-- For the purposes of this section,--

(a) '*ex situ* conservation' means the conservation of components of biological diversity outside their natural habitats;

(b) '*in situ* conservation' means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

Biodiversity heritage sites.

37. (1) Without prejudice to any other law for the time being in force, the State Government may from time to time in consultation with the local bodies, notify in the Official Gazette, areas of biodiversity importance as biodiversity heritage sites under this Act.

(2) The State Government, in consultation with the Central Government, may frame rules for the management and conservation of all the heritage sites.

(3) The State Government shall frame schemes for compensating or rehabilitating any person or section of people economically affected by such notification.

Geographical Indications of Goods (Registration and Protection) Act, 1999 (extracts)

8. (1) A geographical indication may be registered in respect of any or all of the goods, comprised in such class of goods as may be classified by the Registrar and in respect of a definite territory of a country, or a region or locality in that territory, as the case may be.

11. (1) Any association of persons or producers or any organization or authority established by or under any law for the time being in force representing the interest of the producers of the concerned goods, who are desirous of registering a geographical indication in relation to such goods shall apply in writing to the Registrar in such form and in such manner and accompanied by such fees as may be prescribed for the registration of the geographical indication.

18. (1) The registration of a geographical indication shall be for a period of ten years, but may be renewed from time to time in accordance with the provisions of this section.

21. (I) Subject to the other provisions of this Act, the registration of a geographical indication shall, if valid, give,-

(a) to the registered proprietor of the geographical indication and the authorised user or users thereof the right to obtain relief in respect of infringement of the geographical indication in the manner provided by this Act;
(b) to the authorised user thereof the exclusive right to the use of the geographical indication in relation to the Rights conferred by registration

(2) The exclusive right to the use of a geographical indication given under clause (b) of sub-section (1) shall be subject to any condition and limitation to which the registration is subject.

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