Farmers' Rights to Livelihood in the Hindu-Kush Himalayas

INTERNET EDITION

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Acronyms

AAN	:	ActionAid Nepal
ABD	:	Agricultural Botany Division
ADA	:	Agricultural Development Authority
ADIs	:	Acceptable Daily Intakes
AIC	:	Agricultural Input Corporation
AMS	:	Aggregate Measurement of Support
AoA	:	Agreement on Agriculture
APO	:	Asia Pacific and Oceania
APP	:	Agriculture Perspective Plan
APROSC	:	Agricultural Project Services Centre
ATWG	:	Agricultural Technical Working Group
BARC	:	Bangladesh Agricultural Research Council
BELA	:	Bangladesh Environment Lawyers Association
BIMST-EC	:	Bangladesh, India, Myanmar, Sri Lanka, Thailand – Economic Cooperation
BOI	:	Board of Investment
Bt	:	Bacillus Thorengenosis
CAC	:	Codex Alimentarius Commission
CAP	:	Common Agricultural Policy
CASAC	:	Coalition for Action on South Asian Cooperation
CBD	:	Convention on Biological Diversity
CBOs	:	Community Based Organisations

CCRVDF	:	Codex Committee on Residues of Veterinary Drugs in Foods
CDB	:	Coconut Development Board
CFS	:	Consumer Finance and Socio-economic Survey
CGIAR	:	Consultative Group on International Agricultural Research
CoFaB	:	Convention of Farmers and Breeders
CSOs	:	Civil Society Organisations
CUTS	:	Consumer Unity & Trust Society
DCs	:	Developing Countries
DDCs	:	District Development Committees
DNA	:	Deoxyribonucleic Acid
DSU	:	Dispute Settlement Understanding
DUS	:	Distinct, Uniform and Stability
EBA	:	Everything But Arms
ECOS	:	Ecological Society
EDB	:	Export Development Board
EDVs	:	Essentially Derived Varieties
EMRLs	:	Extraneous Maximum Residue Limits
EPA	:	Environment Protection Agency
EU	:	European Union
FAO	:	Food and Agriculture Organisation
FARAD	:	Residue Avoidance Data
FES	:	Friedrich Ebert Stiftung
FIDH	:	International Federation of Human Rights League

GAPs	:	Good Agricultural Practices
GATT	:	General Agreement on Tariffs and Trade
GDP	:	Gross Domestic Product
GE	:	Genetically Engineered
GIPID	:	Global Intellectual Property Issues Division
GLPs	:	Good Laboratory Practices
GMOs	:	Genetically Modified Organisms
GPA	:	Global Plan of Action
GRPI	:	Genetic Resource Policy Initiative
GST	:	Goods and Services Tax
GSTP	:	Global System of Trade Preferences
GTZ	:	German Technical Cooperation
Ha	:	Hactre
HACCP	:	Hazard Analysis Critical Control Points
HD	:	High Diversity
HGT	:	Horizontal Gene Transfer
HKH	:	Hindu-Kush Himalaya
HMG/N	:	His Majesty's Government of Nepal
HYVs	:	High Yielding Varieties
IAEA	:	International Atomic Energy Agency
ICAR	:	Indian Council of Agricultural Research
ICIMOD	:	International Centre for Integrated Mountain Development
IDRC	:	International Development and Research Centre

IFAD	:	International Fund for Agriculture Development
ILO	:	International Labour Organisation
IMF	:	International Monetary Fund
INGOs	:	International Non-governmental Organisations
IP	:	Intellectual Property
IPGRI	:	International Plant Genetic Resource
IPGRI	:	International Plant Genetic Resources Institute
IPP	:	Intellectual Property Protection
IPPC	:	International Plant Protection Convention
IPRs	:	Intellectual Property Rights
ITA	:	Information Transfer Agreement
ITPGR	:	International Treaty on Plant Genetic Resources
IUCN	:	The World Conservation Union
IUPGR	:	International Undertaking on Plant Genetic Resources
JEFCA	:	Joint Expert Committee on Food Additives
JMA	:	John Mellor Associates
JMPR	:	Joint Meeting on Pesticide Residues
KTA	:	Knowledge Transfer Agreement
LD	:	Low Diversity
LDCs	:	Least Developed Countries
LIBIRD	:	Local Initiatives for Biodiversity Research and Development
LP	:	Low Productivity
LSGA	:	Local Self-Governance Act

LST	:	Law & Society Trust
MAFF	:	Ministry of Agriculture, Fisheries and Food
MFN	:	Most Favoured Nation
MNCs	:	Multinational Corporations
MoAC	:	Ministry of Agriculture and Cooperatives
MoF	:	Ministry of Finance
MoFSC	:	Ministry of Forests and Soil Conservation
MoICS	:	Ministry of Industry, Commerce and Supplies
MRLs	:	Maximum Residue Limits
Mt	:	Metric Ton
NABC	:	National Agro-biodiversity Committee
NARC	:	Nepal Agricultural Research Council
NARDF	:	National Agricultural Research and Development Fund
NBA	:	National Biodiversity Authority
NBAP	:	National Biodiversity Action Plan
NBIP	:	National Biodiversity Implementation Plan
NBIS	:	National Biodiversity Information System
NBS	:	National Biodiversity Strategy
NBU	:	National Biodiversity Unit
NCPGR	:	National Committee on Plant Genetic Resources
NCRCS	:	New Comprehensive Rural Credit Scheme
NEFAS	:	Nepal Foundation for Advanced Studies
NGF	:	National Gene Fund

NGOs	:	Non-governmental Organisations
NMDG	:	National Multidisciplinary Group
NPC	:	National Planning Commission
NSL	:	National Security Levy
NT	:	National Treatment
NTBs	:	Non-tariff Barriers
NTCs	:	Non-trade Concerns
NTFPs	:	Non-timber Forest Products
O&M	:	Operation and Maintenance
OECD	:	Organisation for Economic Cooperation and Development
OFCs	:	Other Food Crops
OIC	:	International Office of Epizootics
PBRs	:	Plant Breeders' Rights
PIC	:	Prior Informed Consent
Pro Public	:	Forum for Protection of Public Interest
PVP	:	Plant Variety Protection
QRs	:	Quantitative Restrictions
R&D	:	Research and Development
S&D	:	Special & Differential
SAARC	:	South Asian Association for Regional Cooperation
SAPTA	:	South Asian Preferential Trading Arrangement
SAWTEE	:	South Asia Watch on Trade, Economics & Environment
SDPI	:	Sustainable Development Policy Institute

SEAN	:	Seed Entrepreneurs' Association of Nepal
SLECIC	:	Sri Lanka Export Credit Insurance Corporation
SLSI	:	Sri Lanka Standards Institution
SPS	:	Sanitary and Phytosanitary
TBT	:	Technical Barriers to Trade
TDM	:	Therapeutic Drug Monitoring
TNCs	:	Transnational Corporations
TRIPS	:	Trade Related Aspects of Intellectual Property Rights
TRQs	:	Tariff Rate Quotas
TRRs	:	Traditional Resource Rights
TWN	:	Third World Network
UK	:	United Kingdom
UN	:	United Nations
UNCED	:	United Nations Conference on Environment and Development
UNCTAD	:	United Nations Cooperation on Trade and Development
UNDHR	:	United Nations Universal Declaration of Human Rights
UNDP	:	United Nations Development Programme
UNEP	:	United Nations Environment Programme
UNESCO	:	United Nations Educational, Scientific and Cultural Organisation
UPOV	:	International Union for the Protection of New Varieties of Plants
UR	:	Uruguay Round

URAA	:	Uruguay Round Agreement on Agriculture
USA	:	United States of America
USDA	:	United States Department of Agriculture
VDCs	:	Village Development Committees
WFP	:	World Food Programme
WHO	:	World Health Organisation
WIPO	:	World Intellectual Property Organisation
WTO	:	World Trade Organisation

Preface

The wave of globalisation and liberalisation has swept the entire universe. No part of the world could remain aloof from this paradigm shift in global economic policy making – howsoever radical changes it has brought about or is likely to bring about in the people's livelihood. With the advent of the World Trade Organisation (WTO) and gradual reduction of tariffs and non-tariff barriers, global economy seems poised to become an integrated whole. While apples from New Zealand have found easy entry into Nepalese market, and dairy products from Denmark are finding access to Indian market.

In an era of non-discrimination, hastened by the national treatment requirement of the WTO, the distinction between foreign and national goods is becoming increasingly blurred. While increased competition in the goods as well as service market has enhanced consumer welfare, it has reduced producers' and workers' welfare because of the closure of the factories and abandonment of farming as an occupation by many farmers who find themselves misfit in the present competitive environment. The impact of these changes are likely to be felt by all farmers alike, however, the burden of adjustment is likely to fall disproportionately on mountain farmers.

It is globally accepted reality that people living in mountain region are the most vulnerable and neglected lot. As if their location specific natural handicaps were not enough, they are facing burnt of neglect by the policymakers at the national, regional and international levels. For example, not even a single agreement of the WTO has been prepared with mountain communities in mind. Majority of the population in mountain areas eke out their living through farming. Most of them practice subsistence farming.

Even if they save some of their harvest after fulfilling the consumption requirement of their family members, they are unable to find market to sell them. They live far from city centres and due to lack of requisite infrastructure, including roads, their produce get rotten before reaching the market of the city centres located at plain areas. Even if their produce somehow reaches the city centre, they are unable to compete with the much cheaper imports coming

from outside the country. Who else than mountain farmers could suffer more from the subsidies provided by the richest nations of the world to their farmers?

To further compound the problem, genetic resources conserved by them and the associated traditional knowledge of the mountain farmers are coming under threats from the intellectual property right (IPR) regime of the WTO. The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) has hastened the process of bio-piracy from the gene-rich mountain areas. The irony is that mountain farmers, who are the original donors of germplasm that goes into production of seed, plant variety and medicine by the big corporations do not get the due share of benefits accruing from the commercialisation of their knowledge and resources. Moreover, if they want to use the new products embodying their own knowledge and resources, they would have to pay royalties to the patent holders, who are supposedly the inventors of such products. Further, efforts are being made by the global seed corporations – through their governments – to provide a backdoor entry to an instrument in the TRIPS Agreement which would only protect the rights of breeders and severely circumscribe the rights of farmers to continue their traditional practices of saving, reusing, exchanging and selling seeds.

The continued neglect of mountain farmers' rights to livelihood is the biggest scandal of our time. If the benefits of globalisation, liberalisation and WTO Agreements are to reach these people, some special and sincere efforts should be made at the national, regional as well as international levels. The idea floated by Sustainable Development Policy Institute (SDPI), one of the five partner organisations of SAWTEE, to provide special and differential treatment (S&DT) to the mountain farmers over and above the normal S&DT is both compelling and worth pursuing.

Realising the constraints faced by the mountain communities in general and mountain farmers in the Hindu-Kush Himalaya (HKH) Region in particular, South Asia Watch on Trade, Economics & Environment (SAWTEE), with a view to making strategic interventions at the policy level backed up by solid research and studies started a three-year Regional Programme on *Protecting Farmers' Rights to Livelihood in the HKH Region* since the year 2001. This programme is being implemented through five partner

organisations of SAWTEE in four countries of HKH (Bangladesh, India, Nepal and Pakistan) and Sri Lanka.

As a part of the programme, SAWTEE and its partner orgnaisations have organised series of workshops, consultations and panel discussion, among others, at the national, regional and international levels. Since SAWTEE found some of the papers presented in these events to be extremely useful for activists, academicians, policy makers and other stakeholders, it decided to publish select papers presented at these events. This led to the idea of publishing this book. While most of the papers included in this book were presented at the Second Consultative Meeting of SAWTEE and its partner organisations held in Kathmandu from 17 to 18 August 2002, some of them were presented at the Panel Discussion on Farmers' Rights organised by SAWTEE, International Centre for Integrated Mountain Development (ICIMOD) and German Technical Cooperation (GTZ) on 30 October 2002 in Bishkek, Kyrgyzstan. Yet some other papers were collected from the authors at the later stage with a view to including them in this publication.

This book is edited by Mr. Ratnakar Adhikari, Executive Director and Kamalesh Adhikari, Senior Programme Officer of SAWTEE. Their efforts in bringing this book, despite all odds are commendable and I would like to thank them for their skilful editing and hard work.

Similarly, I would also like to thank Mr. Indra Shrestha for preparing the cover design of this book and Mr. Krishna Subedi for meticulously preparing the internal design of each and every page of this book.

This book would not have been possible without the generous support of Ford Foundation, New Delhi and ActionAid Asia Office in Bangkok. I would like to extend my gratitude to these organisations not only for supporting us financially to conduct our Farmers' Rights Programme but also for their gesture to support us in our future endeavour.

Finally, on behalf of SAWTEE, I would like to express my sincere thanks to all the authors, some of whom even agreed to revise their papers in light of comments and suggestions received subsequently.

We hope this book will find a niche for itself. We would like to encourage the readers to provide us comments and suggestions on the contents of the book and help us improve it further in the possible second edition of the same.

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Kathmandu
1 July 2003

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Introduction

Ratnakar Adhikari

Background

In the modern economic era, globalisation has become virtually an unstoppable phenomenon. It envisages free movement of factors of production, goods and services and is driven by market forces. It offers both opportunities and challenges. Participation of hitherto protected and isolated economies into the global economy provides them access to ideas, information, technologies and number of critical resources that are important for their development. With the openness to foreign trade and investment being embraced as the *mantra* for economic development, many developing countries have already joined the bandwagon of globalisation and many others are in the process of doing so.

The establishment of the World Trade Organisation (WTO), which is supposed to provide a basis for promoting rules-based trading system globally, has undoubtedly hastened the process of globalisation. While in theory, the WTO protects small and vulnerable countries from unilateral trade sanctions, in practice, the implementation of WTO Agreements seems to have further accentuated the process of alienation of small, marginal and vulnerable economies – pushing them on the brink of catastrophe. Even within these economies, there are some communities, which are going to be affected more by this process than other communities – mountain communities being one of them.

Mountains are rich storehouses of biodiversity, minerals, forests and water, yet mountain people are among the world's poorest and marginalised. Majority of the mountain communities depend on farming for their livelihood and farmers constitute majority of the mountain population around the world. Mountain farmers face a number of inherent problems such as lack of access to market, inputs, technology and requisite infrastructure (including transportation and communication) due to their natural locational disadvantage.

Worse still international organisations such as the WTO do not recognise any special and differential treatment (S&DT) for the mountain regions although these areas are least developed and more prone to natural calamities (SDPI, 2002). Mountain communities, which are already resource poor, have to pay twice or thrice as much as their counterparts in the plain areas for acquiring the same products for the daily consumption. On the supply side, they realise very little amount by selling their products as they hardly have direct contacts with the outside markets and have to, more often than not, rely on intermediaries of the city centres to sell their products.

The problem is further compounded by the gross neglect of the mountain areas in the domestic policymaking process. As the mountain areas have limited inhabitants, the political parties too consider focusing on mountain areas as gross misallocation of their resources. They rather prefer to focus on the development of the plain areas where voters are high in number.

Agricultural liberalisation

Despite the fact that developed countries have succeeded in opening up the market of the developing countries for the export of their subsidised agricultural products, they continue to remain highly protectionist themselves. Agreement on Agriculture (AoA) is an attempt to reduce protectionism in developed as well as developing countries. However, a closer look at the way it was crafted and is being implemented, reveals that it would take awfully longer period than earlier envisaged to bring agricultural sector of the developed countries within the WTO discipline.

For example, an important step to provide market access to the exports of other countries, as envisaged by AoA, was to convert non-tariff barriers (NTBs) in agricultural products into tariff barriers — through a process known as "tariffication". In the actual implementation, the developed countries have simply inflated the monetary value of NTBs with the sole objective of protecting the agricultural markets of some sensitive products and therefore applied "dirty tariffs". In some extreme cases, the tariffs of developed countries have increased after the implementation of the reduction commitment as envisaged in AoA.

As per the provision of AoA, subsidies were clustered under three headings: green box, amber box and blue box. While green box subsidies (e.g., provided for training, pest and disease control and research and development) could continue, all the amber box subsidies were to be gradually reduced. However, in the actual implementation, the agricultural supports provided to their farmers actually increased, thus making the agricultural products cheap in developed countries and restricting the market access of products from developing countries. For example, in the Organisation for Economic Cooperation and Development (OECD) countries, agricultural supports in the form of subsidies and other mechanisms still amount to an equivalent of US$ 33,000 per farm in Japan, and US$ 30,000 for European and American farmers (Adhikari, 2001).

As a result of these distortions, according to the WTO Secretariat, developing countries' share of world agricultural exports has not changed since 1990. On the contrary, developing countries' governments have used the subsidy provisions contained in AoA as a ploy to reduce subsidies provided to their farmers. Moreover, developing countries, which had never made use of such measures as the "blue box", are being debarred from using them. Therefore, even if they have the resources to subsidise their farmers, they are not allowed to, for example, provide set-aside compensation to their farmers.

Among the Hindu-Kush Himalayan (HKH) countries, India is the only exception, which has started to subsidise its farm exports. In 2001, it decided to extend support to its traders through what is known as "covering the difference" between world price and minimum support price. The new subsidies are targeted at reducing the costs of marketing and handling, upgradation and processing, cost to international freight and transport and freight charges (The Economic Times, 2002).

IPR regime

The Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement, which was included in the WTO as a part of the package deal agreed during the Uruguay Round (UR) of multilateral trade negotiations, sets minimum standard for intellectual property protection in all the WTO member countries. As per one of the most

controversial provisions contained in the Article 27.3 (b) of this Agreement, WTO members are required to provide protection to microorganisms, micro-biological process and non-biological process – thus opening the floodgate for the protection of life forms. This provision has given *carte blanche* to the transnational corporations (TNCs) to legally pirate genetic resources from the mountain areas, which are considered hotspots of biodiversity; make small modifications to them by adding a few attributes through genetic engineering; and finally patent them. Those new attributes too could have very well been borrowed from the traditional knowledge and practices of the mountain communities. Finally, they can then sell these patented products to the mountain farmers (who are the actual donors of genetic resources) at a monopoly price. This system, which is popularly known as "bio-piracy" and has already happened in the case of products like *neem*, turmeric and Basmati rice, could rob the mountain farmers' rights to their livelihood.

This very Article also contains a provision as per which WTO member countries are required to provide protection to plant varieties either through patent or through what is known as effective *sui generis* (of its own kind) system or comibination of both. Since effective *sui generis* system is not defined anywhere, developing countries thought that they would have the flexibility to design a system of protection of plant variety which suits their national socio-economic, cultural and environmental conditions. However, the developed countries had entirely different intention in incorporating this provision in the TRIPS Agreement. As per them, the only effective *sui generis* system is there own system, which is known as Union Internationale pour la Protection des Obtentions Vegetales (UPOV) or Union for the Protection of New Varieties of Plants – a Convention exclusively prepared by the developed countries in 1961 to suit their requirement of commercial farming at the insistence of the commercial breeders.

As per the initial text of this Convention, though plant breeders were guaranteed protection on new plant varieties developed by them, a provision on "Farmers' Privilege" contained in the Convention allowed farmers to save, exchange and reuse seeds. The UPOV Convention has been amended three times since it came into being in 1968 and now has 52 members – out of which

majority are developed countries. While the first two amendments made in 1972 and 1978 kept the basic structure almost unchanged, the last amendment in 1991 introduced far-reaching changes to the structure of protection considerably downgrading Farmers' Privilege (Dhar, 2002). Should developing countries decide to adopt this system, the rights of their farmers to save, exchange, reuse and sell seeds will be circumscribed. If they choose their own system of protection, there is a danger that developed countries could drag them to the Dispute Settlement Body of the WTO, which could very well declare the system as "ineffective".

These two provisions contained in Article 27.3 (b) could have disastrous consequences for mountain farmers. Firstly, the threat of bio-piracy looms large for the HKH region, which is not only rich in biological diversity but also in traditional knowledge. Secondly, the multinational corporations (MNCs), which are going to patent the genetic resources developed by mountain farmers for generations, are not going to compensate them even if they make billions of dollars profits out of same. Thirdly, mountain farmers could be forced to abandon their age-old practices of acquiring and using seeds and would be forced to pay the monopoly prices demanded by commercial breeders of the developed countries.

There is little sense of respite for the mountain farmers because the mandated review of this Article is moving at a snail pace because of the reluctance of the developed countries to open the entire text for review. Despite the fact that paragraph 19 of the Doha Ministerial Declaration has provided a window to examine, *inter alia*, the relationship between TRIPS and CBD, the protection of traditional knowledge and folklore, the issues and concerns raised by the developing countries are being systematically sidelined.

Standards as NTBs

The Sanitary and Phytosanitary (SPS) Agreement confirms the right of WTO member countries to apply *measures necessary to protect human, animal and plant life and health.* However, recognising the potential of this Agreement being used for disguised protectionism and the imperative to protect the interest of exporting countries, the Agreement requires member countries to base their food safety measures on the standards set by Food and

Agriculture Organisation (FAO)/World Health Organisation (WHO)'s Codex Alimentarius Commission (CAC) *where they exit.* Furthermore, the SPS Agreement calls for programme of harmonisation of national requirements based on CAC standards (Pirzada, 2003). The Agreement covers all food hygiene measures and food safety measures, such as control of veterinary residues, pesticide residues and other chemical/food additives used in food production.

Similarly, the Technical Barriers to Trade (TBT) Agreement was incorporated in the WTO with the objective of preventing the member countries using national or regional technical requirements, or standards in general, as unjustified trade barrier. The TBT Agreement basically provides that all technical standards and regulations must have a legitimate purpose and that the impact or cost of implementing the standard must be proportional to the purpose of the standard. The TBT Agreement places emphasis on international standards - the WTO members being obliged to use them, or parts of them, except where the international standards would be ineffective or inappropriate in the national situation. The Agreement covers standards relating to all types of products, including industrial and agricultural products, with the exception of aspects of food standards relating to SPS measures, such as products contents-requirements, quality, packaging labelling, etc. (Ibid).

Despite the noble intention of these Agreements to curb disguised restrictions on trade, developed countries are still setting very high standards which can only be met by the producers of their own countries. At times, they have even set the standards at a level higher than provided by international standards because these Agreements do not oblige them to follow international standards provided they can scientifically prove that the international standards are insufficient to protect their human, animal or plant life and health or prevent consumer deception.

Bangladesh, for example, is one of the countries in the HKH region, which has already become a victim of the standard imposed by the European Union (EU) on import of shrimp. The standard was so high that shrimp exporters of Bangladesh had no capacity to comply. Therefore, the exporters were forced to divert shrimp export

to Japan at a much lower price thereby suffering enormous financial losses. Since quality testing laboratory and facilities of global standard are not available in most of the HKH countries, the products of these countries are not likely to find their way to the developed countries' markets. Little wonder that the share of agricultural exports in total exports from the region (excluding China) has declined marginally in the past 10 years.

International instruments

Farmers' rights as a global agenda was first defined by the International Undertaking on Plant Genetic Resources (IUPGR), FAO in 1983 to establish harmony between plant breeders' rights (PBRs) and farmers' rights and to ensure due space for farmers' rights in PBR. According to the IUPGR, farmers' rights are "the 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 or diversity." (Bala Ravi, 2003).

These rights are vested with the international community, as the trustees for the present and future generations of farmers, for the purpose of ensuring full benefits to the farmers and supporting continuation of their contributions. The CBD, signed at Rio de Janeiro in 1992, has also reinforced this concept, albeit in an indirect way.

After the TRIPS Agreement came into force in 1995, the issue of protecting farmers' rights has become a matter of intense debate, mainly due to two reasons. Firstly, certain provisions of TRIPS have the potential to limit farmers' traditional rights to save, exchange and sell seeds. Secondly, recent years have seen a sharp increase in the role of IPRs in agriculture. This has led to a demand that the role of farmers and rural communities as sources of genetic material and indigenous knowledge should also be recognised and compensated for.

Moreover, CBD has also given the responsibility to the member states to adopt modalities for regulating access to genetic resources and providing due share of benefits to the communities involved in the conservation of these resources. Further, CBD

obliges member states to follow the principle of PIC so as to ensure that custodians of genetic resources can decide whether or not they would like to allow 'outsiders' to have access to genetic resources, which they have conserved. Therefore, in the present context, farmers' rights should include two distinct but interrelated components. First, rights to save, exchange and sell seeds; and second, rights to recognition and compensation for their role in protecting and improving genetic resources and traditional knowledge.

However, Article 9 of International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), which was approved by the FAO on 3 November 2001, while recognising these two rights, also asserts that the farmers have the right to participate in decision making process, at the national level, on matters related to the conservation and sustainable use of PGRFA. International community feels that the farmers should also have the right to receive compensation from the producers/sellers of the seeds and other agricultural inputs, which do not meet the claims made by them. In other words, farmers should be compensated for the underperformance of the agricultural inputs they purchase from the market.

The way forward

Developing countries are not able to reap the benefits of globalisation not merely because of the lack of their capacity but also because of the iniquitous nature of international agreements and double standards of the developed countries as well as international organisations. The idea of homogenising the heterogeneous world without recongnising the concerns of the developing countries has led to the marginalisation of the majority of developing countries from the global economy. The burnt of this marginalisation is felt more by the farming communities of the developing countries.

While most of the impacts of globalisation are common both for plain farmers and farmers of the mountain regions, the latter ones being much more vulnerable, poor and voiceless are going to face disproportionate burden of adjustment. Mountain farmers are among the marginalised farmers within their own countries. While

much of it is caused due to gross neglect of these communities by the planners and policymakers, globalisation has only served to hasten the process of their marginalisation from the global economy.

Unless and until corrective measures are taken to reverse this trend and serious efforts are made to integrate the mountain farmers first into the national economy and then into the global economy, it could create disastrous social and political backlash. It is necessary for developing countries to have policy autonomy at the national level to protect largely vulnerable communities, including the mountain farmers.

At the same time, it is necessary to protect the mountain resources and traditional knowledge from bio-piracy and restore the rights of farmers to follow their traditional practices of saving, exchanging, reusing and selling seeds. In the HKH region, India's Plant Variety Protection and Farmers' Rights Act 2001 could serve as a model for other countries in the region to ensure these rights. At the national level, bio-piracy can also be prevented by instituting a system of biodiversity registration and documentation. Most of the countries in the region have already initiated this process. Non-governmental organisations (NGOs), community based organisations (CBOs) and farmers' groups have also recognised the gravity of the problem and are supporting the initiatives of their governments towards this end. These efforts are both laudable and worth replicating.

Finally, developed countries should not be allowed to set higher standards than international norms. At the domestic level, governments of the HKH region should enact/amend legislation and create standard setting, testing and monitoring institutions to ensure that the quality of their products meet international requirements. However, setting up such institution being a costly exercise, they should demand technical assistance from the developed countries. Given the fate of S&DT provisions contained in various WTO Agreements, which are never operationalised, the HKH countries should join hands with other developing countries to ensure that there is a multilaterally binding commitment from the developed countries to provide technical assistance to the developing countries to address their concerns.

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Biodiversity, Farmers' Rights, Biotechnology and Patents

S. Bala Ravi

United Nations Environment Programme (UNEP) estimates that the global biodiversity has 1.75 million described species and another eight-fold undescribed species. Ninety percent of these species are indigenous to the 10 percent of the area flanking the equator. The biodiversity, however, is not uniformly distributed around the equator. Some regions are notable for the abundance of ecosystems and species wealth. Such regions are called mega-biodiversity regions. About 70 percent of the global biodiversity is concentrated in 12 mega-biodiversity regions across South and Central America; South, Central and East Africa; West, South and East Asia; and the Pacific Islands. The countries of the Hindu-Kush Himalaya (HKH) Region are native home to many cereal, fruit, fibre, vegetable and beverage crops. The agriculture in this region is at least 5,000 years old. Right from the period of domestication of these crop plants, farmers of this region, over several generations, have created a huge wealth of agro-biodiversity through continuous selection to suit different uses and cultivation under wide agro-climatic conditions.

Generations of farmers, worldwide, and particularly at the centres of diversity of crop plants, have been continuously selecting crop varieties to suit the different agro-climatic, soil conditions, specific needs and resistance against different biotic and abiotic pressures. This continuous intelligent value addition to the genetic diversity and its diligent conservation are solely responsible for the extant genetic diversity in several economically important traits in each crop. The value of these genetic resources in terms of social and economic benefits being accrued to the world is huge. The economic importance of each component of this genetic diversity is intimately associated with a knowledge system concurrently evolved. Free sharing and exchange of these genetic resources and knowledge, without any efforts to establish ownership rights on them, have enormously benefited global agriculture, national food security and livelihood security of millions of farming families, more specifically of the economically disadvantaged countries. A break from this long practice was initiated with the grant of patent

right on plant varieties in the United States of America (USA) coupled with the founding of International Union for the Protection of New Varieties of Plants (UPOV) in Europe in 1961.

These initiatives facilitated the establishment of institutionalised ownership right on plant varieties either under patent or under what is called the plant breeders' right (PBR). These rights in different measures denied the traditional rights of farmers to freely access the seeds of plant varieties by sharing, exchanging or selling or even re-using the seed saved from their own farm for raising the next crop. During the 30 years from 1961 to 1991, UPOV gradually strengthened the PBR at the cost of farmers' privilege it had provided in earlier Conventions.

The farmers' right as a global agenda was first defined by the International Undertaking on Plant Genetic Resources (IUPGR), Food and Agriculture Organisation (FAO) in 1983, with a possible intent to establish harmony between PBR and farmers' right and to ensure due space for farmers' right in the PBR. According to the IUPGR, farmers' rights are "the 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 or diversity". These rights are vested with the international community, as the trustees for the present and future generations of farmers, for the purpose of ensuring full benefits to the farmers and supporting continuation of their contributions. One of the undertakings requires "assisting the farmers and farming communities in all regions of the world, but especially in the areas of origin/diversity of plant genetic resources, to participate fully in the benefits derived at present and in future, from the improved use of plant genetic resources through plant breeding and other scientific methods". The "other scientific methods" obviously include the modern biotechnology being deployed for improvement of crops.

The Trade Related Aspects of Intellectual Property Rights (TRIPS) under the World Trade Organisation (WTO) requires patent protection to "micro-organisms, microbiological and non-biological processes" and the products derived thereform. It is interpreted, by one school, that the biotechnological processes and the transgenic plants are patentable subject matter in all WTO member countries.

This further helps in consolidating privatisation of important genes and bio-resources. What is equally disturbing is that the intellectual property protection (IPR) regime under the TRIPS Agreement does not recognise the rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources.

Now, take a look at what the genetic engineering does for evolving a new plant variety. It essentially adds one or two new economically useful or commercially strategic traits to a plant variety, which already has several other economic traits cumulatively added by the farming community during years of selection and conservation. Again with respect to the new economic trait added biotechnologically, it is not created *de novo* but is essentially drawn from the traditionally known property of biodiversity conserved by the rural and tribal communities. Where is the inventiveness and non-obviousness in such a new plant variety to qualify for a patent protection? The patent-based ownership issue may boil down to the familiar economics and exploitation. Because biotechnology is a costly technology and because it is a business of the private sector, they cannot gain market monopoly and make profit without patent right on the transgenic plants. The arising moral question is that if a party who added one gene today to a pre-existed variety can claim total ownership on that variety, where are the ownership rights to those who added many genes to evolve many traditional varieties, which are the raw material for all forms of breeding including biotechnological? The international community, which is the trustee of farmers' rights, has a moral responsibility to restrain this unethical appropriation of plant genetic resources with total denial of farmers' rights and equitable benefit sharing.

It is now well recognised that the manner by which IPR is allowed under TRIPS on biological material contravenes the basic tenets of the Convention on Biological Diversity (CBD). While CBD mandates sovereign rights to members over their biodiversity, access to the biodiversity with prior informed consent and equitable sharing of benefits gained from commercialisation of products or processes developed from such biodiversity, overlooking these basic rights of the members for the grant of IPR under TRIPS is an open encouragement to bio-piracy and

plagiarisation of bioresource related traditional knowledge. In this unfair deal, the beneficiaries are the technologically strong developed countries and the losers are the technologically weak but bioresource-rich developing countries, which own more than 90 percent of the global species wealth.

Although the Doha Ministerial Conference of the WTO held in November 2001 had directed specific negotiations on the implementation and review aspects of TRIPS with due consideration to the relationship between TRIPS and CBD, the protection of traditional knowledge and folklore, etc., no tangible progress is visible in view of the intransigence negotiation stand being taken by many developed countries against harmonising TRIPS with CBD. Thus, with respect to the use of bioresources for biotechnological research and consequent patenting of genes and varieties, there seems to be no space for farmers' rights, discouraging farmers to participate fully in the benefits derived from the improved use of plant genetic resources. This, in other words, promotes illegitimate free bioresource mining from developing countries by the technologically advanced countries and their private research entrepreneurs to further enrich themselves.

This uneven playground and unfair game rules are already operating against the economic stakes of the poor developing countries. About 40 percent of the global wealth is anchored on biodiversity. However, all bioresource-rich countries continue to be poor. All developing and least developed nations together share only less than 20 percent of the global wealth. It is obvious that much of the wealth from biodiversity is harnessed by the developed countries while the owners of this biodiversity continue to languish in poverty, hunger and total under development on grounds of resource scarcity. The violations of the sovereign ownership on biodiversity and associated traditional knowledge are not followed up and prevented with as much stringency as the IPR violations are dealt under TRIPS. Technology backed value addition of bioresources is the main component in generating wealth. The technological backwardness of poor countries and their inability to invest in creating domestic research and development (R&D) capability are the major disabling factors for the value addition of their own bioresources. For instance, the shares of developing countries to the global R&D steeply dropped from the meagre six

percent during 1980s to four percent in early 1990s and further less by 2000. During this period, the technology flow from the developed to the developing countries has also declined.

Under this deep economic and technological divide between the developed and the developing countries, a stringent and uniform IPR protection may only exacerbate the existing divide with creation of insurmountable hurdle for the economic growth, technological advancement with attendant dangers to the livelihood and food security of the people of these countries. The ability of these countries to prevent or resist piracy of biological wealth and traditional knowledge will be decreased under the IPR regime structured in the developed countries and the high cost for the legal action in these countries. Therefore, there are economic, moral and ethical compulsions for harmonising TRIPS with CBD, e.g., to check the exploitation of the poor, to regulate access to bioresources with prior informed consent, to provide scope for the equitable benefit sharing from the commercialisation of IPR protected bioresource and traditional knowledge-based products or technologies and facilitate technology transfer to the concerned developing country.

Biotechnology and contentious issues

Most of the technological innovations while offering great opportunities for economic growth and improving quality of human life do possess certain liabilities, which could be abused against the humankind and the nature. Some of these technologies, by their very nature, are prone to very high hazards, wherein their application for public good essentially demands *a priori* holistic understanding of all possible risks and dangers as well as establishment of foolproof and transparent regulatory measures to totally exclude such risks and danger to the life and the nature. These requirements are often heavily compromised with the entry of private investment in research and the use of research for advancing monopolistic market and profit making. Biotechnology is a powerful tool both in terms of the benefit it can offer in industry, agriculture health care and environment protection and the hazards it can cause from its irresponsible application for commercial gains under lack of transparency and contrived enforcement of safety regulations. Specifically in the case of biotechnology, the risk analyses as well as evolving fool-proof safety regulations are

severely handicapped by the incomplete understanding of the underlying biological mechanisms and the unpredictability of environment over the biological systems, to make the matters worse.

Much of the present day dilemma, debate and resistance to biotechnology, particularly the agricultural biotechnology, are generated by the over jealousness of some corporate majors to [somehow commercialise their genetically modified organisms (GMOs)] make a quick buck. These corporate majors have made huge investment on this research since last two to three decades and are obviously anxious to outwit each other, enter the commercial market earlier, expand the market across the world and to make an early harvest of the investment. These sheer economic and business considerations are driving them together to deploy their corporate strength and cultivated political patronage to bulldose the food and biosafety norms normally warranted in such a sensitive area. The private interest dominated biotechnology research is one of the good examples of how a good science is made murky and unpopular by the private commercial greed. It is most unfortunate that, in the run of the mill, even the public funded research is getting sucked into the competitive commercial cult, with pretentious sensitivity to the public concern.

Major hazards from agricultural biotechnology may arise from the unnatural intervention in life forms and its release into environment, in violation of some of the basic tenets of natural evolution. It is also accompanied by incomplete understanding of the complexities of life with consequent inadequacy in providing reasonably precise methods to predict possible consequences on food and bio-safety. These consequences are further exacerbated with the absence of foolproof and cost-effective test methods to precisely measure the risks and dangers that could emanate from GMOs. The haste being shown in the release of GMOs has led to many instances of serious risks and dangers to humankind, animal and rest of the living bio-system during the last 10 years. These risks and dangers could broadly be grouped into two classes, namely those arising from horizontal transfer of engineered genes and unpredictable genomic functional instability.

Dangers and risks from horizontal gene transfer

Horizontal gene transfer **(**HGT) involves transfer of genetic materials between cells or genomes belonging to unrelated species by processes other than reproduction. HGT occurs in nature mediated by bacteria and viruses. Genetic engineering is considered to speed up this process, also involving the engineered genes. Certain environmental conditions are known to promote and increase the frequency of HGT many-fold (Ho, Traavik, Olsvik, Tappeser, Howard, Weizsacker, and McGavin, 1998: 33-59). While bacteria and viruses are the most common mediators of HGT from a GMO (Ibid; Grillot, Goussand, Huetz, Ojcius, and Courvalin, 1998: 862-66), other routes of HGT are direct assimilation and integration of naked transgenic Deoxyribonucleic acid (DNA) by all kinds of cells (Ho, Ryan, Cummins, and Traavik, 2000), direct injection of transgenic DNA by insects with sharp mouthparts and additionally through pollen in the case of plants. The implications of HGT are that the genes engineered into one organism for a specific purpose may gradually spread to other non-target organisms and such contamination may cause serious environmental consequences.

Agrobacterium is a specific type of bacteria associated with certain plants, where it causes gall growth similar to the cancerous growth in animals. This property of *Agrobacterium* is being used for the laboratory transfer of engineered genes into target cells. Until recently, it is widely believed that *Agrobacterium* does not infect animals and hence may not transfer engineered genes from plants to animals. This contention is recently proved wrong when scientists detected DNA transfer in human cancer cells mediated by *Agrobacterium* (Kunik, Tzfira, Kapulnik, Gafni, Dingwall, and Citovsky, 2001:1871-87). There are several other scientifically documented instances of DNA fragments carrying engineered genes unwittingly spreading to non-target organisms, along soil in bacteria, along food and feed in animal and human. For instance, human consumption of GM food resulted in transfer of antibiotic resistance gene present in the engineered DNA into the bacteria normally present in human saliva and respiratory tract (Mercer, Scott, Johnson, Glover, and Flint, 1999: 6-10). Similarly, mice fed with GM food were detected to contain transgenic DNA in the blood, liver and spleen cells (Schubbert, Rentz, Schmitzx, and Doerfler,

1997:961-66) and in the placenta and foetus of pregnant mice (Doerfler, and Schubbert, 1998: 40-44).

Another study conducted at the University of New Castle, United Kingdom (UK), with Roundup Ready GM soya carrying herbicide (glyphosate) resistance gene, DNA fragments with this gene were detected in the intestine of three out of seven human volunteers fed only once with this soya (Vidal, 2002). Transfer of antibiotic resistance gene from GM beetroot crop residue to soil bacteria was detected under field conditions (Gebbard and Smalla, 1999:261-72). In yet another study at Leeds University commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF), UK, it was found that the DNA of GM grain and silage do not get degraded during the usual commercial processing conditions and this offers substantial scope for secondary horizontal transfer of intact antibiotic resistance gene to the bacteria and other organisms in the rumen of animals fed with such processed feed (Forbes, Blair, Chiter, and Perks, 1998).

In another study, DNA fragment containing ampicillin resistance gene from the Bacillus Thorengenosis (Bt) maize was detected in the oral cavity and rumen fluid of animals fed with Bt maize silage (Duggan, Chanibers, Heritage, and Forbes, 2000:71-77). All these studies provide unequivocal evidence to show that engineered genes from GMO may spread to all other living entities including human beings and thus cause serious health and environmental hazards with unpredictable consequences and dimensions.

Pollen grains of GM plants containing engineered gene are another route to HGT and cause of toxicity to other organisms. Until now, several instances of such gene flow from GMOs to related and unrelated plant species in the surrounding environment have been documented. Similarly, some of the non-target insects feeding on the GM plants either die or become an agent for the transfer of engineered gene to other natural organisms in the immediate environment. For example, the Bt-toxins present in the pollen of Bt-maize kill friendly insects like honeybee and lacewings (Hibee, Baungartner, Fried, and Bigler, 1998: 480-96) and other insects like monarch butterfly (Losey, Rayor, and Carter, 1999: 214). The MAFF in another important study reported that the engineered DNA from

GM plant can be transferred not only by ingestion, but also by contact with plant dust and airborne pollen during farm work and food processing (Tomlinson, 1998). Natural transfer of engineered gene from GM plant to non-GM plant varieties through pollen is a common event. Few of such documented examples include development of triple herbicide resistance in oilseed rape (GM canola) in Canada (Hall, Topinka, Huffman, Davis, and Good, 2000: 688-94) and Bt gene transfer from Bt maize to a landrace of maize in Mexico (Keen, Wright, Abranches, and Shaw, 2000). Thus, transfer of engineered genes from GM plants through food, plant residue, feed, pollen, etc. to other non-target organisms ranging from microbe to human being is a certain possibility and the long term impact of such transfers on human and animal health and the biodiversity remains largely unassessed.

Risks arising from transgene induced genetic instability

Natural evolution over millions of years, by trial and error, has established a dynamic and delicate equilibrium within an organism, within species and across all species in the biosphere. The invasive introduction of transgenic DNA across distantly placed species, the randomness with which such insertion normally occurs and the instability within the inserted gene construct are fraught with many serious and unpredictable risks. The instability may occur due to the internal structure of the engineered DNA construct or the genomic dynamics of the organism.

There are several well-documented studies to prove that transgenic plants are notoriously unstable and often they do not breed true (Pawlowski, and Somers, 1996:17-30). This instability may lead to different and unpredictable consequences like total silencing of the transgene (Ibid), loss of part or whole of the transgenic DNA, random shifting of sites of insertion, over expression of native genes proximal to the insertion point, activation genes within the junk DNA, etc. Usually, larger the number of genes and longer the length of the transgenic DNA cassette, higher the instability it may encounter. Studies in barley and oats have clearly shown that transgenic DNA induces instability in the host genomes (Kumpatla, Chandrasekharan, Iyer, and Hall, 1998: 96-104; Horvath, Jensen, W'ong, Kohl, Ullrich, Cochran, Kannangara, and Von Wettstein, 2001:1-11). When such random shuffling of site of insertion happens

within the regions known as junk DNA, it may lead to activation of genes silenced during the evolution, with unforeseen consequences. Convincing evidence on random scrambling of the gene order within the transgenic DNA and the sites of its insertion on the host genome is provided by the molecular analysis of Roundup Ready soya commercially grown since last few years (Svitashev, Ananiev, Powlowski, and Somers, 2000: 872-80).

Such unpredictable scrambling of transgenic DNA across the genome of a GMO may trigger totally unforeseen changes in the function of genes, which are placed proximal to the insertion point leading to production of unexpected proteins and other metabolites. Some of them could be allergins or toxins or molecules inducing unwarranted expression of other genes. It is also notable that the similar change in different genomes may cause different effects. There are a number of such documented instances. For example, GM tobacco plant intended to produce gamma-lenoleic acid was found producing toxic octadecatetraenic acid (Reddy, and Thomas, 1996: 639-42). Genetic modification of yeast to increase fermentation efficiency resulted in unexpected high production of a metabolite, methyl glyoxal, in toxic and mutagenic concentration (Inose, and Murata, 1995: 141-46). A batch of tryptophan produced by using GM microorganism, on administration, led to the unexpected death of 37 persons and chronic neurological and autoimmune disorders in 1,500 persons (Mayeno, and Gleich, 1994: 346-52). Introduction of new genes, which may produce new enzymes unfamiliar to the plant, may catalyse new metabolic pathways, with production of unexpected and unfamiliar metabolites. Some of these new biomolecules may have potential to seriously disturb the delicate gene regulatory system with consequent unpredictable dangers.

Safety assessment

Safety assessment regulations in biotechnology suffer from three major limitations. The first limitation arises from the current poor understanding of the totality of gene and genome function. This imposes limitations in predicting an upcoming danger. The second limitation is that for the same reason, it may take time and money to evolve an *a priori* full-fledged testing protocol for safety assessment. And the third limitation is that many dangerous effects arising from the release of GMOs in different environments may not

be readily detectable until such effects reach a discernible size by which time it could have already crossed irreversibly into danger zone.

However, there is a safety and regulatory regime in place in countries where biotechnology research is undertaken and the GMOs are commercialised. Nonetheless, there is also a widespread impression that these regulations are neither foolproof nor adequate enough and strictly complied with transparency. There is unnecessary secrecy and soft-pedalling on safety aspects, notwithstanding the inadequacy of existing domestic legislation on GMOs in several countries. There is a wide dichotomy between the safety regulations being insisted on products of pharmaceutical biotechnology and that of agricultural biotechnology. Safety assessment of biotech drugs is done, at any point of time, with the best procedures available. Despite this rigorous protocol, the test, on average, fails to detect three percent of the harmful cases, necessitating market call back of such certified drugs. Another 10 percent of the certified drugs may cause such side effects to restrict their administration only under very compelling situations. Thus, despite the stringent enforcement of regulations and best test methods, 13 percent of the certified drugs become harmful. In contrast to this, the laboratory experiments with GM foods are very limited. Whenever done, it is short-term with no long-term assessment of toxicological, neurological, endocrinologic, metabolic, mutagenic, developmental or reproductive studies on the food. In short, GM food approvals are being made with superficial short-term testing.

The above-mentioned dichotomy in the safety assessment was created and justified on a questionable ground. The agri-biotech industry found that insertion of a gene is a kind of breeding as much as several non-GM foods also have been developed by breeding. Hence, GMOs are grossly similar to their natural counterparts and should not be discriminated from other bred foods. As the latter do not have to undergo safety tests of any kind, similar practices should be adopted for the former. In order to accept this line of argument, GM food should be proven to be "substantially equivalent" with their natural counterpart. This questionable principle of substantive equivalence provided easy passage of GM foods to public domain without serious risk assessments. These relaxed safety assessment principle and

procedures alerted the US National Academy of Sciences to advice United States Department of Agriculture (USDA) and Environment Protection Agency (EPA) in April 2000, to pay greater attention to "unintended compositional changes" of GM foods to contain allergens and toxic metabolites.

While this is the state of safety assessment on GM foods, the unpredictable risks the GMOs pose to the biosphere remain largely unaddressed. It is in this context, an initiative made by a few developing countries under the framework of CBD led to the conclusion of Cartegena Protocol involving more than 130 countries. This protocol, when enforced shall bind the member governments to implement the precautionary principle in the handling and trade of GMOs within and across national boundaries. The Protocol also mandates the members to evolve legislation and institutional framework and capacity building at national and international levels, taking precedence over trade and financial agreements of the WTO. Under the precautionary principle, a party trading on GM food or products has to demonstrate the safety of the product, if called upon, by the importing country before it is shipped from the port of origin, in contrast to the present export norm that a product is presumed to the safe unless proven otherwise. Efforts are already under way through the WTO by the biotech lobby to subvert the precautionary principle provided in the Cartegena Protocol.

Labelling GM foods

In the absence of a foolproof safety assessment of GM foods, labelling GM foods or GM crop derived products may offer an alternate safeguards to food safety, wherein the public could exercise their right to choose safe food according to their understanding and own choice. However, demand for such labelling also became a contentious issue with the USA refusing labelling and European Union (EU), Japan and more other countries favouring labelling of GM food. It is notable that in the USA, fresh and frozen meat or chicken are labelled to facilitate customer choice. In the case of GM foods, the agri-biotech industry holds that labelling tantamount to skull and crossbones sign on the product. Possibly they know it better!

Poverty and biotechnology

It was around 1973 the potential capability of gene splicing technology was demonstrated. Soon after, the pesticide majors of the USA and Europe started huge investment in biotechnology research. By 1980s, it had emerged as the sunrise industry with a few major players. To consolidate their control over this technology and the global market, these biotech giants successfully set the IPR agenda for agricultural trade at the Uruguay Round (UR) and secured a global patent regime for biotech process and products. However, in the 1990s, when the GMOs were ready for release, unexpected and wide spread opposition to GM crops was encountered from environmentalists and the civil society groups across the world. This opposition is not receding, while more national governments are giving approval for the release of GM plants. Notwithstanding this, the expected biotechnology boom is yet to happen in agriculture, even in countries, which are the leaders of this technology. What is amiss with the GM crop is an inherent agronomic disadvantage, non-attractive economic prospect to the farmer, increasing evidence on environmental and food safety risks and a snow balling public opposition to "frankein" food.

It is possibly to arrest this recession in fortune, the biotechnology public relation invented a new political platform for alleviation of poverty and amelioration of nutritional maladies with a view to gaining foothold in developing countries. The overplay on the scientifically questionable and functionally hazardous golden rice is aimed to create a favourable political and public opinion in poor countries, where calorie deficiency precedes nutritional deficiency. The questions then are, whether GM crops are essential to feed the world, now and later and whether the GM food can be accessed cheaper in hastening eradication of poverty and malnutrition?

A study undertaken by the FAO concluded that the world agriculture during next 30 years will be capable of producing enough food through conventional genetic improvement and production systems without depending on GM crops (Dawkins, 2001). It is now well accepted that poverty today and possibly tomorrow shall persist, not due to lack of global food production capability but due to lack of purchasing power by those who are

hungry and malnourished. There is no basis, so far, to show that GM crops yield better and produce food at a lower cost, so that it will be more accessible to the economically deprived. The controversy regarding African food aid brings to the focus that 'frankein' food bred for animals can also be food for the poor and deprived, whether they like it or not.

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CoFaB: A Developing Country Alternative to UPOV

Suman Sahai

After the conclusion of the Uruguay Round, developing countries have accepted the *sui generis* option for the protection of new plant varieties. India has already passed the Plant Variety Protection and Farmers' Rights Act in 2001. In order to implement the law concerned with the protection of new varieties in each other's countries, nations need to work through an international platform. International Union for the Protection of New Varieties of Plants (UPOV), which came into being in 1961 with its headquarters in Geneva, is such a platform through which the industrialised nations regulate the implementation of plant breeders' rights (PBRs). There are 52 members in UPOV. Almost all of them are developed countries. The reluctance of Asian countries to join UPOV is seen in the fact that today only three countries, Japan, South Korea, and China are its members. China's case is different from the other two as it was not left with much choice. Since China was negotiating its entry into the World Trade Organisation (WTO) (a process that took almost 15 years), it had to make several concessions, especially in the field of intellectual property right (IPR). Apart from radically amending its patent laws, China brought in other changes to comply with the demands made on it. One such compliance was joining UPOV.

UPOV started as a flexible system, which apart from granting breeders' rights was not particularly concerned about restricting the exemptions it provided to other players, namely farmers and other researchers. This began to change as the corporate breeders consolidated their hold on the plant breeding and seed producing industry. Amendments to the UPOV convention were brought in 1972, 1978 and 1991. All these amendments had one goal to further strengthen the hold of the breeders and reduce exemptions that were granted in early versions of the convention. The valid treaty of today is the 1991 treaty which has almost exclusive rights of breeders, no exemptions for farmers or researchers. In fact, UPOV has moved to accept the patents system now so that it is not only a platform for breeders' rights but also for patents on plant varieties.

Gene Campaign has opposed India joining UPOV because UPOV does not address our needs. The Campaign has been urging India to craft an alternative treaty to UPOV that will meet the needs of developing countries. That treaty needs to provide a forum, which will also grant Farmers' Rights and will work towards food and nutritional security.

There is no concept of farmers' rights in the UPOV system; rights are granted only to the breeders. The UPOV system does not need to protect the rich farming communities of Europe and America in the way that our seed laws will have to protect our farmers. It is clear that we have goals that UPOV will be unable to fulfil. UPOV conditions are good for the countries where it was developed but not for us.

The UPOV system is not suited for us because it embodies the philosophy of the industrialised nations where it was developed and where the goal is to protect the interests of powerful seed companies who are the breeders. For example, in India the position is very different. It does not have big seed companies in essential seed sectors and its major seed producers are farmers and farmers' cooperatives. Logically, its laws will have to concentrate on protecting the interests of the farmer in his/her role as producer as well as consumer of seed.

Once we are in the UPOV system, we shall be forced to go in the direction that UPOV goes. It is a system headed towards seed patents. Starting with its first amendment in 1978 when limited restrictions were placed on protected seed, the 1991 amendment, which is now ratified, brought in very strong protection for the plant breeders. In this version, breeders are not exempt from royalty payments for breeding work and the exemption for farmers to save seed has become provisional. UPOV now also permits dual protection of varieties that means in the UPOV system, the same variety can be protected by PBR and patents. It would seem obvious that UPOV is ultimately headed towards patent protection for plant varieties. It would be wise for India to stay out of a system which has plant patents as its goal since that is neither our goal nor our interest.

UPOV laws are formulated by countries which are industrial, not agricultural economies. In these countries the farming communities is by and large rich and constitutes from one to five percent of the population; their agriculture profile is completely different to ours. These countries do not have the large number of small and marginal farmers like we do, yet subsidy to agriculture is of a very high order. Because they produce a massive food surplus, farmers in industrialised countries get paid for leaving their fields fallow.

In Europe, agriculture is a purely commercial activity. However, for the majority of Indian farmers, it is a livelihood. These farmers are the very people who have nurtured and conserved genetic resources – the same genetic resources that breeders want to corner under breeders' rights. We must protect the rights of our farmers and these rights must be stated unambiguously in our *sui generis* legislation.

Almost all agricultural research and plant breeding in India are financed with the taxpayers' money. It is conducted in public institutions like agricultural universities and institutions of the Indian Council of Agricultural Research (ICAR). This research belongs to the public. The laws of UPOV on the other hand are formulated by societies where seed research is conducted more in the private domain than in public institutions; where private capital finances plant breeding. Because they invest in expensive breeding methods and need to secure returns on their investments, seed companies in Europe and North America seek market control through strong IPRs. These conditions do not apply to India.

Another feature that makes the UPOV system unsuitable for us is its sheer cost. At the seminar organised jointly by the ICAR and UPOV in Delhi, the figures that were presented for obtaining an UPOV authorised Breeders' Right Certificate could be several thousands, even hundred thousands. Such rates will effectively preclude the participation of all but the largest seed companies. There certainly will be no space in such a system for small companies, farmers' cooperatives or farmers/breeders.

In developing countries, farmers play a significant role as breeders of new varieties. They often release very successful

varieties by crossing and selection from their fields. These varieties are released for use as such. In addition, in almost all cases, these varieties are taken up by agriculture research stations as breeding material for producing other varieties. Such farmers/breeders would not be able to participate in an expensive system like UPOV. Their material along with their labour and innovation would be misappropriated by those with the money to translate such valuable germplasm into money-spinning varieties registered in UPOV. Poor farmers unable to pay the costs of getting an UPOV certificate would tend to sell their varieties for small sums to larger seed companies. This will be the ultimate irony, creating an institution that will snatch away from the farmer his/her material and his/her opportunities.

Convention of Farmers and Breeders (CoFaB)

Gene Campaign and the Centre for Environment and Development have prepared an alternative treaty to UPOV to provide a forum for developing countries to implement their farmers' and breeders' rights. This treaty is called the *Convention of Farmers and Breeders, CoFaB* for short. CoFaB has an agenda that is appropriate for developing countries. It reflects their strengths and their vulnerabilities. It seeks to secure their interests in agriculture and fulfil the food and nutritional security goals of their people.

This treaty designed for interaction between developing countries seeks to fulfill the following goals:

- Provide reliable and good quality seeds to both small and large farmers.
- Maintain genetic diversity in the field.
- Provide for breeders of new varieties to have protection for their varieties in the market, without prejudice to public interest.
- Acknowledge the enormous contribution of farmers to the identification, maintenance and refinement of germplasm.
- Acknowledge the role of farmers as creators of landraces and traditional varieties which form the foundation of agriculture and modern plant breeding.

- Emphasise that the countries of the tropics are germplasm owning countries and the primary source of agricultural varieties.
- Develop a system wherein farmers and breeders have recognition and rights accruing from their respective contribution to the creation of new varieties.

The salient features of CoFaB

Farmers' rights

Each contracting state will recognise the rights of farmers by making arrangements to collect farmers' rights fee from the breeders of new varieties. The farmers' rights fee will be levied for the privilege of using landraces or traditional varieties either directly or through the use of other varieties that have used landraces and traditional varieties, in their breeding programme issue.

Farmers' rights will be granted to farming communities and where applicable, to individual farmers. Revenue collected from farmers' rights fees will flow into a National Gene Fund (NGF), the use of which will be decided by a multi-stakeholder body set up for the purpose.

The rights granted to the farming communities under Farmers' Rights entitle them to charge a fee from breeders every time a landrace or traditional variety is used for the purpose of breeding or improving a new variety. Rights granted to the farmer and farming communities under farmers rights will be for unlimited period.

Breeders' rights

Each member state will recognise the right of the breeder of a new variety by granting a special title called the Plant Breeders' Right.

The plant breeders' right granted to the breeder of a new plant variety is that prior authorisation shall be required for the production, for purposes of commercial and branded marketing of the reproductive or vegetative propagating material, as such, of the new variety, and for the offering for sale or marketing of such

material. Vegetative propagating material shall be deemed to include whole plants.

The breeders' right shall extend to ornamental plants or parts of these normally marketed for purposes other than propagation when they are used commercially as propagating material in the production of ornamental plants or cut flowers.

Authorisation by the breeder shall not be required either for the utilisation of the new variety as an initial source of variation for the purpose of creating other new varieties or for the marketing of such varieties. Such authorisation shall be required, however, when the repeated use of new variety is necessary for commercial production of another variety. At the time of application for the plant breeders' rights, the breeder of the new variety must declare the name and source of all varieties used in the breeding of the new variety. Where a landrace or farmer variety has been used, this must be specifically mentioned.

To promote a more sustainable kind of agriculture and without any prejudice to the quality and reliability of the new variety, CoFaB enjoins breeders of new varieties to try to base the new variety on a broader rather than a narrower genetic base, in order to maintain greater genetic variability in the field. Further, a variety for which rights are claimed must have been entered in field trials for at least two cropping seasons and evaluated by an independent institutional arrangement. The breeder at the time of getting rights will have to provide the genealogy of the variety along with DNA finger printing and other molecular, morphological and physiological characteristics. The right conferred on the breeder of a new plant variety shall he granted for a limited period, depending on the variety.

In the event of a variety becoming susceptible to pest attack, the normal period of protection may be curtailed to prevent the spread of disease. In order to monitor this, periodic evaluations will be undertaken. The breeder or his/her successor shall forfeit his/her right when he/she is no longer in a position to provide the competent authority with reproductive or propagating material capable of producing the new variety with its morphological and physiological characteristics as defined when the right was granted.

The breeder will also forfeit his/her right if the "Productivity Potential" as claimed in the application is no longer valid.

To give primacy to the goals of food security, it has been provided in CoFaB that the right of the breeder will be forfeited if he/she is not able to meet the demand of farmers. Time inability will lead to scarcity of planting material, increased market price and monopolies. If the breeder fails to disclose information about the new variety or does not provide the competent authority with the reproductive or propagating material, his/her right will be declared null and void.

Current status

After the progressive Indian legislation, with strong rights for farmers, the decision of the Indian government to join UPOV has stunned the international community and those who have fought hard to keep open the flexibility provided in TRIPS for countries to draft a *sui generis* legislation to suit their needs. The Indian decision is even more perplexing, given that UPOV is not even mentioned in the WTO/TRIPS and joining it is not required.

The Indian government points out that India has applied to join the 1978 UPOV Convention, not the far more draconian 1991 version. In this context, it needs to be understood that a soft landing into UPOV via the 1978 Convention is only temporary in nature. Article 37(3) of the UPOV 1991 Convention clearly states that after 31 December 1995 all countries, including developing countries, who wish to join UPOV must accede to the 1991 Convention. Yet India has been allowed to join the 1978 Convention. The obvious benefit to UPOV in bending their own regulations [Article 37(3) UPOV 1991] is that in encouraging India, a large developing country with major public and private plant breeding sectors, to join, other Asian countries will follow suit rather than try and introduce their own *sui generis* legislation. To defeat UPOV's intentions, Gene Campaign has launched a full-fledged social, political and intellectual campaign against the Indian government's decision and is trying to overturn the decision to become a UPOV member, overturned. To this end, Gene Campaign filed a public interest litigation in Delhi High Court on 01 October 2002. However, the case is still *sub-judice*.

Recognising Farmers' Rights as Human Rights

Shafqat Munir

Five hundred generations ago, the first change in the organisation of human society began. Agricultural wave was the first economic and social change in human society when our ancestors picked some crude implements, sharpened them and went to fields. By sowing first crop, they laid a new foundation for power structure, concept of ownership and sharing in the crop. As an economic and power factor, farming expanded the human horizons and created the concept of farmers' rights that include:

- Right to have implements and skills to sharpen them
- Right to acquire skills in cultivating and reaping the crop
- Right to acquire a piece of land and knowledge about soil and protection against eviction and displacement
- Right to store crop and seed
- Right to reuse and share the plant varieties
- Right to protect indigenous knowledge, plant and seed varieties
- Right to have sufficient water

These are the basic fundamental rights of farmers. However, in this globalisation era, these centuries and generations old fundamental rights of the farming communities are at stake, mostly due to the monopoly of multinational corporations (MNCs) over agricultural inputs including plants and seed varieties. Introduction of corporate farming has deprived small subsistence farmers from their right to cultivation, caused withdrawal of subsidies, and displaced the landless farmers from the state owned farms. The violations of these rights are the violations of human rights.

The reason why human rights are being undermined by the soft-states is the dictations of MNCs and their mentors in the North. If we look into the process of multilateral talks under the World

Trade Organisation (WTO) regime, we find that the WTO is hardly concerned about the principles set by the natural law and international conventions on human rights. Instead, they consider human rights as a hindrance to trade liberalisation.

Under the WTO regime, trade is not required to conform to the notion of human rights rather it opts for the reverse despite the fact that the Preamble to the *Marrakesh Agreement Establishing the Word Trade Organisation* has duly incorporated the spirit of Article 55 (a) of the United Nations (UN) Declaration of Human Rights. The first paragraph of the Preamble of the Marrakesh Agreement reads: "Relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand." And, the Article 55 (a) of the UN Charter reads: "The United Nations shall promote higher standards of living, full employment and conditions of economic and social progress and development in the economic and social order."

By incorporating the spirit of Article 55 (a) in the document, the WTO rules are subordinated to the principles of the UN Charter. But, in practice, how WTO talks are being conducted shows that it is poised to violate the UN Charter. It rather makes a mockery of the globally acknowledged UN Universal Declaration of Human Rights (UDHR).

It is however important here to note that with the emergence of worldwide rights movements, awareness of human rights and a widespread rights-based approach to settle disputes and vulnerabilities are creating space across communities and countries. The trend now is to give rights an explicit legislative basis, and to incorporate them into a wide range of agreements and policies at all levels – national, regional and international. It is therefore important to understand what actually human rights mean.

The concept of human rights not only covers individual freedom of expression, voting and trade, but basic needs of human being including food, housing, employment opportunities, a clean environment and increasingly gender and cultural rights, and

security. The violation of these rights makes the communities and the people vulnerable.

There is a consensus among the human rights groups that the rights-based approach could help reduce vulnerability provided legal instruments support the approach. Existing human rights and rights related law appear to cover many of the components of vulnerability. In addition, long established international humanitarian law sets out obligations in times of war (Plattner, 1992), and there is currently a debate over the existence of much broader rights to humanitarian assistance (Kent, 2000). Sometimes, laws and acts give protection to people's rights and the other times certain traditions and customs or practices provide the same protection.

Globalisation is fast creating losers as a result of enhanced competition for capital and trade and the ease in relocation of commercial activities. It has been observed that globalisation by creating vulnerable communities worldwide is causing loss of livelihoods and environmental degradation. Among such vulnerable communities, the most important group is the farmers. In this era of globalisation, MNCs and corporative atmosphere are gradually monopolising trade and agriculture in the pretext of trade liberalisation. It has rendered the poor, deprived and the marginalised farming communities more vulnerable. The case is severe especially in the developing and least developed nations where agriculture is the mainstay of their economies.

Primacy of human rights over other obligations

The bases for the international human rights law have been provided in the United Nations Charter alongwith the UDHR. The UN Charter sets human rights as a founding stone that must be abided by, as the privileged means of reaching the United Nations' fundamental goals.

Article 55 (c) of the Charter provides that the UN will encourage "Universal respect for, and observance of, human rights and fundamental freedoms for all, without discrimination as to race, sex, language and religion." Article 56 defines a concrete

obligation to cooperate to promote universal and effective respect for human rights as "All members pledge themselves to take joint and separate action in cooperation with the organisation for the achievement of the purposes set forth in Article 55." Similarly, Article 103 urges member states to give preference to the obligations under the Charter over other international agreements. Confirming the pre-eminence of this obligation, the Article reads: "In the event of a conflict between the obligations of the members of the United Nations under the present Charter and their obligations under any other International Agreement, their obligations under the present Charter shall prevail."

While interpreting the UDHR, we find a link between the Charter and the UDHR, which necessitates that the international agreements and regimes including the WTO should not violate the basic principles and the spirits of the UDHR. The principle of pre-eminence concerns economic, cultural and social rights as guaranteed in the Articles from 21 to 27 of the UDHR.

The UDHR is considered to be a guiding principle of International Customary Law if not a peremptory norm of the international law. It is a fact that whenever multilateral discussions or talks are held at the UN or other forums on certain international treaties, the UDHR is referred to as a fundamental source. The UDHR also features in the legislative and judicial proceedings of a large number of countries. This proves that the UDHR has become a part of International Customary Law. Humphey asserts: "Today the bill is binding on all countries, including those which did not approve it in the first place in 1948" (Humphey, 1955).

Certain norms being part of the International Customary Law are considered as binding *erga omnes*, which means that all states have a vested legal interest in the protection of such rights. Some authors and researchers consider the UDHR as a binding principle of *jus cogens* within the meaning of the Article 53 of the Vienna Convention on the Law of Treaties. The Article 53 reads: "A peremptory norm of general international law is a norm accepted and recognised by the international community of states as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character."

The UDHR's preamble at the end refers to itself as "a common standard of achievement for all people and all nations, to the end that every individual and every organ of society shall strive to secure their universal and effective recognition and observance." This part of the Preamble means that the role of promoting human rights is not confined to government alone. Any individual or institutional action that fails to uphold basic liberties must be opposed. This very commitment also applies to multilateral institutions including Bretton Woods Institutions (BWIs) and transnational corporations (TNCs), particularly dealing with the farming sector.

This legal recognition of the primacy principle means that obligations under human rights must systematically prevail over all other obligations. The states must make sure that all their commitments, including economic, trade, agriculture and commerce are compatible with the universal principles of human rights law. Nevertheless, if we apply the primacy principle to the Agreement on Agriculture (AoA) of the WTO regime, we find that the said agreement confronts with the commitments made under the UDHR.

Mauritius in a submission to the WTO Committee on Agriculture at a session in 2000 underlined the relevance of international obligations (under the International Covenant on Economic, Social and Cultural Rights) when negotiating WTO Agreements. It underlined the fact that AoA must be interpreted in conjunction with other obligation under Article 11 of the International Covenant on Economic, Social and Cultural Rights.

The Article 11 calls for "the right of everyone to an adequate standard of living for himself/herself and his/her family including adequate food, clothing and housing, and to the continuous improvement of living conditions."

In light of the human rights agenda, Mauritius has categorically said, "the text of the WTO agreement appears to have been …drafted so as to avoid countries having to make commitments which would contradict their obligations under other multilateral frameworks." This way, Mauritius has indicated that it

intends to fulfil its obligations under human rights regime and oppose the implementation of the WTO regime.

Amid monopolistic trends seen at the WTO ministerial conferences, it has been observed that the North, with their view to see human rights as hindrance to trade liberalisation, did not consider the human rights as an important issue during trade talks. Therefore, it has become essential that now the South should raise the issue of linking the validity of trade agreement to the observance of human rights and the UDHR norms must serve as a reference. It is proposed that a "human rights clause" should be incorporated in all the WTO Agreements to ensure unconditional observance of the international human rights norms set out by the UDHR.

Farmers' rights and UDHR

As described above, the WTO trade talks and agreements dealing with agriculture do violate the basic spirit of the UDHR and deprive the farmers of their fundamental right to choose. If we see the rights of the farmers in the parameters of the primacy and pre-eminence of the international human rights law, we would find that the farmers' rights are the human rights.

David Wood in his article on "Real Rights for Farmers" published in *Biotechnology and Development Monitor* said: "Over the past 15 years, efforts have been made to develop *farmers' rights* as a system to acknowledge the contribution of farmers to the conservation and improvement of plant genetic resources." He suggests that these rights should establish farmers' individual ownership of the varieties they develop. Farmers' rights as property rights can stimulate plant breeding and conservation of agricultural biodiversity.

Farmers' rights as formulated in 1989 by the Food and Agriculture Organisation (FAO) were defined as "rights arising from the past, present and future contributions of farmers in conserving, improving, and making available plant genetic resources... These rights are vested in the international community, as trustee for present and future generations of farmers, for the

purpose of ensuring full benefits to farmers, and supporting the continuation of their contributions... "

Farmers' rights are actually the concrete benefits to farmers. During the last decade, ideas concerning genetic resources have changed substantially. The Convention on Biological Diversity (CBD) has endorsed national sovereignty over all biological resources, including genetic resources for agriculture, as private rights on plant materials. It has now become a global but very controversial issue within the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement.

The continuing decline of public sector plant breeding underscores the expanding role of the private sector with an obvious impact on intellectual property regimes. The private sector and MNCs in agricultural research, plant breeding, and biotechnology are trying to achieve two objectives: stronger global intellectual property regimes to protect their own inventions; and weak or no protection over their raw materials, the bio resources of others, including farmers' varieties and their local knowledge system. Here comes the discrimination against and violations of farmers' rights at the hands of MNCs. They want to protect their own inventions and do not want to allow similar protection to the farmers despite knowing the fact that the farmers own the local knowledge, skills and plant varieties.

Under the TRIPS Agreement, "Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof". With the strengthening and widening of the IPR regime, industrialised countries have been attempting to patent materials based on traditional knowledge and genetic strains particularly obtained from developing countries. For example, traditional medicinal crops such as *"neem"* and turmeric have been subjected in recent years to IPR claims in the industrialised countries. Even plant materials of well established geographical identity such as basmati rice grown in Pakistan and India, have also been subjected to IPR claims.

There is an urgent need to harmonise the provisions of TRIPS with the equitable benefit sharing and Prior Informed Consent

(PIC) provisions of CBD. There is a need for a new global trade and transactions order, a "TRIPS Plus". The "Plus" refers to equity and ethics in IPR claims.

UNCHR questions TRIPS as violation of human rights

In August 2000, the United Nations Commission on Human Rights (UNHCR) questioned the balance of rights between those promoted by TRIPS and the broader human rights of people and communities, including farmers and indigenous people worldwide. In its first-ever scrutiny of an important WTO agreement, the UN Sub-commission for the Protection and Promotion of Human Rights unanimously adopted a resolution on *Intellectual Property Rights and Human Rights* on 17 August 2000. This resolution (E/CN.4/Sub.2/2000/L.20) highlights the human rights implications of TRIPS. The resolution calls on the UN High Commissioner for Human Rights to undertake an analysis of these impacts and asks the UN Secretary General to prepare a report on the implications of TRIPS and options for further action by the Sub-commission.

The resolution further recommends to the World Intellectual Property Organisation (WIPO), the World Health Organisation (WHO), the United Nations Development Programme (UNDP), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Environment Programme (UNEP) and other relevant United Nations agencies to analyse the impacts of TRIPS, with human rights perspective. The resolution requests the WTO, in general, and the TRIPS Council in particular, "to take fully into account the existing state obligations under international human rights instruments." This resolution is a serious effort to make the WTO realise that under the primacy of international human rights commitments, it cannot cross the limits while negotiating the trade agreements. The UN Sub-commission's resolution recognises that there is a conflict between the 'private' interests of IPR holders, championed by TRIPS, and the 'social' or 'public' concerns embodied in international human rights law.

Article 27, paragraph 2, of the UDHR and Article 15, paragraph 1 (c) of the International Covenant on Economic, Social and Cultural Rights indicate that the right to protection of the moral and material interests resulting from any scientific, literary

or artistic production of which one is the author is a human right, subject to limitations in the public interest. The UN resolution declares that "since the implementation of the TRIPS Agreement does not adequately reflect the fundamental nature and indivisibility of all human rights, including the right of everyone to enjoy the benefits of scientific progress and its applications, the right to health, the right to food, and the right to self-determination, there are apparent conflicts between the intellectual property rights regime embodied in the TRIPS Agreement, on one hand, and international human rights law, on the other."

The resolution notes that the UNDP Human Development Reports of 1999 and 2000 identify circumstances "attributable to the implementation of the TRIPS Agreement that constitute contraventions of international human rights law." In view of the 'disconnect' between individual and public rights, and the fact that the former are "subject to limitations in the public interest," the UN resolution requests Governments "to integrate into their national and local legislations and policies, provisions, in accordance with international human rights obligations and principles, that protect the social function of intellectual property."

The inter-governmental organisations have also been requested "to integrate into their policies, practices and operations, provisions, in accordance with international human rights obligations and principles that protect the social function of intellectual property." If we analyse the violations of the farmers' rights in the light of the resolution of the UN Sub-committee, we see that the TRIPS requirements for an 'effective' system of intellectual property protection for plant varieties violate farmers' rights to save, exchange, re-use and sell seed from their own harvests.

In the United States (US), Canada and other countries, the Monsanto (a biotech giant recently acquired by Pharmacia, Inc.) has employed Pinkerton detectives to find and prosecute farmers who are harvesting seed from its patented crops. If replicated throughout the world, such enforcement of IPRs would violate the human rights of hundreds of millions of farming families who depend on recycling seed for survival. This is a direct violation of Article 1 of the Covenant on Economic, Social and Cultural Rights which stipulates that: "In no case may people be deprived of their

own means of subsistence." The UN resolution based on the provisions of both the UN Covenant on Economic, Social and Cultural Rights and the CBD signifies the resolve of the UN human rights programme to monitor the work of the WTO by firmly affirming the primacy of human rights and environmental obligations over the commercial and profit-driven motives upon which agreements such as TRIPS are based.

Conclusion

The farming communities are becoming more vulnerable due to monopoly regimes perpetuated by the WTO. Particularly, the AoA and TRIPS that govern the production and trade of food are harming the human rights of the farmers. Under these Agreements, Southern countries are forced to reduce support to agriculture while Northern countries continue to give massive subsidies to their farmers. Similarly, Southern countries have to increase the access of Northern countries to their markets while Northern countries retain high trade barriers that discourage imports from the South. On the other hand, MNCs are using new patent laws to increase their control over the resources required to produce food in the South. The MNCs will be allowed, under these agreements to claim the rights to profit from the sale of food produced from plants that have been developed and grown in the South for centuries.

Both these laws do not subscribe to what has already been said under the topic primacy of human rights laws over other international laws, regimes and agreements. The principle of human rights' primacy and its pre-eminence over trade, non-trade and other obligations clearly stipulates that no agreement whatsoever could be framed at international level confronting the UN Charter, which validates and qualifies the UDHR, to guarantee human rights and respect for human rights. While interpreting the UDHR, we find a link between the Charter and the UDHR, which necessitates that the international agreements and regimes including the WTO should not violate the basic principle and spirit of the UDHR. The principle of pre-eminence concerns economic, cultural and social rights as guaranteed in the Articles from 21 to 27 of the UDHR.

This legal recognition of the primacy principle means that obligations under human rights must systematically prevail over all other obligations. The states must make sure that all their commitments; including economic, trade, agriculture and commerce are compatible with the universal principles of human rights law. If we apply the primacy principle to AoA and TRIPS Agreements, we find that they confront with the commitments made under the UDHR.

The UN binds the WTO in formulating its further agreements and accepts farmers' rights as human rights on the primacy and vulnerability principles. In contrast to TRIPS, CBD provides safeguards for farming communities. The pre-eminence and primacy principles under the UDHR and the Chapters 32 and 26 of the Agenda 21 can promote the rights-based approach, which can reduce the vulnerability of the farming communities thus recognising and protecting their rights as human rights.

Since both the Agreements - TRIPS and AoA - are subject to periodic reviews under WTO negotiations, the groups advocating the farmers' rights should lobby in the countries of South and the North to create an equitable atmosphere during the trade talks at the WTO ministerial level. They should particularly focus the Southern governments so that they would understand the implications of these Agreements on their agriculture production in terms of the security of food and livelihoods. Recognising farmers' rights as human rights through the promotion of rights-based approach could reduce vulnerability of the farming communities both in the plains and the mountains. This could help check monopolistic designs of the MNCs thus empowering the farmers ensuring them their century's old right to produce, store, share and reuse the seeds and plant varieties and discouraging patent regimes over the life forms. There is a need for a sustained campaign so that the farmers' rights could be recognised as human rights that are becoming vulnerable to monopolistic policies of the Northern MNCs.

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Agreement on Agriculture: A South Asian Perspective

Hiramani Ghimire

The WTO and agricultural liberalisation

The Agreement on Agriculture (AoA) under the World Trade Organisation (WTO) sets out a programme for progressive liberalisation of trade in agriculture. The Uruguay Round (UR) saw agricultural protectionism as a factor for trade distortions and included agriculture in the agenda for negotiation. The purpose was to bring "more discipline and predictability to world agricultural trade" (Croome, 1995: 110-1). In fact, agriculture was never excluded from the old General Agreement on Tariffs and Trade (GATT). However, rules on it were weak. They allowed, for instance, quantitative restrictions (QRs) and export subsidies.

AoA requires WTO member countries to undertake a number of measures towards liberalising agricultural trade. There are three major areas of commitment, namely market access, domestic support and export competition.

Key elements of the market access commitments are "tariffication" (calculating tariff equivalents of non-tariff import barriers and adding them to fixed tariffs), tariff reduction, and binding of tariffs. During the negotiations, it was realised that tariffication alone would not lead to better market access opportunities. Many countries at that time were imposing QRs to limit the volume of import of particular commodity groups. These were included in each country's tariff rate quotas (TRQs), which would allow low tariff imports up to a certain amount.

The emphasis of the domestic support provisions is on limiting the effects of trade-distorting measures. Domestic subsides may distort trade. However, not all subsides do so. Therefore, the Agreement divides subsides into three groups: 'green box' (freely granted), 'amber box' (granted, but actionable), and 'blue box' (e.g., set aside payments). The Agreement establishes a ceiling on the total domestic support, commonly referred to as "Aggregate

Measurement of Support" (AMS). The green and blue box subsides are exempt from inclusion in AMS. Export subsides are considered as trade distorting. The Agreement bans their use unless they qualify under some exceptions. Many developing countries can hardly pay export subsidies. This is affordable only for the developed countries. In fact, only 25 WTO Members have agricultural export subsidy entitlements in their Schedules. They cover a total of 428 product groups.

The Agreement also contains *de minimis* provisions, which exempt from reduction supports that are less than five percent (10 percent for developing countries) of production value. Similarly, the Agreement contains a "peace clause" that shields some of the domestic support policies and export subsidies from remedial actions by other countries.

The tariffication package of the Agreement, which may lead to very high tariff equivalents of non-tariff barriers (NTBs), requires countries to maintain existing access opportunities. For products with no existing market, minimum access commitments are offered. However, countries may take special safeguard action under specified conditions in order to appropriately respond to sudden increases in imports. The obligation of tariffication may be waived for developing countries in case of balance-of-payments difficulties. Similarly, they are given the flexibility to bind their tariffs at ceiling rates, which could be higher than their applied rates.

Countries agreed to reduce tariffs and subsidies by fixed percentages during the UR. Developing and least developed countries enjoy preferential status in terms of tariff reduction. Industrial countries should have reduced tariffs by 36 percent over six years, while developing countries have to do so by 24 percent over ten years. Least developed do not need to cut their tariffs. Similarly, aggregate producer subsidies were to be cut by 20 percent by industrialised countries over six years, and by 13.3 percent by developing countries over 10 years, but not by least developed countries (LDCs). On export subsidies, developed countries should have reduced by 36 percent the *value* of their direct export subsidies and by 21 percent the *quantity* of subsidised exports over six years. The cuts for developing countries are set at two-thirds this level over 10 years. No cuts need to be made by LDCs.

The Sanitary and Phytosanitary (SPS) Agreement, closely linked to AoA, allows countries to restrict trade in order to protect human, animal, or plant life. However, this should not be disguised restriction on trade. The Agreement covers all measures to protect animal and plant health from pests and diseases, and to protect human and animal health from risks in foodstuffs as well as to protect humans from animal-carried diseases. All actions against such risks must be based on scientific evidence.

The AoA also covers some non-trade concerns such as food security and environment protection.

Who stands to benefit?

Despite the euphoria of initial years of the WTO in respect of its benefits, most analysts now consider that income and trade gains have been much smaller than expected. One of the major reasons for the high expectations was the assumption that WTO members would implement their commitments not only in letter but also in spirit (International Trade Centre/Commonwealth Secretariat, 1999: 185). In agriculture, like in many other sectors, there has been much hesitation in the implementation of commitments.

Despite all good intentions contained in the Agreement, agricultural protectionism has remained prohibitively high in developed countries. In some cases, the level of protection has even increased. Protection and subsidies for agriculture in Organisation for Economic Cooperation and Development (OECD) countries amounted to US$ 311 billion in 2001, compared to US$ 302 billion in 1986-88 (Ingco, 2003:1). Subsidies and other supports to agriculture in high-income countries is about US$ 1 billion a day (which is more than six times the sum of all official development assistance). In fact, the total transfer to agriculture has increased. For example, OECD farmers have enjoyed higher domestic support in the last five years although their governments utilised less than 50 percent of agreed AMS. Besides, reduction in AMS has been accompanied by an increase in green and blue box supports. The Agreement allows such a manipulation of farm supports, requiring governments only to notify new or modified subsidies announced as green.

Market access for developing country products has become more difficult in some cases due to "dirty tariffication" (over-estimated calculation of tariff equivalents of NTBs). For instance, the European Union (EU) has bound tariffs on average at about 61 percent above the actual tariff equivalents, and the US at about 44 percent. Canada and Japan are the two other major economies with a very high degree of dirty tariffication. For example, the average tariff for butter is computed at 360 percent in Canada. Similarly, tariffs for cheese and eggs are computed at 289 percent and 236 percent respectively. In Japan, tariffication for wheat stands at 353 percent. In the United States of America (USA), there is a 244 percent tariff on sugar and 174 percent on peanuts (Tucker, 2003: 60-62).

Despite the incidence of dirty tariffication in some products, average tariff levels of many countries have come down as a result of tariff reforms after the conclusion of the UR. However, for some products, particularly for those of export interest to developing countries, they still remain at very high levels. This phenomenon of tariff peaks has been eroding the developing countries' opportunities in the international market, especially in the developed countries. Most affected products are dairy products, sugar, groundnuts, and cereals.

The average tariff cut (36 percent for developed and 24 percent for developing countries) could in effect be less than one sixth as an average, as the system allows unweighted cut with the requirement to reduce each tariff item by only 15 percent. Countries have often taken recourse to this provision, limiting the positive outcomes of the Agreement. Besides, this allows governments to set peak tariffs for their sensitive products.

Since recently, the "multifunctionality" argument has been eroding the importance of liberalisation in agricultural trade. As a result, agricultural tariffs still remain very high at 62 percent on an average (compared to 5-10 per cent manufacturing tariffs), with tariff peaks of over 500 percent (Diakosavvas, 2003: 21-48). On the other hand, rich countries are applying NTBs such as food safety standards, which go beyond internationally agreed levels. The levels of protection are in some cases equivalent to tariffs of more than 100 percent (Johnson, 2003: 13).

The Agreement foresees TRQs to guarantee minimum access (where there had been no significant imports) or maintain current access opportunities for exporters. Thirty-seven of the 146 member countries are using TRQs, which are concentrated in particular product groups. Fruits and vegetables alone account for some 25 percent of all TRQs. The other four major product groups are meat, cereals, dairy products, and oilseeds. However, the 'fill rate' of TRQs has remained low. For example, only two-thirds of all TRQs were filled in OECD countries between 1995 and 2000. And, the rate is on declining trend. Changing competitiveness in importing countries and the administration of the quota system often lead to the underutilisation of TRQs (Diakosavvas, 2003: 38-39).

Agricultural commodities receive an annual export subsidy of approximately US$ seven billion (calculated for 25 exporting countries). The EU doles out large amounts of export subsidies. They account for 90 per cent of the total subsidies. The dairy sector gets the lion's share (33 percent). It is followed by beef (20 percent), sugar (11 percent), coarse grains (8 percent), and wheat and wheat products (5 per cent). The remaining 23 percent is distributed over a large number of other products (Gulati and Narayanan, 2000) .

Impact on farming communities in developing countries

The implications of the AoA for farming communities could be grouped into two categories: trade-related issues and non-trade concerns.

Trade and economic issues

The revival of protectionist influence in agricultural trade has continued at the expense of farming communities in poor countries, who provide more than 60 percent of the world's value added in agriculture. Poor people in most of these countries depend upon agriculture for livelihood. More than 70 percent of the population live in rural areas, with more than 95 percent of them engaged in agriculture. Agricultural exports are the largest source of employment, revenue, and foreign exchange in these countries. Besides, any additional incomes generated through agricultural trade become the source of non-agricultural incomes for local enterprises. For example, studies on the impact of green revolution during the 1970s have shown that each additional dollar of

agricultural income was associated with 80 cents of non-agricultural incomes (Cleaver, 2003). Therefore, increased opportunities for agriculture mean benefits for the whole of rural economy. AoA has not helped them to realise these benefits. Development priorities were neglected during its 'implementation'. In fact, an honest implementation of the AoA would benefit not only the poor countries but also the rich ones. It has been estimated that the USA would benefit the most getting 24 percent of the consumer purchasing power increased through the elimination of protectionist measures (estimated at US$ 56 billion). The EU would have enjoyed the second place with 19 percent (Burfisher, 2003: 136). On the other hand, a recent OECD study indicates that farm subsidies are ineffective in achieving income gains, with only about 25 percent of total subsidies ending up as extra income for farmers (The Kathmandu Post, 2003).

In the case of LDCs, the EU has announced the EBA (everything but arms) initiative, which grants duty- and quota-free access for all goods except for armaments. For three products, namely bananas, rice, and sugar, duty-free access will be granted in a phased manner (i.e., until 2008). However, even this initiative provides mechanisms to avoid any "unfavourable" influence in the EU market. In other words, safeguard options will be available (Olarreaga and Ng, 2002:106-7).

Non-trade concerns

Among the non-trade concerns raised by the Agreement are food security and environmental protection in poorer countries the most important. The Food and Agriculture Organisation (FAO) definition of food security emphasises three major parts that are essential for achieving food security. They are availability, access, and affordability. These demand-side factors will be influenced by supply-side issues of food policy of the government, cropping pattern, and the level of food production. In fact, the need to ensure some degree of security in the supply of basic foodstuffs is a public good.

Food insecurity is a global phenomenon, but it specially threatens the developing world. Developing countries in Asia and the Pacific are home to majority of the undernourished people across the globe. According to FAO, South Asia alone accounts for

more than one-third of the world population suffering from undernourishment.

Generally speaking, trade contributes to food security. However, increased trade does not necessarily mean better food security. While aggregate trends of food security are positive, one could see the situation deteriorating in specific cases. In the LDCs, for instance, the food bill (measured by food imports as a percentage of total exports) remains still very high at 20 percent (which was the case of many developing countries in the 1960s) (Diaz-Bonilla and Thomas, 2003: 229-30). In fact, trade alone cannot contribute substantially towards resolving the problem of food insecurity in a majority of developing countries. Most of world's poor are rural-based and rely on farm and non-farm employment and incomes, which are again dependent on agriculture. For them, economic improvements are assured only if they produce the food themselves. Increased agricultural production, and not only trade, should therefore be the focus of attention (www.fao.org).

Price instability in agricultural commodities is a major risk for farming communities. If the export base is narrow, the impact of price fluctuations is more visible. Families that spend a large part of their income on food often face a survival problem when prices go up unexpectedly. In the same way, they are critically affected when prices for agricultural commodities fall. The AoA can be a factor for both of these situations.

With the requirement to reduce domestic support under the AoA, the cost of official food aid will be higher than under previous farm policy regimes. In this context, it can only be expected that domestic political pressure will be exercised to reduce food aid. This will lead to an increase in food prices, creating food security problems in developing countries. Further, technical assistance for improving agricultural productivity is declining. In fact, international research institutions and aid agencies themselves have been suffering from the scarcity of funds.

Another major issue is that of cropping pattern. The Agreement promotes commercialisation, and therefore, specialisation in agriculture. This may invite dangers of monocropping. Moreover, production of cash crop is likely to get

prominence over other food products under the liberalised trade regime. This tendency may erode national capacity to ensure food security in the long term. On the other hand, it may come at the cost of biodiversity and environmental conservation.

Doha Ministerial and its aftermath

The 'work programme' adopted at the Doha Ministerial Conference of the WTO allocates two paragraphs to agriculture. It commits members to "substantial improvements in market access; reductions of, with a view to phasing out, all forms of export subsidies; and substantial reductions in trade-distorting domestic support". Modalities for further commitments should have been established by 31 March 2003 but the member countries could not agree to the modalities within this deadline. Doha has thus given a new context to negotiations, which started in March 2000 as part of the "continuation of the reform process" foreseen in the Agreement.

The prospects for a successful outcome of these negotiations are difficult to predict. The continued – or, rather increased - protection to provided agriculture in some developed countries speaks a different language from that of the Doha text. The first draft of the modalities was submitted in February 2003. A revised version of this draft was presented on 18 March 2003. This was discussed at the Special Session of the Committee in Agriculture from 25-31 March 2003. However, according to the Chairperson of the Committee, "It represents no more than a first attempt to identify possible paths to solution. It does not claim to be agreed in whole or in any part and is without prejudice to the positions of participants". Obviously, the draft is full of square brackets. As mentioned above, members could not reach a consensus on this issue.

Of interest, the USA and the EU (albeit reluctantly) worked together at the Doha Ministerial to secure a higher degree of agricultural liberalisation. Farm Bill of the USA, enacted in August 2002, goes in the opposite direction by increasing federal farm subsidies by about 80 percent (which means an additional subsidy of US$ 82 billion over the next 10 years). The US House Committee on Agriculture even observed, "we should not depend on the Third World for a safe and adequate supply of food and fiber". The Bill

also undoes the Freedom to Farm Act, 1996 which foresees phasing out of agricultural subsidies for most agricultural products. The Bill, which would provide a 'safety net for the American farmers', is politically very important. Basically, it has been exchanged for 'trade promotion authority', which the President needs to establish his credibility in international trade negotiations. With this, US subsidies per farm will soon reach almost four times the EU levels. Three-fourths of the cash bill will go to big farmers.[1] The EU has been a major critic of the US Farm Bill. It is also being seen as a problem in getting the EU to reform its common agricultural policy (CAP). In fact, the EU wants to grasp any opportunity to put off the CAP reforms so that their politically powerful farmers are not hurt. The recent Franco-German alliance against reform in the CAP (See, for example, The Economist, 2002: 13, 48). is a fresh reminder of this fact.

Position of SAARC countries

Has the Agreement widened the export market for the SAARC countries as promised? There are at least three aspects to be examined in this context. Firstly, developed countries have remained, as already explained, too protective of their markets be it through high tariff walls, especially for developing country exports, or through the circumvention of provisions of the Agreement, including the elimination of subsidies. Secondly, exports from the SAARC countries have been hit by the imposition of NTBs. The EU banned, for instance, the import of frozen shrimp from Bangladesh on the ground of sanitary regulations.

Similarly, the EU's technical standards are affecting Indian coffee and tea exports as they are supposed to contain too much of pesticide residue. The USA has been subjecting Indian exports of meat, fish, diary products, vegetables, and fruits to the provisions of the SPS Agreement. Japan is doing the same for the import of fish and tea from India. Also Sri Lanka is facing NTBs for its exports of tea, coconut, and fish products in developed country markets.

[1] It is an entirely matter that the USA has proposed to the WTO Committee on Agriculture to scrap all export subsidies, cap trade-distorting subsidies (currently, US$ 100 billion) at five percent of agricultural production of each country. The new US proposal also seeks to bring global farm tariff from 62 percent to 25 per cent in five years' time. The US move is targeted at the EU for reciprocity.

Products have also been subjected to process standards (for example, the EU's requirement for mango pulp from India), requiring them to be processed using a specific method. This bars producers from choosing the technology that minimises resource costs (Wilson 2002: 433-4). Thirdly, the SAARC countries have not been able to overcome the supply-side constraints, which would require a proactive policy environment. Nepal and Bhutan have a very narrow export base in terms of agricultural products. The SAARC countries have, thus, not been able to make much out of the AoA. They are therefore subscribing to the idea of a 'development box' within the Agreement.

The way forward

In fact, it is not easy for SAARC governments to decide on how to position themselves with regard to the Agreement. They know very well that a very protectionist posture would not be in anyone's interest, although it may mean some political advantages at times. Anti-WTO and anti-globalisation rallies in recent times are sending a clear message to policymakers: don't be over-enthusiastic about the fruits of free trade or even globalisation for that matter (See The Economist, 2000). On the other hand, taking a liberal position means that one should be prepared to accept the challenges of multilateral negotiations in an environment that already favours big players. It also demands combined efforts of all affected parties. It is here that regional associations like SAARC can play an effective role. If so, the first common initiative of the SAARC countries could be the exercise of their combined strength in bringing down export subsidies provided by the developed countries. Scope for international cooperation also exists in this area. It must be noted here that all SAARC countries may not find themselves comfortable with the proposal to abolish export subsidies. The least-developed and net food-importing of them will be concerned over the possible rise in prices of food products as a result of the elimination of subsidy. This is understandable. A mechanism for compensation in case of a price rise needs therefore to be devised.

However, one cannot talk of a "SAARC position" in this regard. The countries in the Grouping do seem to be interested in taking a common stand in particular issues. A trend to intensify consultations amongst them on WTO related issues is emerging. It

is only befitting the initiatives taken by SAARC governments in creating a South Asian free-trade area. But, this process is yet to be institutionalised (Kelagama and Adhikari, 2002). In the context of regional economic integration for enhancing international competitiveness, SAARC countries need to move closer to each other (Kumar, 2000: 5-18). It is also important to remember that today's trade issues go beyond the mechanisms of tariffs and quotas. A number of "behind-the-border" issues such as infrastructure development and good governance will also have to be taken into account.

Conclusion

AoA represents both an opportunity and a challenge for the SAARC countries. It provides them with an opportunity to tune the agricultural production system to the widening access in the international market with a view to addressing the problem of poverty through the expansion of trade. On the other hand, it brings a number of challenges in the form of competition, international obligation, and revived protectionism. The need to create an appropriate policy environment at home for overcoming a number of supply-side constraints becomes also a formidable task in this context. And, these problems can be better addressed collectively than individually. Obviously, the SAARC countries should be focusing on regional cooperation more intensively than ever.

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Safety and Quality Imperatives within the SPS/TBT Regime: A HKH Perspective

Wajid H. Pirzada

Background

In the last 50 years of the last millennium, the world witnessed unprecedented progress in both agricultural production, and food science and technology. This led to enhanced use of these technologies for production, processing and preservation, both at farm and food processing levels, so as to increase productivity, shelf-life or improve the organoleptic and nutritional properties of food products. Similarly, food storage, distribution and consumption practices have also been changed. At the same time, the rapid development of international food trade and the expansion of food distribution system have increased the potential for spread of food-borne and zoonotic diseases, i.e., diseases which are communicable from animals to human. Resultantly, there is a growing concern among consumers about the quality and safety of the food-supply.

This paper, therefore, seeks to address the issue of national food safety and quality imperatives, as a prerequisite for successful domestic and international trade, facilitated through the implementation of the Agreements on Sanitary and Phytosanitary (SPS) Measures and Technical Barriers to Trade (TBT) of the World Trade Organisation (WTO).

As specific SPS requirements are most frequently applied on a bilateral basis between trading countries, the implementation of SPS Agreement will reduce uncertainty about the conditions for selling to specific markets. This also discourages the use of SPS measures, as disguised barriers to trade – as a way of shielding domestic producers from economic competition. Without such measures, developing countries like those of the Hindu-Kush Himalaya (HKH) Region have both political and technical disadvantages.

The need for harmonising national standards of food safety and quality, as envisaged under the SPS Agreement, with Codex Alimentarius Commission (CAC) of the United Nations Food and Agriculture Organisation (FAO)/World Health Organisation (WHO), is emphasised so as to provide an enabling environment for the HKH countries in the context of liberalisation of agricultural trade.

The Uruguay Round (UR), which ended in 1994, established the WTO replacing the General Agreement on Tariffs and Trade (GATT). The UR negotiations were the first to deal with the liberalisation of trade in agricultural products, an area excluded from previous rounds of negotiations. The UR also included negotiation on reducing non-tariff barriers (NTBs) to international trade in agricultural products and led to two binding agreements: SPS and TBT.

Both these Agreements recognise the standards, guidelines and other recommendations of CAC as the specially identified baseline for consumer protection. This paper seeks to address the issues related to SPS and TBT, including CAC standards and their implications for the HKH countries, as these agreements are to be applied by all WTO members including the HKH countries, being Member or those aspiring to be member of WTO. Moreover, these are even applicable to countries that are not WTO members. With this background, we would like to discuss CAC standards and their application in relation to SPS and TBT Agreements.

The SPS Agreement

The SPS Agreement confirms the right of WTO member countries to apply *measures necessary to protect human, animal and plant life and health.* Notwithstanding the need for application of national measures to protect human, animal and plant life and health, the national SPS measures had become, by design or accident, effective trade barriers. And as the UR negotiations addressed the issue of NTBs, as such, the SPS Agreement sets new rules to ensure that national SPS measures are consistent with obligations prohibiting arbitrary or unjustifiable discrimination on trade between countries. The SPS Agreement requires that, with regard to food safety measures, WTO members base (as discussed above) their

national measures as adopted by CAC where they exist. Furthermore, SPS calls for programme of harmonisation of national requirements based on CAC standards. This work is guided by the WTO Committee on SPS measures, to which the representative of CAC, the International Office of Epizootics (OIC) and the International Plant Protection Convention (IPPC) are invited.

SPS covers all food hygiene measures and food safety measures, such as control of veterinary residues, pesticide residues and other chemical/food additives used in food production.

The TBT Agreement

The objective of the Agreement is to prevent the member countries using national or regional technical requirements, or standards in general, as unjustified TBT. The TBT Agreement basically provides that all technical standards and regulations must have a legitimate purpose and that the impact or cost of implementing the standard must be proportional to the purpose of the standard. It provides that: If there are two or more ways to achieving the same objectives, the *least trade restrictive alternative should be followed.*

The TBT Agreement places emphasis on international standards, the WTO members being obliged to use them, or parts of them, except where the international standards would be ineffective or inappropriate in the national situation.

The Agreement covers standards relating to all types of products, including industrial and agricultural products, with the exception of aspects of food standards relating to SPS measures, such as products' contents requirements quality, packaging, labelling, etc. This Agreement includes numerous measures to protect the consumers against deception and economic fraud.

The CAC

In the aforementioned context, the CAC standards, guidelines and other recommendations take on unprecedented prominence, with respect to both consumer protection and international food trade. It is, therefore, advisable to understand the CAC's working and its standards, guidelines and recommendations in greater detail. The

CAC is an inter-governmental body established by FAO in 1961. Since 1962, it has been responsible for implementing the joint *FAO/WHO Food Standards Programme*, the primary aims of which are to protect the health of consumers and to ensure fair practices in the food trade.

The Codex Alimentarius (a Latin word meaning "Food Code" or "Food Law") is a collection of food standards, codes of practice and other recommendations, presented in a uniform way. Codex standards, guidelines and other recommendations ensure that food products are not harmful to consumers and can be traded safety between countries or, in other words, it facilitates international trade in food.

As discussed above, the food safety standards are defined in the SPS Agreement as those relating to food additives, microbiological norms, veterinary drugs and pesticide residues, contaminants, hygienic practices. Codex food safety standards are to be used by the WTO as the reference point for the WTO in this area.

There are more than 300 codex standards, guidelines and other recommendations relating to food (whether processed, semi-processed or raw), quality, composition and safety. It evaluates the safety of over 760 food additives and contaminants, setting more than 2,500 maximum limits for pesticide residues and more than 150 veterinary drug residues. In addition, the CAC has established a number of guideline levels for a number of environmental and industrial contaminants in food. The first Codex edition was published in 1981 and the second in 1998. The second edition is now being revised and updated to take into account the decisions made by the 21st session of CAC, July 1995.

For the standards and maximum limits for residues of pesticides and veterinary drugs in food and feeds, it has taken a number of years to develop the Codex. Maximum Residue Limits (MRLs) and Extraneous Maximum Residue Limits (EMRLs) are generally consistent with the recommendations of the Joint FAO/WHO Meeting on Pesticide Residues (JMPR). The JMPR is composed of independent scientists who serve in their individual capacities as experts, but not as representatives of their

governments or organisations. The standards and maximum limits for residues of pesticides and veterinary drugs in foods and feeds, accompanied by an appropriate communication, are sent for action to Ministries of Agriculture or Ministries of Foreign Affairs, as appropriate, of Member Nations of FAO and the Ministries of Health of Member States of WHO.

These standards and maximum limits of CAC for residues of pesticides and veterinary drugs in food and feeds are the product of a wide measure of cooperation and international agreements. Moreover, they are compatible with the norms considered by FAO and WHO as best guaranteeing the protection of the health of consumers as well as facilitation of international food trade. It, therefore, would be in the fitness of things that the HKH countries build their capacity and ability to not only apply the international standards adopted by CAC, but also harmonise their national standards with international standards, which shall help facilitate their trade within the region and globally.

Pesticide residues

The basis for establishment of Codex MRLs: The Codex MRLs are established only when there is supporting evidence concerning the safety/danger to humans of the resulting residues, as determined by the Joint FAO/WHO Meeting on Pesticide Residues and this implies that Codex MRLs represent residue-levels which are toxicologically acceptable. The Codex MRLs are recommended on the basis of appropriate residue-data obtained mainly from supervised trials. The residue-data, thus obtained, reflect registered or approved usage of pesticide in accordance with "good agricultural practices (GAPs)". As Codex MRLs cover a wide spectrum of use-patterns and GAPs and need to reflect residue-levels closely following harvest, they may occasionally be higher than the levels of residues found in national surveillance programmes.

Basis for establishment of Codex EMRLs: The MRLs refer to residues of compounds, which were used as pesticides, arising from environmental contamination (including former use of agricultural pesticides or uses of these compounds for other than agricultural uses). These residues are treated as contaminants. Codex MRLs

need to cover widely varying residue-levels in food, reflecting differing situations in respect of contamination of food by environmental and persistent pesticide-residues. For this reason, Codex EMRLs cannot always reflect strictly the actual situation of residue existing in given countries or regions. Codex EMRLs, therefore, represent acceptable residue-levels, which are intended to facilitate trade in food while protecting the health of the consumers. They are established only when there is supporting evidence concerning the safety to humans of the residues, as determined by the JMPR.

Codex MRLs/EMRLs and consumer protection – Determination of total daily intake of pesticide residues: The primary purpose of setting maximum limits for pesticide residues on food and (in some cases) in animal feeds, is to protect the health of consumers. Codex MRLs and EMRLs serve that purpose, as they help to ensure that the maximum amount of pesticides applied to food is consistent with real pest-control needs. Codex MRLs are based on residue data from supervised trials and not directly derived from Acceptable Daily Intakes (ADIs), which are a quantitative expression of acceptable daily amounts of residues that persons may ingest on a log-term basis and that are established on the basis of appropriate toxicological data, mainly from animal studies.

Codex MRLs/EMRLs for milk and milk products: Codex MRLs/EMRLs for fat-soluble pesticide-residues in milk and milk products are expressed on whole-product basis.

For a "milk product" with a fat-content less than two percent, the MRL applied should be half those specified for milk. The MRL for "milk products" with a fat-content of two percent or more should be 2.5 times the MRL specified for milk, *expressed on a fat basis*.

Codex MRLs/EMRLs for processed foods: As a rule, Codex MRLs and EMRLs are established for new agricultural commodities. However, where it is considered necessary for consumer protection and facilitation of trade, MRLs and EMRLs are established for certain processed foods on a case-by-case basis, taking into consideration information on the influence of processing on residues.

Residue data and the developing countries: JMPR in its meeting held at FAO, Rome, Italy on 21-30 September 1998 recognised the limitation in expertise and resources prevailing in many developing countries. It concluded that, within a relatively short period of time, *reliable residue-data could be generated in several developing countries having appropriate laboratory capacity, by providing assistance for the introduction and implementation of quality control and quality assurance principles in their laboratories, and for execution of supervised field trials, in compliance with good laboratory practices (GLPs)*. The major part of this assistance would be related to the transfer of accumulated knowledge and experience, and interested countries should explore the possibilities of obtaining the necessary support. For theoretical and practical training in this subject, the JMPR recommended the use of FAO/International Atomic Energy Agency (IAEA) Training and Reference Centre, for which FAO and other organisations could provide the necessary assistance, if interested countries so request.

Veterinary residues

Veterinary residues that remain in the tissues of food-producing animals, after treatment, create one of the major problems associated with the veterinary use of such drugs. This problem stems from the difficulty of defining "safe concentration" of the agents in meat or milk for human consumption, and is compounded by the increasing sensitivity of detection methods. In addition, milk for processing to cheese, yogurt and similar products must not contain drugs that inhibit bacterial growth.

Public health/Consumer protection: The human health risks from the ingestion of small quantities of antibiotics are hypersensitivity reactions, other toxic effects, and possible effects on micro-flora. According to a report, even in a developed country like the United States of America (USA), it was estimated that 14 percent of all meat and poultry samples, tested over a two years period, contained illegal and potentially harmful residues of pesticides and other drugs.

About four to seven percent of the human population is hypersensitive to penicillin; about 0.04 percent develops acute anaphylactic shock when the drug is encountered and there are

reports of hypersensitivity reactions after the ingestion of penicillin-contaminated milk. Nondose-related aplastic anemia caused by chloramphenicol in humans is another potential hazard of antibiotic contamination. The effect of low concentrations of antibiotic ingested in contaminated meat on the resistance and composition of human microbial flora is probably negligible. Whereas certain antibiotics are degraded by freezing, cooking or storage, such degradation is not complete, and for some antibiotics degradation is minimal. The toxic effects of antibiotics in humans increase with the concentration and duration of exposure; the small quantities likely to be consumed by the average person over the course of a year, as a result of ingesting animal products contaminated with antibiotics, are unlikely to have any significance, with rare possible exceptions, as discussed above, of penicillin and chloramphenicol. Nevertheless, it is difficult to define these risks because *antibiotics and their degradation products may have carcinogenic, mutagenic and teratogenic, or other effects*.

Codex Committee on Residues of Veterinary Drugs in Foods (CCRVDF): In response to a growing concern about mass-medication of food-producing animals and the implications, as discussed above, for human health and international trade, a Joint FAO/WHO Expert Consultation on Residues of Veterinary Drugs was convened in Rome, in November 1984. This led to the establishment of a specialised CCRVDF which, at its first session in Washington, DC, in November 1986, made a number of recommendations and suggestions for consideration by Joint FAO/WHO Expert Committee on Food Additives (JEFCA). Consequently, the 32nd JEFCA meeting was entirely devoted to the evaluation of residues of veterinary drugs in foods; subsequently a series of nine meetings of JEFCA were also dedicated to evaluation of veterinary drugs.

Methods of detecting veterinary residues: The methods used for the detection of antibiotic residues are mainly microbiological, with confirmation by electrophoresis and chemical methods (mainly high-performance liquid chromatography). Such methods employ sensitive bacterial strains (e.g., Sarcina Lutea, Bacillus subtilis). The 10th session of the CCRVDF held in San Jose, Costa Rica (October-November 1996) revised the priority-list of veterinary drugs requiring evaluation. The drugs evaluated during the 48th

meeting of JEFCA included these compounds except Gentamicin. The evaluation appraisals take into account the results of pharmacokinetics, meta-bolism and tissue residue depletion studies.

Coping strategies for HKH countries

Coping strategies will rely heavily on judicious and rational use of agricultural pesticides and veterinary drugs. This, in turn, warrants regulatory interventions, on one hand, and institutional arrangements for monitoring and testing, on the other.

For instance, the USA established a computerised Residue-Avoidance Data (FARAD) Bank for food animals. The Pharmacokinetics data is available to veterinarians on inquiry. Rational therapeutic decisions by veterinarians offer a key to control veterinary residues in food and safeguard public health and thus protect consumers.

Recommendations

The HKH countries need to address the following issues collectively, benefiting from their synergies and complementarities:

a. Capacity building in the area of testing and monitoring of pesticides and veterinary drugs-accredited laboratories.

b. Development of core human resource in the area of food safety and quality control/Veterinary public health.

c. Rational policy for import and use of agricultural pesticides and veterinary drugs.

d. Training/advocacy in the area of *rational therapeutics* for veterinarians and good agricultural practices for agronomists.

e. Institutionalising the optimisation of drug-therapy, through *Therapeutic Drug Monitoring (TDM)* service in veterinary medicine. TDM laboratories require:

- Understanding of the pharmacology of the drugs being administered.

- Some information on the Pharmacokinetics of the drugs in the normal animal.
- The effect of various clinical conditions on drug disposition. TDM is a complex service and several individuals, including clinical chemists, veterinary clinical pharmacologists and veterinary clinicians/ practitioners, need to be involved in the proper collection and interpretation of data.

f. Research studies on pesticide/veterinary drug residues.

g. Providing financial and technical support to consumer organisation and involving them in standard setting process.

h. Initiatives should also be taken on consumer education programmes.

i. Harmonisation of standards with international standards/CAC; and harmonisation/equivalence within the HKH region.

j. GO-NGO-Private Sector Partnership in the area of food safety and quality control.

k. Structural adjustments in agriculture, in the context of the WTO regime.

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Plant Genetic Resources and Farmers' Rights: The Case of Bangladesh

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Introduction

Farmers' rights basically represent the farming communities struggle since the earlier stage of human civilisation, to achieve food security and to conserve and sustain their environment. Issues surrounding farmers' rights in plant genetic resources marked a very hot debate in 1979 at a discussion organised by the United Nations Food and Agriculture Organisation (FAO) where repeated reference had been made to the asymmetry of benefits derived by the donors of germplasm and the donors of technology (Brush, 1996: 12). It has been observed for a long time that commercial varieties are ultimately the products of applying breeders' technologies to farmers' germplasm, and while the former may generate return through plant breeders' rights (PBRs) or other intellectual property protection (IPP) legislation, no system of compensation or incentives for the providers of germplasm has been developed (Ibid).

This paper is an endeavour to focus on the domestic and international rule making frameworks and implementation mechanisms for the protection of farmers' rights in plant genetic resources with particular reference to Bangladesh's progression on this issue and issues of specific significance to it as a least developed agricultural country.

Farmers' rights in plant genetic resources: Present status

International context

As mentioned earlier, farmers' rights acknowledge the contribution of the farmers to the conservation and development of plant genetic resources, which constitute the basis of plant production throughout the world. As defined by Resolution 5/89 of the

International Undertaking on Plant Genetic Resources (IUPGR, 1989), farmers' rights are the 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. Those rights are vested in the international community, as trustees for present and future generations of farmers, and supporting the continuation of their contributions as well as the attainment of overall purposes of the international undertaking" (Deb, 2002).

Relevant section on farmers' rights, inserted in Section 39, clause (iv) of the Plant Variety Protection and Farmers' Rights Act 2001, India, reads:

> The farmer shall be deemed to be entitled to save, use, sow, re-sow exchange, share or sell his farm produce including seed of a variety protected under this Act in the same manner as he was entitled before the coming into force of this Act; provided that the farmer shall not be entitled to sell branded seed of a variety protected under this Act.

The farmers' rights advocates hold that the successful development of varieties by breeders depends on genetic resources and related knowledge acquired by the farmers and the farming communities. Therefore, any invention based on the knowledge and genetic resources of the farming community should be duly recognised and rewarded. Farmers' contribution to the process of variety screening and selection could hardly be overlooked. In many instances, involvement of farmers in participatory breeding research led to successful innovation of technology.

It should be noted that the issue of farmers' rights is crucially linked with intellectual property right (IPR) in the global context since basic plant genetic resources have been historically considered as public goods and a part of common "heritage of humankind". Though under "national sovereignty", plant genetic resources are given high priority as commercial goods, the need for international legislative framework and implementation mechanism could never be overlooked, especially in the case of developing and least developed nations. Access and benefit sharing arrangement and fair and equitable sharing of benefits arising from the utilisation of genetic resources have proved to be the complex

tasks and effective mechanism and approaches are still evolving. Different regional and international forums have focused on this issue, however, concrete conclusion has not been drawn as yet.

Farmers' rights as enunciated in TRIPS

Ever since the completion of the Uruguay Round (UR, 1986-94), the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) under the World Trade Organisation (WTO) has been regarded as an *endeavour* to bridge the gaps in the way the IPRs are protected around the globe and a mechanism that would bring them under common international rules. The TRIPS framework, within which the demand for IPRs on biological materials has arisen, contributed to the appearance of biotechnology as a key economic sector. For most of the developing countries such as Bangladesh, TRIPS bears critical significance in terms of both food security and security of animal life since the modern biotechnology, armed with patents, is controlled by the multinational corporates. The farmers' rights dichotomy originates from the tussle for global control over genetic resources as the developed world, on one hand, has the technological know-how needed to convert genes to products, on the other, the raw materials are concentrated in the less developed tropical countries. The TRIPS Agreement, *inter alia*, covers the following two aspects (WTO, 1995):

- How to give adequate protection to the IPRs?
- How the countries should enforce those rights adequately in their own territories?

TRIPS has, however, duly recognised the need to strike a balance between the producers and users of intellectual property that would enhance the economic and social welfare of both (Article 7).

The TRIPS Agreement holds that the member countries are required to make patents available for any inventions, in all fields of technology without discrimination, be it a product or a process, subject to the normal tests of novelty, inventiveness, and industrial applicability. The Agreement also requires that patents be available and patent rights enjoyable without discrimination as regards the place of invention and whether products are imported or locally

produced barring the following three permissible exceptions to the basic rule on patentability (Article 27):

- Governments may refuse to issue a patent for an invention if its commercial exploitation is prohibited for reasons of public order or morality.
- Governments may exclude diagnostic, therapeutic, and surgical methods for the treatment of humans or animals from patentability.
- Governments may exclude plants and animals other than micro-organisms and essentially biological processes for the production of plants or animals other than non-biological and micro-biological processes.

Sui generis protection for farmers' varieties

The impetus for enshrining farmers' rights in national and international legal mechanisms has significantly increased in recent years as a result of the TRIPS accord. It was mandatory for the countries to adopt an effective *sui generis* system in case they exclude patents. Most of the developing countries have accepted the *sui generis* system for the protection of new plant varieties. As a least developed country, Bangladesh's deadline for implementation of the TRIPS Agreement is January 2006 but the process for the preparation of legislative framework for protection of community rights and plant varieties in Bangladesh is far from complete (Gul, 2002).

Sui generis is an alternative, unique form of IPP designed to fit a country's particular context and needs, which ensures distinctness, uniformity and stability in plant variety protection (PVP) process. Farmers could only exert ownership rights over derived varieties if the country adopted PVP legislation that contained provision for essentially derived varieties (EDVs). Government could legislate that all genetic resources used from Bangladesh be under material transfer agreement and farmers are free to conduct research with or without an up-front fee or technology transfer with further transfer of benefits upon commercialisation. Traditional knowledge and IPR are the two main points for the dialogue and discussion while making a *sui generis* system.

Farmers' rights and benefit sharing

The issue of benefit sharing with regard to farmers' rights involves the development of additional mechanism that can provide support to farmers to continue and improve their conservation activities, their agronomic practices and the genotypic potential of the varieties that they have grown to better meet their needs. A pragmatic way of sharing access to plant genetic resources might be the provision of financial support to the farming communities by the signatory countries or private sectors.

In fact, during the evolution of agriculture, plant genetic resources evolved in the absence of national boundaries and gained distinctive characteristics in response to selection pressure applied by the farmers. Exchange of seeds among farmers has resulted in continued onfarm conservation, improvement and availability of plant genetic resources. Sharing of genetic resources had become a deliberate activity to support local economics. Attendant to these innovations, a concern was that genetic resources developed by the local farmers were being used without proper acknowledgment of their origins and hence the concept of *Farmers' Right* and *Benefit Sharing* emerged as a social issue. Major issues falling under the ambit of *Benefit Sharing System* are:

- Acreage coverage and the price of the products
- Seed sale within the country or seed tax
- Gross domestic product (GDP)
- Raising of international and local fund

How farmers' rights are at peril?

Inappropriate pressure

In the first place, the pressure is on governments to approve experiments with genetically engineered (GE) crops, to accept imports, which contain some percentage of genetically modified organisms (GMOs), or to approve commercial production of GMOs. The pressure comes both from the life science companies and from the governments of countries where GMOs are already widely accepted, particularly the United States of America (USA), Canada

and Argentina. Often the legally required steps for admittance of GMOs are skipped and the research reports tampered. An increasing number of corruption cases have been documented. Least developed agricultural countries are threatened with the WTO or bilateral trade sanctions if they do not let GE crops to come into their country, even when biosafety considerations would perfectly justify their reluctance (as for instance formalised in the Cartagena Protocol) (www.hivos.nl).

Contamination

What ecologists warn for crosspollination and lateral gene flow is now becoming apparent in the USA and Canada, beyond the centre of origin of corn in Mexico and in the case of soy in Brazil. Seeds and GMO contamination is rapidly spreading and there seems to be no way to contain pollen. Where containment seems to be impossible, co-existence of conventional, organic and GMO crops is also not possible. Separate production chains will be invaded in just a few years time. Organic farming will cease to exist. Consumers will not have a choice anymore. Worst though, there will be no way back for most crops. The GE corporations will go free since liability for biodiversity loss and health problems does not exist once a crop is approved by a government. They might not even be liable for damage caused to organic farmers.

Denial of the right to sell seeds

It is crucial that the farmers retain the right to sell seeds, as the farming communities are the largest suppliers of seeds. But it is an alarming trend that the agro-chemical giants have overtaken the farmers as seed producers in the industrialised nations. In Europe, the US, Canada, Australia, New Zealand, Japan and to a lesser extent in Korea as well as some Latin American countries, seed production is at the hands of corporate giants (Ibid). Particularly in the developing countries, there are no seed companies of any size or significance. This is why the market has automatically become penetrable for the next contender, the multinational corporation (MNC). In the absence of an organised legislative framework to protect farmers' right to sell seeds, the seed corporations have established monopoly control over the seed market.

Corporate control

The green revolution brought many benefits to farmers, but after the first decade, negative consequences emerged such as the hazards of chemicals use, rapid loss of genetic diversity, and corporate control over agriculture. In the past, many chemical corporations merged with seed companies and life science corporations and, through national patents reinforced by TRIPS, they gained control over agricultural development.

Excessive and unjust corporate control over the process of crop production may also be evidenced from a look at their insistence on the production and marketing of GMO products and pesticides. Although statistics show that the GMO crops generally do not have higher yields (for instance soy in Brazil and canola in Canada) and unplanned use of pesticide is most likely to bring about ecological disaster, the MNCs are exerting undue pressure on the least developed countries (LDCs) to let the entry of GMO products and different pesticides into their markets (Ibid). This is an alarming trend since it is likely to lead to more (agro) biodiversity loss and monocultures, to more dependency of farmers on the corporations and to less food security.

Controversial clauses in TRIPS

Article 27.3(b) of the TRIPS Agreement, which requires the members to provide the patenting of micro-organisms and GE organisms (non-biological and microbiological processes), is considered as the most controversial clause. It allows them to exclude from patentability, plants and animals "and essentially biological processes for the production of plants and animals", though members must provide protection to plant varieties either through patent or an "effective *sui generis* system".

It also needs to be recognised that there are potential conflicts between the TRIPS patenting regime and the Convention on Biological Diversity (CBD), as well as the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). These conflicts are widely seen as more political than legal in nature. The US government has made early implementation of TRIPS and the "TRIPS-plus" provisions as a top priority of its foreign policy. These matters are likely to emerge as matters of

dispute under the WTO's dispute settlement system in the coming years.

The implications of complying with the Article 27.3(b) of the TRIPS Agreement for small farmers and rural communities in developing countries are likely to be considerable. Added to that, with the misinterpretation of the provision contained in TRIPS that members can protect plant varieties with one of three measures – patent or an effective *sui generis* or the combination of both – the developed countries are pressurising the developing and least developed countries to apply their model of plant varieties, the International Union for the Protection of New Varieties of Plants (UPOV). But, the UPOV conditions significantly diminish the capacity of the farming communities to be self-sufficient in seed and self-reliant as agricultural producers. It only serves the interests of the commercial plant breeders and the multinational corporates.

The 52-member UPOV, established in Geneva in 1961, has only three signatories from Asia: Japan, South Korea and China. Many observers maintain that, like its original convention, the subsequent amendments of UPOV brought out in 1972, 1978 and 1991 advanced the breeders' interests and reduced exemptions that favoured the farmers and researchers (Sahai, 2002). UPOV's uniformity requirement will contribute to genetic erosion and the cost of maintaining UPOV certification is beyond the means of most farmers and breeders, especially of the developing and least developed nations. For instance, although peasants have also cultivated plant varieties expressing desirable traits over time, their varieties rarely meet the UPOV requirements of D-U-S, that is, they be distinct from other varieties, produce genetically uniform progeny, and remain genetically stable over generations. After the 1991 UPOV amendment, a new quality (novelty) has been added to the minimal characteristics required of plant varieties in order to bring them in line with patent requirements.

These conditions for PBR certificate under the UPOV system are contrary to the goal of enhancing genetic diversity as the kind of protection granted by post 1991 UPOV's PBRs is an exclusive monopoly right. This contrasts sharply with the broader goals of collective remuneration and benefit sharing expressed in the CBD

and the FAO Global Plan of Action for the Conservation and Sustainable Utilisation of Plant Genetic Resources (FAO, 1998).

In response to UPOV, one of the leading NGOs of India – Gene Campaign, in cooperation with Centre for Environment and Development, has prepared a model, namely Convention of Farmers and Breeders (CoFaB). This Convention has been regarded as an effective option, which, among other features, acknowledges the contribution of farmers to the identification, maintenance, refinement of germplasm, and creators of landraces and traditional varieties which form the foundation of agriculture and modern plant breeding (Sahai, 2002). CoFaB also recognises the countries of the tropics as germplasm owning countries and the primary source of agricultural varieties and calls for a system wherein farmers and breeders have recognition and rights accruing from their respective contribution to the creation of new varieties.

Bangladesh's Progression

The agriculturists and other professionals for the first time came across the intricacies of the matter in 1995 while they were preparing the Bangladesh Country Report for FAO's Technical Conference on Plant Genetic Resources held at Leipzig, Germany in 1996. In this connection, a Biodiversity Policy Meeting was held in April 1995 at the Bangladesh Agricultural Research Council (BARC), which led to the formation of an *ad hoc* Committee and, subsequently, a broad based National Committee on Plant Genetic Resources (NCPGR). The NCPGR, assigned to formulate a national policy framework on biodiversity, organised a national workshop on plant genetic resources in August 1997. The workshop recommendations set forth the following guidelines for Bangladesh in drafting the national policy framework on plant genetic resources (Gul, 2002):

a. a *sui generis* system;
b. formulation of plant variety protection regulation;
c. access to and exchange of plant genetic resources;
d. recognition to farming communities, their conservation and use of plant genetic resources and their indigenous knowledge (farmers' rights);

e. curbing bio-piracy;

f. arresting genetic erosion and threats to conservation of biodiversity;

g. protection of habitats rich in native biodiversity;

h. application of biotechnology;

i. biosafety regulation; and

j. seed policies and other such concerns.

Establishment of farmers' rights in plant genetic resources was, therefore, one of the most pertinent objectives, which propelled the experts and policymakers of Bangladesh to attain a legislative framework on community knowledge protection and plant varieties. Guided by the above-set of recommendations, the NCPGR constituted a sub-committee to draft the national policy framework, which has drafted the following two complementary Acts:

- Plant Varieties Act [later reviewed by an overseas consultant who, among other changes, suggested introducing Plant Variety Rights Authority instead of National Biodiversity Authority (NBA)]; and
- Biodiversity and Community Knowledge Protection Act.

Plant Varieties Act

Following are the salient features of the Plant Varieties Act of Bangladesh:

- To be eligible for protection, a variety must be new, have consistent specific traits, be stable and have distinctive traits.
- Breeding alone is not sufficient to justify commercial privileges. The variety must have "immediate, direct, and substantial benefit to the people of Bangladesh."
- Hybrids may only be protected if the patents are available as community varieties in the public domain.
- Any variety that may lead to genetic or cultural erosion shall not be protected.
- Transgenic varieties are subject to further legislation.

- All varieties that are developed in any national public research institute (universities, national agricultural research centres, etc.) shall be considered the property of the people of Bangladesh, i.e. common property. The same holds for farmer - or NGO-developed varieties created through the use of public funds (development cooperation funds). In these cases, the Citation of Award shall replace a plant variety protection certificate.
- Plant variety protection is not available to nationals or juristic persons of countries that are not a party to the CBD.
- The country of origin of the material used to develop the variety shall be disclosed.
- Where a community variety, indigenous plant variety, or wild plant variety has been used in developing a protected variety, 25 percent of the revenue accruing from its commercialisation shall be shared.
- Periods of protection are seven years for annuals, 10 years for biennials, 15 years for perennials, and 25 years for woody species.
- There is a citation or recognition system to award innovators who wish to register their innovations without claiming commercial privilege or protection for personal gain.
- A Plant Variety Development Fund shall be established.

Biodiversity and Community Knowledge Protection Act

The following are the major points of this Act (Gul, 2002):

- The Act shall be the principal instrument to guide, inform, determine, control, reinterpret and give effect, where necessary, to the rights and privileges granted, if any, to innovations of any form that have used natural and biological resources including knowledge and culture of the country or of other countries with which Bangladesh has reciprocal recognition of similar acts, ordinances, or laws.
- This Act shall include all biological and genetic resources and related knowledge and their derivatives within the jurisdiction of the country, both *in-situ* and *ex-situ.*

- The Act deals primarily with community knowledge, collective innovation, and community rights.
- *Community*, *local community* or *indigenous community* refers to a group of individuals who have settled together in any geographical area, agro-ecological zone, forest, flood plain, coastal area or eco-cultural system such that their livelihood practices are part of that system.
- The Act declares and reaffirms that patenting of life forms is against the moral, intellectual, and cultural values of the people of Bangladesh.
- This Act shall ensure that no citizen of Bangladesh is prohibited from access and use of biological and genetic resources and related knowledge and intellectual and cultural practices.
- Any intervention, technological or otherwise, in these systems, causing irreversible damage, destruction, and/or negative short term or long-term consequences according to this Act is prohibited and illegal.
- The sovereignty of the state over biological and genetic resources and related intellectual and cultural knowledge and practices will always take effect through communities and they shall, at all times and in perpetuity, be the lawful and sole owner, custodian and steward of biological resources, knowledge, and innovation related to these resources.
- The state shall ensure payment of royalties or compensations to the communities where applicable. The state shall also ensure equitable disbursement of such payments where applicable.
- The principle of co-ownership may be extended to communities belonging to other countries based on reciprocal recognition of rights inscribed in this Act, if such recognition is promulgated as an act in both the countries.
- The state shall reclaim all *ex-situ* collection of biological and genetic materials and resources and related intellectual and cultural knowledge collected before the signing of the

CBD and establish transparent and direct custody over them.

- A national inter-sectoral and regulatory body at the highest level, composed of relevant representatives from the public sector, scientific and professional organisations, people's organisations, women's organisations, and development and environmental organisations, and representatives of local and indigenous communities, shall be created to ensure proper implementation and enforcement of the provisions of this legislation. It consists of seven ex-officio members, one member from the parliament, and six representatives from different communities.
- The NBA shall also be the implementing agency of the New Plant Varieties Act of Bangladesh as well as other acts related to biodiversity and innovation in other areas.
- The NBA shall establish a National Biodiversity Information System (NBIS).
- A complete inventory of all the biological wealth of the nation, called the National Biological Inventory, will be documented with special and detailed emphasis on species and genetic diversity.
- The NBIS shall develop an effective database for monitoring the causes of the loss of biological diversity.
- Access to biological and genetic resources shall be allowed only with the written prior informed consent of the NBA and concerned communities.
- The maximum term for a research agreement for public research institutions shall be five years and the agreement is renewable upon review by the NBA.
- This Act will not in any way limit the rights of any community including farmers as innovators, for the right to be recognised and rewarded individually or as a group, or both, for the innovation.
- The collector has to pay a fee for commercial collection to be decided by the NBA.

- Funds required in undertaking activities toward implementing the provisions of this Act should be obtained by establishing a national trust fund for which resources may include:
    a. allocation of state revenue budget ;
    b. a portion of benefits shared by appropriate and concerned sectoral departments ; and
    c. incomes and fees imposed on bioprospecting agreements for research and for commerce.
- The NBA shall remain accountable to the Parliament. In the absence of an active session of the parliament, it shall remain accountable to the President.

Concluding remarks

Farming has remained a key source of livelihood for the farmers of the Bengal delta since time immemorial. Rich tradition of farming over the centuries has paved the way for increased production and subsequent agro-based industrialisation. But unsustainable use of natural and biological resources, lack of adequate conservation strategy, destruction of biodiversity, extinction of species, and more importantly, the forces of globalisation have called for policy intervention at both domestic and global levels. But adverse effects on the development strategy could never be stopped if a policy of deprivation is imposed on the less privileged segments of the society which, by dint of generations of hard work and expertise, contribute to the arrival of new plants and resources.

Traditional knowledge of the farming communities has tremendously contributed to modern green, white, silver and yellow revolutions, yet they have remained unrewarded. The plant varieties developed and released by the poor farmers of the agricultural countries like Bangladesh are handed over to the agriculture research stations as breeding material for producing other varieties since the farmers/breeders are in most cases not in a position to participate in an expensive system like that of the UPOV. Their material and innovation along with years of labour and devotion are just misappropriated by the resource rich firms which are capable of translating such valuable germplasm into

money-spinning varieties registered in UPOV. The ultimate irony is that poor farmers, who are unable to pay the costs of getting an UPOV certificate, tend to sell their seed varieties to the rich seed companies *(See Sahai, 2003)*. Many developed and developing countries have, therefore, enacted laws and adopted implementation strategies to protect the farmers' rights not only as a cultivator but also as innovator of plant genetic resources. Bangladesh needs to follow the suit as early as possible.

Major food and livelihood security concerns in the planet, particularly in the developing countries such as Bangladesh, may be addressed by resorting to the following options on priority basis:

- Farmers should be allowed to choose from, and have access to, a wide range of germplasm and samples that would be best suited to their present needs and they should have the right to use their own seeds. They should be free to improve germplasm (varieties and breeds) by using their own and materials introduced from other sources. The legal reforms in this regard should be carried out right now.
- Farming communities should be free to sell the harvested commodity, to save seed (on a non-commercial basis) for replanting, and to share and exchange seed.
- Farmer to farmer seed exchange and sale of seed by farmers should be allowed but a farmer should not be entitled for such right in case the sale is for the purpose of reproduction under a branded marketing arrangement.
- In case of genetic resources, country of origin should be recognised and arrangement for benefit sharing should be made accordingly. Genetic erosion, biodiversity loss and corporate control over agricultural development have to be checked.
- Sustainable forms of rural development and food security enhancing policies should be supported.

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Legal and Institutional Mechanisms to Protect Farmers' Rights in Nepal

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Background

Nepal is predominantly an agricultural country. Agriculture generates about 80 percent of the employment and contributes 40 percent to the gross domestic product (GDP). About 18 percent agricultural land is suitable for conventional agriculture and 25 percent of agricultural land gets irrigation facility. Farming practices are still conventional. The farmers[1] plant a number of species of plants and their varieties and maintain different types of animals in their farms. Due to the traditional farming system and small size of land holding the land and labour productivity is low. Farmers and their institutions are weak. They are not strong enough to recognise and assert their rights. Primary sector in general is weaker in policy lobbying than the secondary and tertiary sectors of the economy.

For strengthening the ability of the farmers to derive benefits from the conservation of biological diversity and to assert their rights over genetic resources, knowledge and innovations, appropriate policies and legislation will be necessary. The countries providing genetic resources will have to improve their protection measures so as to prevent unlawful collection of genetic resources (Mugabe and Ouko, 1994). If the benefits of genetic resources utilisation are to be shared fairly and equitably, states will need to design specific mechanisms to ensure that those benefits actually reach intended beneficiaries, be they local communities, natural research institutions, or government conservation agencies (Mugabe *et al.*, 1997). In order to formulate and effectively implement national access and benefit sharing legislation,

[1] Any community engaged in food production whether living in forest, flood plain or any agro-ecological zone, or a member of such community, women and /or men, will be considered as farmers (NCPGR, 1998).

countries require capacities drawn from a wide range of disciplines. They will have to undertake the relatively knowledge-intensive process of formulating policy and national legislation, and developing the institutions and mechanisms to implement such policy and legislation (Belbase and Regmi, 2000). The knowledge systems of indigenous people and local communities are given less recognition compared to the industrial model of innovation. Recognising and protecting the knowledge systems of indigenous people and local communities include the recognition of their cultural and social life that embodies knowledge and practices supportive of biological diversity.

Nepalese farmers are virtually unaware of the new developments taking place under the auspices of the World Trade Organisation (WTO) and they cannot identify their rights on their genetic resources and related knowledge as rights. It is very important to first inform them about the plight towards which they are heading. Once they are informed, they will try to have their own safeguards (Belbase and Regmi, 2000). Unless they are fully informed and empowered, they will find it difficult to protect their knowledge, innovations and skills from being pirated.

The farmers should get the share of their rights to their indigenous knowledge and seeds and other propagating materials not less than what they were enjoying earlier. In addition, their access to productive resources and technology and information, and their protection from internal and external threats are essential for making them able to maintain a sustainable livelihood.

After the advent of the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement, the rights to seeds and genetic resources have become critical because this Agreement does not duly recognise the more informal system of innovations through which the farmers produce, select, improve and breed a diverse crop varieties and livestock breeds. The United Nations Food and Agriculture Organisation (FAO) defined the farmers' rights as 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 or diversity. Farmers' rights are of an eminently collective nature and

for this reason should be recognised in a different framework from that of a private property (Via Campesina, 1996).

The following sections deal with the rights of the farmers to their farming profession and livelihood, and more specifically their rights to seeds and planting materials.

Right to indigenous knowledge

The informal innovations of the farmers need to be legally recognised as innovations. In addition, it is generally accepted that the farmers must have the right to benefit from their ethno-botanical knowledge, ethical values and cultural traditions of preserving biological diversity, which they have developed for generations.

Innovation systems in many developing countries are quite different from those of developed countries. There is a strong informal system, with small-scale farmers, aboriginal herbalists, and others, developing an enormous range of useful innovations, many of them involving the use of biological materials (Belcher and Hawtin 1991). The Convention on Biological Diversity (CBD) extended intellectual property laws to the knowledge and practices of the indigenous[2] and local communities. The major objectives of the Convention are conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the utilisation of genetic resources. CBD offers a major opportunity to safeguard and conserve the biological and intellectual capital of local and regional communities (Shiva, 1994). In fact, the genetic resources are brought under the domain of sovereign control for the first time by this Convention (Nijar, 1996). Protection of genetic materials and indigenous knowledge and equitable sharing of benefit, however, require national legislation and the effective enforcement.

Protection of indigenous knowledge

The contracting parties to the CBD are required to protect, preserve and maintain knowledge, innovations and practices of indigenous

[2] The term 'Indigenous' refers to pre-existence, non-dominance, cultural difference and self-identification (ICIHI, 1987), as quoted by D. Leskian and M. Flinter (1997)

and local communities embodying traditional life styles relevant for the conservation and sustainable use of biological diversity. The CBD guides its contracting parties to equally share the benefits arising from the use of technical knowledge, innovations and practices relevant to the conservation of biological diversity and sustainable use of its components. The authority to determine access to genetic resources rests with the national government and is subject to national legislation (Belbase and Regmi, 2000).

The practices followed by the farmers are more sustainable in the sense that they know more about the natural environment and the intricate relationship between the elements of the local production system. The farmers are now facing new challenges from genetic erosion, ecological degradation and pressures to produce more to feed ever growing population. For this purpose, conservation and improvement of plant and animal genetic resources are central to their evolving strategies.

Equitable sharing of benefits from indigenous knowledge

The rights of breeders or inventors over improved varieties are given greater recognition at the expense of rights of local communities over source materials, which themselves are the results of innovation and improvements by generations of the farmers. The right to indigenous intellectual property requires not only that the value of such knowledge be recognised, but also that the holders of such property benefit from the use of their knowledge or material (Leskien and Flinter, 1997). It is important to develop a *sui generis* legislation to protect the knowledge and practices of local communities and ensure equitable sharing of benefits arising from their use.

As the indigenous and local communities are more dependent on the genetic resources in their surrounding, the benefit sharing mechanism should give them due considerations. To this end, there is a need for identifying the communities living in areas where collection of genetic resources will occur. It should also be made mandatory to consult with the communities to ascertain their interest in allowing collection in their territories and in negotiating an agreement with the potential user. The communities should be assisted to negotiate terms of access and benefit sharing and review the agreement between a community and a potential user of genetic

resources to ensure conformity with relevant access criteria (Glowka, 1995). For this purpose, the rights of the local community need to be legally recognised.

Right to productive resources

The farmers have collective rights to productive resources as well as natural amenities essential for production system. Rights to the pastures and other community land are critical to the farmers. The quality of private land depends on irrigation facilities, which are mostly collective in nature. Therefore, rights of the farmers to irrigation water are important. Farmers' rights should be extended to their rights to dispose farm products at reasonable price.

Trade liberalisation and globalisation are promoted without considering their implications on farmers. It is apprehended that the liberalisation of Nepalese agricultural market is further weakening and marginalising the rural farmers. Recognition of the rights of the farmers is essential not only to protect their interests but also to save agrarian economy of Nepal.

Farmers should also have rights to have their production environment free from plant pests and diseases of other areas and other countries. Strict quarantine laws and their enforcement are imperative to protect such rights. Similarly, farmers have rights to protect their crops from alterations of sunshine hours and photoperiods by factors other than natural.

Rights to technology and information

Farmers should possess a clearly spelt out collective right - the right to have access on agricultural technology. The technology can improve the productivity of farm resources like land and labour.

Right to information, in general, is guaranteed by the Constitution of the Kingdom of Nepal, 1990. But the set of information required by farmers is different than that by the other people. Farmers desperately wait for market information and weather information that are essential to maintain their livelihood.

However, they are, more often than not, deprived of the opportunity to obtain such information.

Rights to seeds and other genetic materials

This section deals with the farmers' rights to save, sow, exchange, share and sell their farm produce including of a patented variety. Similarly, the rights of the farmers to protect themselves from genetically modified organisms (GMOs) and rights to compensation for seeds and varieties provided to scientists and gene banks are also equally important.

Farmers maintained traditional varieties or 'landraces' of the crops on their farms for centuries. Their ancestors domesticated the wild animals and made them more useful for human being by selecting and improving them. Farming communities have developed suitable farming systems based on thousands of years of experience. Despite the significant role played by rural farmers in conservation of the genetic wealth of plants, crops, seeds, domesticated animals, forest and NTFPs in developing countries like Nepal, the industrialised world is yet to recognise the major contribution of farmers and ensure their rights (Belbase and Regmi, 2000). Many poor farmers in Nepal have very small-holdings and live outside the high potential agricultural areas. Access and affordability to productive and stable seeds are essential to the farmers to maintain production levels effectively. With the advent of more input responsive varieties, farmers have been experimenting with both modern and traditional varieties, and they play a vital role in the selection and diffusion of successful varieties in their communities.

Women play a vital role in the conservation of plant and animal genetic resources. They select seeds and breeds on the basis of preferred traits of landraces like productivity, duration of the crop, storage and milling quality, cooking quality and tastes. They also consider plant protection, adaptation to soil and agro-climate conditions. In most of the cases women maintain animals. Women are managing crop germplasm and their diversity for generations. In most of the cases, women identify and prepare seeds and other planting materials deciding what seed to use.

The authority to determine farmers' access to genetic resources rests with the national government and is subject to national legislation. Prevention from bio-piracy needs legal frameworks and their effective enforcement. Rights of the farmers for their access to genetic resources and benefit sharing should also be clearly stipulated.

Rights to genetic resources and protection of bio-piracy

It is already a normal practice in Nepal that people engaged in research and development (R&D) collect different seeds, semen and other germplasm. A large number of foreign agencies and scholars conduct research on indigenous farm products. People apprehend that after research they may patent the products and Nepal's very indigenous products will be inaccessible to the Nepalese without paying royalty (Bajrachrya, 1996). Recording of the utilisation of such collected germplasm and giving rights on the products therefrom to the original community and farmers who maintain them for generations is a major challenge for the enforcement of legislative frameworks that protect farmers' rights.

Rights to genetic resources and TRIPS

The main purpose of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) is to set an internationally acceptable standard for the protection and enforcement of intellectual property rights (IPRs). TRIPS effectively requires all member countries to apply intellectual property protection over most biological products and processes - from agricultural commodities to medicinal plants and brewer's yeast (Mooney, 1996). The Agreement exerts an obligation to the member states to provide effective procedures for the enforcement of all IPRs and directs them to incorporate adequate legal provisions for this purpose.

Article 27.3 (b) of TRIPS mandates member countries of the WTO to protect plant varieties. This can be done either by patents or an effective *sui generis* system or any combination of these. The *sui generis* system does not yet have any rigid or precise definition. It is sometimes used to denote alternative rights regimes for the protection of community innovations not protectable under conventional intellectual property laws, or to mean a system embodying farmers' and indigenous peoples' rights. The *sui generis*

system for plant varieties can serve as a tool for benefit sharing mechanism between providers and users of germplasm and related knowledge (Leskien and Flinter, 1997).

One of the modalities of this approach is community intellectual rights and collective rights. All biodiversity related rights of local people are protected by adequate legislation. Its basic objective is to prevent bio-piracy from the local communities. However, developing a *sui generis* IPR regime requires an examination of the legal, social and economic conditions prevailing in the particular country or region as well as consideration of the market for the resources (Johnston and Yamin, 1997).

One of the implications of the new IPR requirement will be that farmers have to pay royalties to use patented seeds and they cannot reuse seeds produced out of the patented seeds without the permission of the patent holders. But the farmers in Nepal have the age-old practice of saving and reusing their own seeds. Even with the improved seeds, the farmers replace their seeds hardly once in four to five years. For the first couple of years, the farmers experiment with the new variety of seeds and expand the areas under the varieties in the following years only if they are convinced with the result. Small family farms growing crops mostly for home scale food security cannot afford improved seeds to plant their entire areas in the first year. Moreover, the micro-climatic conditions vary from village to village and plot to plot and the farmers cannot plunge with the new varieties not tested for their farm situations.

Bio-prospecting and benefit sharing

The term 'bio-prospecting' is defined as the research, collection and utilisation of biological and genetic resources for the purpose of applying the knowledge derived therefrom to scientific and/or commercial purposes (Vina, 1997). Traditionally, it was believed that, the right of utilising the wild resources is vested on those people who have easy access to the resources in their surrounding. But later, in the name of research and other industrial purposes, such resources were deliberately infringed from the natural sites and exploited with the justification that the genetic resources of the world are the "common heritage of the humankind". CBD rejects the common heritage of humankind approach and establishes

instead that countries have a right to profit from their wild genetic resources in much the same way that they profit from other natural resources (Adair, 1997).

Legal mechanisms

There are several provisions of laws in Nepal including the Constitution, Acts, Rules and Regulations to protect personal and private property of the citizens of the country. But the collective rights of farmers as a practitioner of farming profession and the users of bio-physical resources maintained by them for centuries are not clearly stipulated so far. The existing provisions appear incidentally in the laws but not as the exclusive rights of the farmers. However, some legal provisions are concerned with collective rights on common property resources. The laws are purposively enacted to empower the state administration to undertake various activities to regulate people including farming communities. Major legal provisions directly concerned with the rights of the farmers are summarised in the following sections.

Protection of indigenous knowledge

The Constitution of the Kingdom of Nepal, 1990 has various provisions (both direct and indirect) related to the farmers and traditional communities. The Constitution protects rights to work, equality, freedom, access to information, protection of property and protection against exploitation. It has no specific provisions exclusively designed to protect the farmers but empowers the government to enact laws to protect weaker sections of the communities in the country. In addition, the guiding principle stipulates that "The State shall create conditions for economic progress of the majority of the people, who are dependent on agriculture, by introducing measures which will help in raising productivity in the agricultural sector and develop the agricultural sector on the principles of industrial growth by launching land reform programmes." It, therefore, requires protecting the rights of the farmers for their economic progress. Existing rules, regulations and legislation in Nepal are not sufficient to protect the indigenous knowledge of the farmers.

Protection of rights on productive resources

The Local Self-Governance Act, 1999 (LSGA) was enacted to transfer the authority and responsibility to local governments and to ensure the maximum participation of people in the development process. Section 28 of this Act entrusts Village Development Committees (VDCs) with the authority to develop agricultural sector, by enhancing irrigation facilities, protecting forest and environment and controling soil erosion and floods. Section 43 requires that VDCs assign priority to programmes which directly benefit backward classes and the rural poor. Section 190 empowers District Development Committees (DDCs) to constitute sub-committees for agriculture, forest and environment with wider representation of the people.

Though the rights of the farmers are not clearly stipulated in LSGA, it is the responsibility of the local governments to assist the farmers for the improvement of their livelihood. It is surprising to note that the Municipalities are not entrusted with the responsibility of agricultural development.

The Lands Act, 1964 sets out a comprehensive framework for regulating tenants' holdings and imposes ceiling on landholdings. It however, provides exemptions from land ceiling for industrial crops. This Act protects the right of the tenants to the land. Section 59 of the Act empowers the government to issue directives to landlords and farmers with respect to cultivation of specified crops in the specified manner in certain areas. This provision infringes the rights of property and freedom for profession.

Land tenants section of *Muluki Ain* (the Civil Code) 1963 recognises the traditional water distribution system. The farmer who constructs the irrigation canal by own effort has a prior right on the water source. The construction of a new irrigation canal above the existing canal is allowed only if that does not reduce the quantity of water to those plots of land which are being irrigated through the old one. This provision recognises and protects the traditional rights of the individual farmers on water sources and not the collective rights of the farming communities on the local resources. Similarly, the Water Resources Act, 1992 rejects the individual ownership on water sources and confirms state

ownership on such resources. It empowers people to establish an association to use water resources for collective benefit. Only the water resources confined to a private land are regarded as private resources.

The Act empowers the government to fix necessary quality standard of water for various uses and to prescribe its pollution tolerance limit. It further prevents water pollution by using or discharging garbage, industrial wastes, poison, chemical or toxicant exceeding the pollution tolerance limit. This attempts to protect the rights of the farmers to quality irrigation and potable water.

Aquatic Animals Protection Act, 1961 prohibits the use of any sort of explosive materials or toxic substances or damage and the destruction of any dam, bridge and waterways intentionally with a view to killing or capturing the aquatic animals. The Act, however, provides the right to the owner of the private water in using all sorts of methods, except toxic substances, for capturing and killing the aquatic animals kept in such water.

The Forest Act, 1993 empowers the local people with the right to revenue sharing upon significant contribution to forest conservation. It recognises that the forest is the basic need of people for their social and economic development. Upon the hand over of a part of the national forest to the local community, they are entitled to develop, conserve, use and manage such forests, and to sell and distribute the forest products independently as per the work plan. The local users are the immediate beneficiaries of the natural resources located in their respective areas. Section 38 of the Act empowers the owner of a private forest to develop, conserve, manage and use forest products. The Forest Act recognises the collective rights of the primary and secondary users of the forest with a restriction that the condition of the forest will not deteriorate from the base level.

Most of the legal provisions on productive resources in Nepal are concerned with the property and civil rights of individual, community and the state. Very few provisions like those relating to common property resources have some concerns with the collective rights of the farmers.

Protection from environmental pollution, food adulteration, diseases and pests

Environment Protection Act, 1996 promotes conservation and sustainable development of the environmental amenities by maintaining clean and healthy environment so as to minimise the adverse effects of environmental degradation on human being, animals, plants, nature and material beings. It defines biological diversity in line with CBD. The Act stipulates that foreign organisation, institution or any individual or organisation affiliated with them shall not collect sample of any micro-organisms and vegetation, and shall not undertake any research work with respect to biological diversity within the Kingdom of Nepal without a prior approval from the relevant government agency. Though the Act tries to regulate the access to genetic resources, it is silent about sharing of benefits among farmers and local communities who are the custodians of Nepal's genetic resources.

The Pesticides Act, 1991 regulates the production, import, export, distribution and use of pesticides. Due to lack of awareness of pesticide hazards among the farmers and consumers, and inadequate monitoring, they are using the pesticides that are not registered in Nepal. This Act ensures the right of the farmers to save themselves from the hazards of dangerous pesticides.

Food Act, 1967 stipulates the provisions to analyse food samples and fix the standards of food products by carrying out necessary research and investigations. Any person, who wants to prepare, sell, distribute, stock or process dairy products, edible oils or processed fruits as an enterprise, needs to obtain a license. Such provisions are mainly for the protection of the rights of the consumers. But the protection of the consumers from low-quality sub-standard food materials indirectly protects the rights of the farmers to market their good quality products.

Plants Quarantine Act, 1972 empowers the government to take necessary measures to prohibit the import of some plants, plant produces or soils infested with diseases and pests that could carry diseases to Nepal. The Act requires the government to prescribe specific conditions for obtaining license with respect to import of any plant or plant products and prescribing necessary

means and conditions. These provisions are also equally applicable to any plant or plant products being transported from one district to another district within Nepal. Such provisions attempt to protect the rights of the farmers to be free from the disease and pests from outsides.

Animal Health and Services Act, 1998 provides the necessary authority to control the diseases and pests of animals in the country. It requires setting up of quarantine check posts to monitor the diseases and pests in the imported and transported livestock and livestock products. Sections 10 and 11 prohibit import and export of livestock products that are carriers of specified diseases and pests. This attempts to protect the rights of the farmers to protect their livestock from the transmission of disease and pests.

There are also some other legal provisions for protecting farmers and consumers from pollution, adulteration, diseases and pests. But, these provisions are not in a consolidated form.

Protection of rights to technology and information

Farmers' rights to improved technology and information are recognised by the government. The Nepal Agriculture Research Council Act, 1991 establishes Nepal Agricultural Research Council (NARC) as an autonomous body for research and technology generation in the agricultural sector in the country. The NARC is supposed to ensure the rights of the farmers for improved farm technology.

The farmers, as citizen, have rights to the information they need for their awareness and to carry out their profession. Among others, the farmers need information on technology and market. Agricultural Marketing Bill is proposed for providing necessary legislative provisions required for market development and information on agricultural products.

Industrial Development Act, 1992 classifies some agricultural production activities as the agro-based industry. In addition, some service industries like cold storage and ginning and baling industries are agricultural in nature affecting the farmers directly. The agro-based industries are entitled to get some rebates and facilities. For example, cottage industries are exempted from sales

tax, excise duty and income tax. The maximum limit for income tax for agro-industries is 20 percent of the taxable income. Industry using 80 percent or more of indigenous raw materials and 100 percent Nepalese human resource will get 10 percent rebate in income tax. National priority industries shall be granted a rebate of 50 percent of the income tax on their income for a period of seven years from the date of operation. The industries established in remote, undeveloped and underdeveloped areas would get further rebates for a period of 10 years from the date of operation. All these rebates emanate from the rights of the farmers to earn their livelihood out of agriculture. Rebates and concessions in agricultural sector are also aimed at facilitating transfer of technology to the farm.

Cooperative Act, 1991 provides some concessions and tax exemptions to the duly registered cooperative societies. Some promotional activities, training and soft loan are provided to the co-operatives. The cooperative legislation protects the farmers from their rights to be organised into an institution for their common benefit.

Though the rights of the farmers to technology and information are recognised, such collective rights of the farmers are not explicitly specified legally. Some improvements in the laws and the institutions to implement the laws are necessary for this purpose.

Protection of seeds and other genetic materials

The traditional farmers are virtually unable to protect their rights to seeds that they have been preserving from time immemorial. After the enforcement of IPR of the seed developers, the farmers have to pay royalties for acquiring those seeds or techniques that are based on the efforts of their ancestors.

Seeds Act, 1988 secures various provisions for production, processing and testing of high quality seeds to increase the production. Section 3 of the Act envisages constitution of a National Seed Committee in order to formulate and implement the seed policy and to render necessary advice to the government. Section 13 of the Act prohibits selling, holding for selling or exchanging of seeds with unidentified species and variety by any means. The

seeds should have label and comply with the minimum standard prescribed. The seeds of specified species or variety should be prescribed as suitable for particular area. The Act protects the rights of the farmers to get good quality reliable seeds.

Plant Protection Act, 1972 empowers the government to ban the import or inter-district transport of any plant, plant part or plant product. As this right of the government is unconditional, it may either be used for or against the interest of the farmers. It also stipulates the provisions for the establishment of laboratory check posts or quarantine stations for check-up and treatment of plants or plant parts. This protects the farmers' right to protect their crop from external diseases and pests. Plant Protection Officer, however, can exempt the requirement of this Act on plants or plant parts imported for study, research or other scientific work by the government and non-governmental organisations (NGOs). This provision takes care of the rights of the breeders.

Nepal is yet to enact laws for the protection of the farmers from the potential consequences of genetically modified seeds. Bio-safety and environmental impact assessment of GMOs are essential. The transgenic seeds, which could be potentially harmful to the environment, health and the welfare of the people need to be banned in the country. Farmers need also to be protected from seeds that are with no or low reproduction and production potentials at the successive generations. A separate *sui generis* legislation with clear and precise statements of rights and duties of farmers and industrial property owners is required for protecting farmers' knowledge, practices and innovations.

Institutional mechanism to protect farmers' rights

Appropriate and effective institutional mechanisms are important for the implementation of legal provisions relating to protection of farmers' rights. There is no such institution that is fully responsible for the protection of farmers' rights in Nepal. By the nature of their jobs, some institutions are more related to such activities that can be linked to the protection of the rights of the farmers.

Parliamentary committee

Natural Resources and Environment Committee of the House of Representatives evaluates the policies and programmes of sectoral ministries concerned with the rights of the farmers. Sectoral ministries address many issues relating to protection of farmers' rights and indigenous people's practices, knowledge, and innovations in particular. Furthermore, sectoral ministries recommend amendments to existing legislation, prepare new laws, and monitor the implementation of policies and the compliance of legislation. The Parliamentary Committee has the authority to suggest and guide the sectoral ministry to make amendments to those rules.

Sectoral ministries

In order to formulate and effectively implement farmers' rights related policies and legislation, capacities drawn from a wide range of disciplines are required. Different ministries and departments under them are involved in the intensive process of formulating policy and national legislation, developing the institutions and devising mechanisms to implement them.

The Ministry of Water Resources is concerned with the rights of the farmers for irrigation. Similarly, the Ministry of Land Reform and Management deals with the rights of the farmers on land, and the Ministry of Population and Environment deals with, among others, the rights of the farmers to protect them from environmental degradation and pollution. The Ministry of Forest and Soil Conservation is concerned with the conservation of genetic resources in the country. This Ministry has the Department of Plant Genetic Resources with the mandate of maintaining herbarium, records of ethno-botanical knowledge, *in-situ* and *ex-situ* conservation of plant genetic resources and exploration of potentials of the plants for economic exploitation. The Ministry has formed a National Biodiversity Unit (NBU) in 1997 to act as a national focal point for guiding CBD implementation, monitoring the progress and providing a forum for interactive discussions.

Ministry of Agriculture and Cooperatives is responsible for technology generation and transfer for agricultural development in the country. The responsibility of developing seeds and other

propagation materials is entrusted to NARC. It is also responsible for maintenance of gene pool of different varieties of cultivated species and their wild relatives. Private organisations are also promoted for technology generation particularly through National Agricultural Research and Development Fund (NARDF). The Ministry is interested in setting up a Seed Quality Control Centre to protect the interests of the farmers. It is also exploring the possibility of providing accreditation of private sector laboratories for quality analysis of seeds.

Local governments

DDCs, municipalities and VDCs constitute the local governments in Nepal. They are more directly concerned with the implementation of development programmes for the benefit of the local people; most of whom are farmers. Knowledge gap among the local governance institutions is the major problem in protecting farmers' rights. Issues relating to protection of farmers' rights are not yet on their agenda. Once the local government realises the contribution of farmers in conservation of genetic resources, its behaviour and decision-making is likely to change towards the protection of the rights of the farmers. There is a serious need for integrating the conservation and sustainable use of biological resources and equitable sharing of the benefits arising out of them. Since majority of Nepalese farmers live in 3,912 VDCs and to some extent in 58 Municipalities, the activities for protection of farmers' rights and local communities' knowledge, innovations and practices should also be vested with the local government. However, technical backup is required in order to help local government to effectively discharge these functions.

Proposed institutions

HMG and IUCN (2001) propose a National Genetic Resources Protection Authority under the Ministry of Forest and Soil Conservation for the effective conservation of and benefit sharing from genetic resources. This authority is envisaged to be economically viable from the income generated by utilising the genetic resources. For effective *in-situ* conservation and equitable sharing of the economic benefits from bio-prospecting, the authority has to work with local communities and farmers institutions.

There is a need to establish a strong gene bank for effective utilisation of plant genetic resources in the country for the benefits of the local farmers. This is expected to act as a resource centre for breeders, conservers and farmers.

Conclusion

Farmers and their institutions in Nepal are still weak. To assert the rights of the farmers to genetic resources, knowledge and innovations, appropriate policies and legislation are necessary. Farmers should have rights to their indigenous knowledge and seeds and other propagating materials not less than what they were enjoying prior to the advent of TRIPS. In addition, access to productive resources, technology and information, and protection from internal and external threats are essential for improving their livelihood.

Farmers have collective rights to productive resources as well as natural amenities essential for production system. This should also be extended to their rights to dispose farm products at reasonable price. Farms should be free from the external threats of plant pests and diseases. Similarly, the farmers have rights to protect their crops from alterations of sunshine hours and photoperiods by factors relating to industrialisation. They should have clearly spelt out collective rights to the access of agricultural technology and information for the improvement of their farming profession.

Government needs to provide legal protection to the rights of farmers to save, sow, exchange, share and sell their farm produce including that from the seed of a patented variety. Effective legal provisions are needed to protect farmers and consumers from the risks of GMOs. It is equally important to protect genetic resources from bio-piracy. In the industrialised countries, the rights of breeders or inventors over improved varieties are given greater recognition. We should reject this model of plant variety protection. In the case of a least developed agrarian country like Nepal, it is important to develop a *sui generis* legislation to protect the knowledge and practices of local communities including the farmers and ensure equitable sharing of benefits arising from their use. The *sui generis* system for plant varieties needs to be utilised

as a tool for benefit sharing mechanisms between providers and users of germplasm. The sovereign rights to biological resources need to be conferred to those farmers who conserved and protected them for generations.

The informal innovations like ethno-botanical knowledge and cultural traditions of biological diversity of the farmers need to be legally recognised as innovations. Legislative provisions in Nepal are not sufficient to protect the indigenous knowledge of the farmers. Most of them are concerned with the property and civil rights of individual, community and the state. Very few provisions like those relating to common property resources relate to collective rights of the farmers. There are some legal provisions for protecting farmers and consumers from pollution, adulteration, diseases and pests. But, the provisions are neither explicit nor consolidated. Nepal needs both to ensure that farmers' rights are protected.

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Protecting Farmers' Rights for Sustainable Agriculture Development in Nepal

Madhusudan P. Upadhyay

Introduction

Nepal covers an area of 147,181 sq. km with an average length of 800 km and breadth of 160 km. Ecologically diverse in nature, the country possesses eight out of 14 peaks above 8,000 meters above sea level, rugged mountains and sloppy lands, fertile valleys in low to mid hills and flat lands in terai. Nearly four million hactre (ha) is agricultural land and expansion of area for cultivation is extremely limited. The predominance of agriculture has led the Nepalese society to agrarian culture. Agriculture is the means of livelihood. More than two third of the Nepalese population is actively involved in this sector for food security and employment opportunities. This sector contributes nearly 40 percent to the national gross domestic product (GDP).

Agricultural development plan

Agriculture receives a high priority in the national agenda of developing world because of its contribution to national food security, nutrition, employment, industrial growth and income generation. Use of dwarfing genes, chemical fertilisers, insecticides/ pesticides and modern scientific advances have revolutionised the agricultural production system. Nepalese agricultural development plan is highly influenced by the success of the green revolution and scientific advances. Despite the concentrated national efforts in the past two decades, the agricultural growth remained at three percent per annum i.e. a half percentage point more than the population growth rate. Poverty has not been reduced and the number of food deficit districts has increased over the years. Recognising the slow growth of agriculture, a 20-year Agriculture Perspective Plan (APP, 1995-2015) has been implemented since the Ninth Five Year Plan (1997-2002). The APP aims at accelerating the growth rate in agriculture,

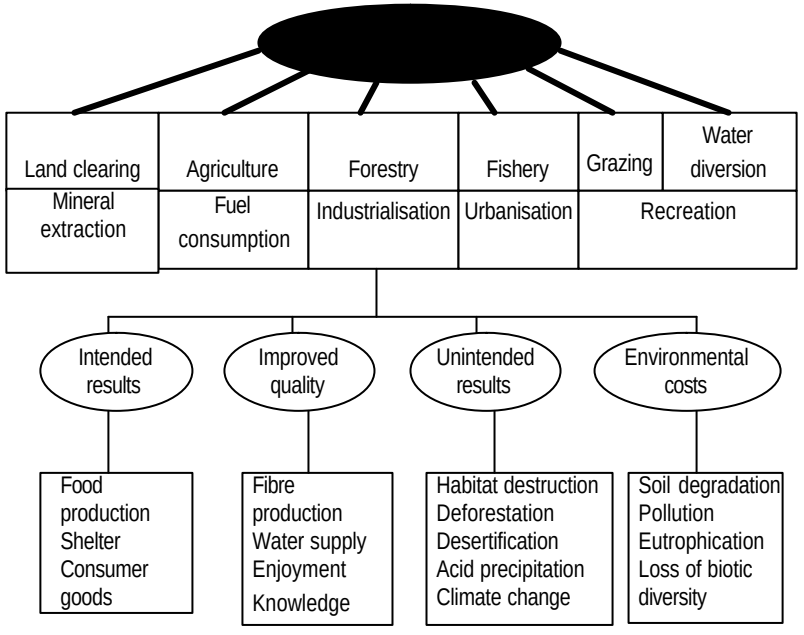
alleviating poverty and improving the livelihoods of the people. Transformation of subsistence-based agriculture into commercial one has been visualised through the use of green revolution type technologies and timely availability of inputs and other factors linked with production system.

However, the conservation and sustainable utilisation of agro-biodiversity have not been realised in national development plans. The APP is also silent on the issue. Review of the performance of development plans indicates poor achievements (Joshi, 2000).

Convention on Biological Diversity

The loss of biodiversity is linked with human activities and evolutionary forces. Extinction of species/ varieties has been a rule of nature. However, the rapid rate of development in twentieth century intensified the indiscriminate use of biodiversity resulting in massive erosion of diversity (Figure 9.1).

Figure 9.1: Human involvement in utilisation and destruction of biodiversity (Lubchencho *et al.*, 1991)



The issue was largely recognised due to loss of large mammals and forest destruction. In agriculture, spread of modern varieties, urbanisation, land encroachment and other development activities led the path of erosion at genetic, species and ecosystem levels. High rate of extinction became a challenging concern for the civilised world. Therefore, the Convention on Biological Diversity (CBD) was adopted by majority of the countries participating at the Earth Summit in 1992. CBD has outlined three major principles:

- States have sovereign rights over their own biological resources (National Sovereign Rights).
- States are responsible for conserving their biological diversity and/or using biological resources in a sustainable manner (National Responsibility).
- The conservation of biological diversity is a common concern of humankind. The conservation and sustainable use of biological diversity will strengthen friendly relations among states and contribute to peace for humankind (International Collaboration).

Nepal signed the Convention in 1992 and ratified it in 1993. His Majesty's Government of Nepal (HMG/N) identified the Ministry of Forest and Soil Conservation (MoFSC) as the CBD focal point. The draft of National Biodiversity Strategy recognises six sectors under biodiversity: Forest, National Parks and Wildlife, Rangeland, Agriculture, Wetland and Mountain. Agro-biodiversity is a prioritised sub-sector of biodiversity. National Agro-biodiversity Conservation Committee has been established under the aegis of Ministry of Agriculture and Cooperatives (MoAC) for the conservation and sustainable utilisation of agro-biodiversity.

Spectrum of agro-biodiversity

Agro-biodiversity (Box: 9.1) is the component of biodiversity that nurtures people and is nurtured by farmers and farming communities. Richness in agro-biodiversity coupled with traditional farming systems adapted to varied micro niches provides unique opportunity for evolution of genetic diversity over time and space. Farmers are the key actors conserving and utilising agro-biodiversity in a sustainable manner.

Box: 9.1 Components of agro-biodiversity

- Cultivated crop species/varieties and related wild species
- Domesticated livestock species/breed and related wild species
- Rangeland, pasture and agro-forestry
- Indigenous fish species
- Insects/honeybees/sericulture
- Microorganisms
- Agro-ecosystems
- Indigenous/local knowledge, skills and techniques

Status of agricultural biodiversity in Nepal

Human involvement in hunting and food gathering led to identification, selection and domestication of plants and animals from their wild habitats. Later, the systematic agricultural practices were developed to suit the specific niches and requirements of individuals and commune. More than 500 plant species are edible and 200 species are cultivated in Nepal. Nearly, 2,000 landraces of rice are being grown. The progenitor of present day cultivated rice: Oryza rufipogon and O. nivara is widely distributed in the terai and midhills. Indigenous breeds of livestock in cattle (Siri, Lulu, and Achhame), buffaloes (Lime and Parakote), goat (Chyangra, Khasi, Sinhal and Terai Goat), pig (Chwanche and Hurrah), sheep (Bhyanglung, Baruwal, Kage and Lampuchchhre**)** and fish species (Asala, Sahar, Rahu, Buwari, Mungri, Tengra, Gainchi, Bam etc.) are available (Joshi and Rasali, 1996). Variabilities in insect fauna have also been documented (Joshi, 2002).

Nepal Agricultural Research Council (NARC), Local Initiatives for Biodiversity Research and Development (LIBIRD) and International Plant Genetic Resources Institute (IPGRI) have initiated a study to understand farmers' decision making processes in conservation and sustainable utilisation of agro-biodiversity in thee major agro-ecosystems representing flat lands, mid hills and high hills of Nepal. Studies indicate that mobilising farming communities and strengthening community based organisations through creating awareness, ownership and promoting value

addition activities are necessary to ensure sustainable use of onfarm conservation. Agriculture Botany Division under NARC has preserved 10,721 accessions of germplasm in temperature controlled environment at 5 ^{0}c and 45 percent relative humidity.

Table 9.1: Germplasm holdings in Genebank

SN	Crop categories	Number of species	Preserved germplasm (Number)
1	Cereals	19	6,035
2	Legumes	22	3,340
3	Oilseed	11	640
4	Vegetables	20	600
5	Spices	10	75
6	Jute/Fibre	3	11
7	Miscellaneous	5	20

Biodiversity and bioproductivity for sustainable agriculture

The interrelationship between biodiversity and bioproductivity (Figure 9.2) has been described indicating characteristic features of sustainable agriculture (Khoshoo, 1996). Low productivity (LP) and low diversity (LD) are observed in marginal and extreme harsh environments. The production from the environment is inadequate to meet the food demand of the population. Poverty is acute. Limited genetic resources with ability to cope up with harsh environment are available. Rare species/varieties/breeds with unique features exist in the environment.

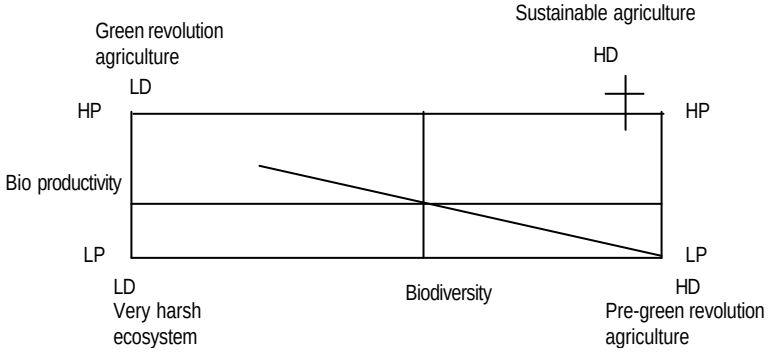
High diversity (HD) and LP are believed to be the attributions of traditional farming system. Farmers/farming communities follow onfarm eco-friendly cultivation practices enriched with traditional knowledge, skills and techniques. Local varieties of cultivated crop species and breeds of livestock are maintained onfarm. Traditional seed supply systems and local markets and

fairs ensure the availability of agricultural inputs to those who require them.

The green revolution induced agriculture represents LD and HP. Modern technologies dependent agriculture is practiced by resource endowed farmers to boost production potentials, which increase dependence of farming communities on external agencies for agricultural inputs. This leads to farming communities becoming susceptible to changing global political and economic scenario. The resources of poor farmers/farming communities could be seriously affected by such changes. Besides, because of low genetic variability, the system is vulnerable to insects and diseases and unsustainable. In such a situation, loss of agro-biodiversity is eminent.

The proposed sustainable agriculture has features of HD with HP that will be able to feed the ever-growing population. Participatory research and development approaches have to be carried out for sustainable utilisation of plant and animal genetic resources. Introduction of technologies must not aim at replacing existing local resources and traditional knowledge. It should rather be complementary with traditional knowledge on conservation and enhancement of local genetic resources.

Figure 9.2: Relationship between biodiversity and bioproductivity (Khoshoo, 1996)



Seed supply system

National seed supply scenario depicts the role of formal and informal seed supply systems. Agricultural Input Corporation (AIC), government agricultural stations and national seed companies are the major formal seed supplying sectors. AIC with national network for seed production, processing and supply deals with extremely low fraction of national seed requirement (Table 9.2). Bulk of seed requirement for farmers and farming communities is fulfilled through informal mechanism representing traditional seed supply system. Farming communities use farm saved seed for production, exchange, sell and donate gift to relatives/neighbours (Baniya *et al.*, 1999). The traditional seed supply system has maintained a large number of genetic diversity at a village level that ensures onfarm production.

Table 9.2: Share of AIC in national cereal seed supply

Year	Improved seed (%)			Year	Improved seed (%)		
	Paddy	Maize	Wheat		Paddy	Maize	Wheat
1984/85	0.5	0.9	3..5	1991/92	0.4	0.4	2..8
1985/86	0.3	0.6	3..9	1992/93	0.3	0.5	2..1
1886/87	0.2	0.6	3.4	1993/94	0.3	0.7	4.4
1987/88	>0.1	0.7	3.1	1994/95	0.5	0.6	4.4
1988/89	0.3	0.8	2.4	1995/96	0.3	0.9	3..8
1989/90	0.2	0.8	2..9	1996/97	0.5	0.8	4..3
1990/91	0.2	0.3	2..9	1997/98	0.2	0.7	2..5

Source: Agriculture Inputs Corporation, 1999.

Farmers' rights

Farmers are the owners of domesticated plant and animal genetic resources. Food and Agriculture Organisation (FAO) Commission, 1989 defined farmers' rights as "rights arising from the past, present and future contributions in conserving, improving and making

available plant genetic resources, particularly those in the centre of origin/diversity". The fifth Extraordinary Session of the Commission on Genetic Resources for Food and Agriculture, 1998 reconfirmed the role of farming communities in conservation and sustainable utilisation of plant genetic resources. However, limited efforts are directed towards supporting and promoting farmers' rights. Developed countries prefer to assign farmers' rights to individual farmer for his/her innovation but are unwilling to reward communities for their roles as visualised by the FAO Commission. Developing countries are ready to recognise and reward indigenous innovation and farmers' rights.

The Fourth FAO International Technical Conference on Plant Genetic Resources, 1996 adopted a Global Action Plan for the Conservation and Sustainable Utilisation of Plant Genetic Resources for Food and Agriculture in order to foster development and reduce hunger and poverty, particularly in developing countries. It also promotes a fair and equitable sharing of benefits arising from the use of genetic resources managed through traditional knowledge, innovations and practices under the possession of farmers and farming communities.

Another significant achievement has been the adoption of International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) on 03 November 2001 under the auspices of the FAO. Nepal is in the process of signing this treaty. The treaty wishes to recognise and reward the past, present and future contributions of farming communities in the conservation and development of plant genetic resources for human survival. Participating nations are encouraged to fulfil their commitments in protecting and promoting the following rights of farmers through national legislation:

- Rights to save, use, exchange and sell farm-saved seeds/propagating materials;
- Protection of traditional knowledge;
- Rights to equitable benefit sharing; and
- Involvement in decisionmaking processes on matters related to the conservation and use of plant genetic resources for food and agriculture.

Why farmers' rights?

Farmers were free to share and exchange germplasm as a common heritage of humankind. Prior to the CBD, the free flow of genetic resources was accepted and, in fact, encouraged as a mechanism to ensure food security and fight hunger and starvation at the global level. Asian and African countries did benefit from the services provided by the joint efforts of farmers and scientific communities. Recently, in the quest to promote globalisation and liberalisation, issues like plant variety protection under the UPOV and the Trade Related Aspects of Intellectual Property Rights (TRIPS) models have emerged. Such models have direct implications on farmers' rights and conservation and sustainable utilisation of genetic resources. Article 27.3 (b) of TRIPS mentions "Members may also exclude from patentability plants and animals other than microorganisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either through patent, or an effective *sui generis* system or any combination thereof. " This Article implies that members are obliged to provide protection to life forms including genetic resources.

Box: 9.2

Sui generis system

Sui generis system provides an opportunity to each nation for formulating legislation of its own kind or unique type that provides adequate plant variety protection. While enacting such a system, national considerations could be successfully blended to honour the rights of the farming communities and fulfil international obligations. General features of *sui generis* system should reflect the basic requirements to acknowledge and reward plant breeders and farmers for their innovation, incorporating among others:

- A system of protecting new plant varieties
- Non-discriminatory, which includes most favoured nations as well as national treatment
- Enforceable and applicable
- Conformity with relevant international agreements
- Incorporation of national elements: farmers' rights, community rights, traditional knowledge, landraces and basic features of general rights.

Race for patenting genetic resources is unabated. Private entrepreneurs are encouraged to use the genetic resources and traditional knowledge to build their scientific capabilities and knowledge thereby acquiring benefits without considering equitable benefit sharing to the owners of genetic resources and knowledge. Several species and varieties such as Brinjal, Bitter gourd, Turmeric, Jamun, Basmati rice etc. have been patented. More than 600 biotech patents exist on rice genes, plants and breeding methods. Genetically engineered plants/products already in use may be introduced without any biosafety protocols. Farmers' concerns are neither supported nor considered. Resource poor farming communities will have to depend on developed countries for technologies and inputs. Farmers will not be able to continue unaffordable agricultural practices. In the process, genetic resources, traditional knowledge and self-confidence of farmers will be lost for ever. An irreparable damage to sustainable agriculture is imminent.

Costs of ignoring farmers and farming communities

Farmers and farming communities are the owners of plant genetic resources for food and agriculture. Failure to provide them rights would adversely affect existence of agro-biodiversity. No incentives should be allowed to discourage communities from their traditional roles and make them susceptible to exploitation by technologies. The ultimate effect will be the loss of diversity and dependence on technologies, which will hinder attainment of national goal for food security and poverty alleviation. Resource poor farmers cannot afford to use expensive technologies requiring high inputs for their livelihoods.

Studies have indicated that farmers grow and are dependent on local plant genetic resources and traditional seed supply system. This contribution of farmers must be recognised, respected and rewarded. Ensuring farmers' rights as visualised by the FAO Commission can be a better means in this regard. Deviation from this commitment would lead to unsustainable agricultural production. Therefore, HD and HP have to be ensured for sustainable agriculture. Appropriate provisions of farmers' rights would pave the way towards attaining the goal of sustained agricultural growth to feed ever growing population.

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Current Policy Situation, Issues and Gaps in Plant Genetic Resource for Food and Agriculture Policy in Nepal

Devendra Gauchan, Bimal Baniya, Madhusudan Upadhyay, Anil Subedi and Bhuwon Sthapit

Introduction

Globalisation, liberalisation and advances in biotechnology are among the most obvious and fundamental trends that affect and influence policy debates on ownership, conservation and exchange of biological materials (The Crucible II Group, 2000). The coming into force of the Convention on Biological Diversity (CBD) in 1992 has changed considerably the nature of international policy and politics on conservation, utilisation and exchange of plant genetic resources. Subsequent to the implementation of CBD, the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) under the World Trade Organisation (WTO) has emerged as another major policy issue that is related to plant genetic resource management. Similarly, the signing of revised International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) by Food and Agriculture Organisation (FAO)'s Conference in 2001 reflects the significance of access and benefit sharing as the basis for continued and sustainable utilisation of plant genetic resources for food and agriculture. Nepal has taken part in some of these important international agreements and conventions and has been actively involved in the discussions leading to them in various preparatory meetings (Pant, 1998; Chaudhary, 1999; Gauchan *et al.*, 2000a). Nepal has also formally applied for the WTO membership in 1998 (Pandey, 1999; Adhikari *et al.*, 2000) and is expected to accede to it in the near future. However, the country has not taken adequate initiatives to develop its overall policies for PGRFA in accordance with international policy agreements and requirements. There are many provisions of CBD and ITPGRFA, which should be of concern to Nepal.

This paper is the outcome of the review, survey and analysis of PGRFA policy case study (2001-2002) conducted in Nepal. The

paper first intends to present the background dealing with the need for the policy case study, the research process and then review existing international and national policies that have implications on PGRFA policy developments in Nepal.

Rationale for the policy case study

- Nepal is an agriculture based country dominated by traditional farming systems. PGRFA plays a vital role in the national economy since more than 80 percent of the population depend on agriculture for their livelihoods (CBS, 2000). Despite major emphasis on agricultural development in Nepal, with particular focus on formal seed sector in the past three decades, still above 90 percent of the seed supply in food crops takes place through farmers' own informal source of production and management (Cromwell, *et al* ., 1993, Joshi, 2000; Baniya *et al.*, 2002).

- The country is rich in PGRFA as a result of its diverse farming systems, extreme variation in micro-agroecological niches and varied socio-cultural settings. Small-scale farmers since time immemorial have nurtured and maintained these rich plant genetic resources for their immediate food needs and survival. But in recent times, there have been widespread claims that the country is losing its significant portion of PGRFA due to its liberal economic policy, *ad hoc* promotion of modern varieties and lack of overall policy of genetic resources (Gauchan *et al.*, 2001).

- Even though, Nepal, a gene rich country, is a signatory of CBD 1992, and Global Plan of Action (GPA) 1997, no adequate initiatives have been taken to implement international agreements (Pant, 1998; Gauchan *et al.*, 2000a). In addition, if it becomes a signatory to the WTO, which many believe is imminent; it will need to fulfil intellectual property right (IPR) requirements (either through patent or *sui generis* system or combination of both) for its PGRFA products. But, policymakers lack appropriate information, knowledge and capabilities to take such initiatives (Sapkota *et al.*, 2001).

- Preliminary policy study of IPGRI supported globally coordinated Nepal component of *In-situ* Conservation of Agro-biodiversity Onfarm Project has identified some of the policy, issues, gaps, and

constraints influencing farmers' decisions on maintenance of genetic diversity using participatory policy analysis (Gauchan *et al.*, 2000b). Nevertheless, review and analysis of national policies and their linkages to recently formulated policies and legislation relevant to PGRFA have not been made to ensure that they are consistent and that they support national objectives, priorities and international obligations.

- Some of the initiatives made by different groups such as Nepal's *In-situ* Agro-biodiversity Project, Agro-biodiversity Committee, some non-governmental organisatoins (NGOs) and advocacy groups have in recent days been able to create awareness among the various stakeholders to some extent, particularly in regards to the need for the appropriate policies and legislation to protect rich genetic resources. However, mechanism for wide consultations, debates and public participation in the development of relevant PGRFA policy is not yet upto mark.

- Government has realised the importance of PGRFA. Some processes have been initiated in the development of National Biodiversity Action Plan (NBAP). However, the process that the government (different ministries/departments) followed to develop strategies, action plans and policies and mechanisms is largely undocumented and unknown to other stakeholders.

- Identification of relevant policy framework and priorities for PGRFA is often a complex process due to the involvement of diverse stakeholders and interest groups. One major drawback facing Nepal presently is inadequate review and analysis of key policy issues and policy formulation process. Understanding and identification of perceptions of potential stakeholders on key issues and priorities are essential to developing PGRFA policy.

- Despite the importance of agriculture and predominance of traditional farming systems, policy makers, and other major stakeholder groups are not adequately aware of the potential benefits of PGRFA in Nepal. Understanding of key policy issues with appropriate research and development (R&D) information and policy analysis will help decisionmakers make informed choices that will have profound implications for ensuring food security and poverty reduction in Nepal.

Objectives of the study

The case study in Nepal is designed with the following objectives:

- Review of current policy situations in PGRFA management and related sectors.
- Analyses of problems and gaps in current policies and policy formulation process.
- Identification of key policy issues and priorities for PGRFA management in Nepal.

Research process

The case study employed multi-disciplinary, participatory and process oriented research approach to elicit information from various stakeholders (public, private, I/NGO sectors and farmers) at different steps and hierarchical levels. Specific research steps and methods were designed during the process of case study. The steps and the sources of information were (i) protocol development based on review of policy study and documents of *In-situ* Agro-biodiversity Conservation Project, Nepal; (ii) review and analysis of international and national policy documents relevant to PGRFA; (iii) interviews of important stakeholders; (iv) bringing key government officials and policymakers in direct contact with the farming communities; (v) consultation meetings with the experts (e.g. thematic experts of the *In-situ* Project); (vi) presentation of the preliminary findings in the policy workshop for receiving the feedback from policy makers and other important stakeholders; (vii) interaction of PGRFA decision makers and study team members with the local journalists through press conference; (viii) monitoring of the changes in the policy initiatives based on the feed back received from the workshop; and (ix) data compilation, analysis, synthesis, documentation and refinement of the report.

Preliminary identification of the stakeholders for the case study was accomplished through literature review and informal and formal consultations with relevant stakeholders based on their existing programme activities, focus of area and interest in the PGRFA policy issues. In addition to informal interaction and consultation meetings, a total of 15 key stakeholders were directly interviewed with guided checklists. These stakeholders included people form the government ministries and departments - from

trade and commerce to forest and agriculture, national agricultural research institutes such as NARC including private sector such as Seed Entrepreneurs' Association of Nepal (SEAN) and I/NGOs such as ActionAid Nepal (AAN), IUCN, LIBIRD and Pro Public. The study also consulted Ministry of Industry, Commerce and Supplies (MoICS) – the WTO focal point, Ministry of Forest and Soil Conservation (MoFSC) – the CBD focal point, and key senior officials at Ministry of Agriculture and Cooperatives (MoAC). The farming communities were also consulted and interviewed such as Pratighya Cooperatives at Begnas-Kaski and farmers' groups at Kachorwa village of Bara district.

Preliminary findings of the reviews, travelling seminars, consultation meetings and interviews were analysed and documented. Summarised key findings were presented at the policy workshop organised by the *In-situ* Project in association with the case study team members. The feedback of the policy workshop was incorporated in designing further steps in the case study research process. The key issues and ambiguous information identified were further probed through revisit of the stakeholders wherever possible and necessary. The draft report was finalised based on the comments of the policy specialists and other experts from IPGRI both in headquarters at Rome and the Asia Pacific and Oceania (APO) Region, Serdang.

Findings

International conventions, policies and legislation

International conventions, policies and legal matters play important roles in the conservation of PGRFA. Nepal is a signatory of CBD (1992), which was ratified by the parliament on 15 September 1993 and enforced in Nepal since 21 February 1994 (Chaudhary, 1999). But, it is not a member of International Union for Protection of New Varieties of Plants (UPOV). Nepal's plan to join the WTO and its enforcement of TRIPS will create significant challenges and policy implications that need serious attention as well as internal preparation (Gauchan et al. 2000a; 2001). The other important policy issues that have important bearing on Nepal's PGRFA policy developments will be the coming into force of the ITPGRFA, especially if Nepal signs and ratifies the Treaty ; and

FAO Technical Conference on Plant Genetic Resources' or Global Plan of Action (1997).

Current national policy and legislation

Box: 10.1 presents national policy and legislation applicable for PGRFA management. Nepal has adopted liberal economic policies since 1992 following the advent of multiparty democracy. These liberal policies are reflected in the Eighth (1992-1997) and Ninth (1997-2002) Five Year Economic Development Plans. Recently introduced Tenth Plan (2003-2008) has also more or less same spirit. The 20-year Agricultural Perspective Plan (APP, 1995-2015) (APROSC/JMA, 1995) is a major guiding policy document in agricultural development sector. The Forestry Master Plan is a major sectoral plan in the forestry sector and it covers the aspects of biodiversity conservation applicable to forest trees, agroforestry, medicinal herbs and wild biological diversity. MoFSC is the focal point for implementing CBD. It is in the process of finalising National Biodiversity Strategy and Implementation Plan, including Access and Benefit Sharing Legislation.

Box: 10.1

National policies and legislation applicable for PGRFA

- Agricultural Perspective Plan (1995-2015)
- Ninth Five Year Plan (1997-2002)
- Forestry Master Plan (1988) and Revised (2000)
- Seed Policy (2000), Seed Act (1988), and Seed Regulations (1997)
- Environmental Action Plan (1992)
- Local Governance Act (1998)
- Forest Regulations (1997) and Forest Act (1993)
- Patent, Design and Trademark Act (1965)
- Food Act (1966) and Food Rules (1972)
- Plant Protection Act, (1972), Pesticide Act (1991)
- National Park and Wildlife Conservation Act (1973)
- National Biodiversity Strategy (2002)
- National Biodiversity Action Plan (under approval)
- Access and Benefit Sharing Legislation (under approval)
- Biodiversity Trust Fund Legislation

The important policy and legislation related to PGRFA that are commonly in use are Seed Act (1988), Seed Policy (2000), Plant Protection Act (1972), Forest Act (1993) and primitive Patent, Design and Trade Mark Act (1965). Policy and legislation related to seed supply of modern varieties are found in Seed Act, Seed Regulations, and Seed Policy. Plant Protection Act is legislated with a view to preventing the spread of epidemic diseases. The Act authorises the government to prohibit the import of any plant, plant material, soil attached to plant or plant product or soil.

MoFSC, with the technical support from IUCN Nepal, is in the process of finalising a national legislation to determine access and benefit sharing. Several rounds of meetings with stakeholders (including some important NGOs) were organised and a draft copy has been prepared. The scope of the legislation includes recognition and reward to traditional knowledge, biodiversity registration, ownership issue, mechanism of access, role of local communities in determining access, and mechanism of sharing benefits. However, it ignores the special nature of PGRFA as envisaged by the ITPGRFA (2001). Farmers and communities' rights are not mentioned in the draft bill (Upadhyaya, 2002).

Gaps in policies

Presently, the country lacks overall policy for the conservation and sustainable use of PGRFA. Lack of overall national policy on PGRFA in Nepal is also highlighted by earlier documents (Gautam et al, 1999; Gauchan et al, 2000a; 2000b; Sapkota et al, 2001; Upadhyaya et al, 2002). The external and internal supports for resource mobilisation and national capacity building have been constrained by the lack of recognition of PGRFA conservation as a priority issue in the national plans and polices.

Despite the predominance of informal seed supply systems in Nepalese farming systems (where above 90 percent of the seeds in food crops are produced and managed by farmers), the present agricultural development policies and programmes do not recognise the importance of informal seed supply systems in maintaining farmers' local food security and sustainable livelihood. The APP is also virtually silent on these aspects including conservation and sustainable use of PGRFA. The policies (credit, subsidy, research and extension including education systems), and legislation that are

developed so far are favourable to the cultivation and promotion of modern varieties. For example, the present seed legislation emphasises on distinct, uniform and stability (DUS) properties of the crop genetic materials and it is mainly applicable to release improved varieties of major cereal crops (rice, wheat and maize).

Nepal is presently observer to the WTO and is going to obtain membership in the near future. However, the country has not so far made adequate preparation to develop plant variety protection legislation and other related genetic resource policies. For an agro-based least developed country like Nepal, the presently available UPOV (1991) model, which is designed for industrial country, is not suitable since it does not recognise the predominance of country's diversity of genetic resources, farmers' rich indigenous knowledge and their informal innovation process.

At the national level, present policy on biodiversity focuses on forest and wild life. Since the signing of CBD by Nepal in 1993 and its ratification in 1994, some initiatives have been taken to implement the obligations of CBD in Nepal. MoFSC is coordinating the different works on biodiversity. The important ones are the recently approved National Biodiversity Strategy (NBS) and National Biodiversity Implementation Plan (in the process for approval). It has also coordinated the work on drafting Access and Benefit Sharing Legislation with the support from IUCN Nepal, which is in the final stage of approval. As this legislation was drafted before the approval of ITPGRFA in 2001, this lacks recent policy concerns that are highlighted in the ITPGRFA.

Policy making process

Historical context of policy making

Systematic policymaking process started in Nepal with the concept of national five year development plans in the mid 1950s. Since the First Five Year Plan (1956-1961), national periodic plans have been the principle means of articulating government's development objectives. Until now, 10 periodic plans have been developed and nine of them implemented. Historically, the policy formulation process remained in the government sector with no or limited participation of private sector and other stakeholders. The policies were framed based on the advice of relevant technical experts in the

government or with the assistance of foreign/local consultants. They were basically guided by the western scientific paradigm. The notion that "economic benefits can be derived only from the promotion of modern varieties/technologies" brought from outside is still the guiding philosophy in the policy formulation in Nepal (Gauchan *et al.*, 2000a).

Recently, however, there has been increased realisation of the role and participation of civil society organisations (CSOs) in the policy formulation process. CSOs, particularly INGOs/NGOs, have lately been active in creating awareness and raising policy issues after the government decided to join the WTO in 1998. Government ministries and other public institutions have shown increasing interest to involve private sector and CSOs in the policy debates and discussions, particularly in relation to national preparation for entry to the WTO. However, participation of low-income farmers and grassroots institutions is very limited and they are rarely involved in the consultation process.

Level of awareness among the stakeholders

Despite the importance of agriculture in farmers' livelihood, and national food security, the level of awareness and knowledge of PGRFA policy development is low among many of the important stakeholders. Only very few officials and scientific communities of the government ministries and public R&D institutions are aware of international policy issues such as CBD obligations and WTO/TRIPS requirements. Most of the important stakeholders such as the farming communities and grassroots institutions lack knowledge on the CBD and TRIPS requirements. Many decision makers (senior level policy and planning staff) at MoAC, NARC, Department of Agriculture etc., lack awareness and expertise on recent international policy issues and implications on national PGRFA management. There is a wide gap between rapid changes in international policy issues/debates and awareness at the national level. The government lacks financial resources to create public awareness and coordinate debate and discourse on PGRFA policy issues. Despite some awareness creation activities conducted by the *In-situ* Project and National Agro-biodiversity Committee (NABC) they are constrained by financial resources and expertise to initiate wide-scale discourse, debate, and consultation process for awareness creation and information sharing.

Stakeholders involved in in-situ and ex-situ management

The stakeholders involved in *in-situ* and *ex-situ* management facilities are very few and are limited within the few institutions in the MoAC and MoFSC. NARC is the national research agency involved in the use and management of agriculture related genetic resources. Within the NARC, Agricultural Botany Division (ABD) is the main body involved in *ex-situ* conservation, biotechnological research including IPGRI coordinated *in-situ* conservation of crop genetic resources in Nepal. The National Commodity Research Programmes (Rice, Maize, Wheat and Potato) of NARC are also involved in the utilisation of genetic resources in crop breeding programme and short term storage of genetic materials. Within the MoFSC, Department of Wildlife and National Parks is involved in the *in-situ* conservation of wild and non-domesticated PGRFA through its national biological and wild life conservation parks/sanctuaries and the Department of Botany in the *ex-situ* collection, conservation and documentation of general plants and herbs in herbarium and botanical gardens. In the NGO sector, LIBIRD in collaboration with NARC, is involved in *in-situ* crop genetic conservation programmes in Pokhara (Western Nepal). It is also actively involved in the utilisation of crop genetic resources through participatory plant breeding and community based value addition activities.

Coordination and information flow among multiple stakeholders

The effective coordination of plant genetic resources efforts requires regular communication between stakeholders. Unfortunately, the flow of information among many stakeholders (e.g. government ministries) associated with conservation and use is often irregular and *ad hoc*. Institutions and stakeholders involved in the development of PGRFA priorities, action plans and policies are scattered in different ministries and institutes. To some extent, vertical flow of information exists from policymaking level (National Planning Commission, which is the highest policy making body) to government ministry and government ministry to its institutes within the same ministry. However, there is irregular and poor flow of information horizontally between government ministries and institutes within the same ministry.

Similarly, even though there exists joint forum of agricultural research and extension institutions for technology development and transfer such as Agricultural Technical Working Group (ATWG) meetings at the regional and national levels, the linkage and flow of information on policy matter between these institutions are yet to be well-developed. Since such forums have been developed mainly for the promotion of modern technologies, discussions on issues of conservation and utilisation of PGRFA are limited. MoAC also lacks expertise and separate authorised cell to coordinate PGRFA policy. Similarly, NABC Secretariat in the MoAC is constrained by the resources and expertise to ensure coordination among relevant stakeholders for the PGRFA policy development in the country.

Availability, accessibility and relevance of information, flowing between the government and the private sector, I/NGOs, grassroots institutions and farming communities, are not satisfactory due to lack of common platforms and regular mechanisms for information sharing on issues relating to policy debates and development. There is no explicit mechanism for the participation of farming communities and the CSOs in the development of policies and programmes. As a result, there is hardly any feedback in the development of policy including limited national capacity to protect, characterise and conserve valuable genetic resources for the future benefit of the people.

Recent biodiversity policy initiatives and their linkages with PGRFA

Considerable efforts have been made to initiate the formulation of national biodiversity action plan in accordance with CBD. This was exclusively undertaken by the MoFSC, which is the focal point for the CBD. The policy document on biodiversity such as National Biodiversity Action Plan (NBAP) is divided into two separate documents to separate strategic issues from the operational plan. They are (a) NBS which is recently approved and (b) National Biodiversity Implementation Plan (NBIP) which is in the stage of final approval. Even though biodiversity has been well prioritised as an important aspect in the Tenth Plan, concerns of PGRFA have not been adequately highlighted. Similarly, existing Seed Act (1988), Seed Policy (2000) and Access and Benefit Sharing legislation (under approval) fall short of covering the overall policy dimensions of PGRFA including issues of farmers' rights for food security. Nepal

has also signed Biosafety Protocol in 2001 and will soon ratify it. However, many stakeholders are not much aware of the importance and implications of the Biosafety ratification for Nepal.

Policy issues and considerations

Perceptions of policy issues among stakeholders

Decisionmakers in the government, particularly in MoICs and Ministry of Finance (MoF), have so far given high priority to joining the WTO as they perceive that after Nepal joins the WTO, it can obtain considerable benefits due to its potentials for exploiting comparative advantages in industrial, commerce and agricultural sectors. Therefore, they seem to focus more on trade issues than on issues of plant variety protection, food security and livelihood of small farmers. In contrast to this, some stakeholders from local and international NGOs feel that Nepal will not benefit much from the WTO due to absence of fair trade practices. As a small least developed agricultural based country, joining the WTO will have negative impacts on food security and welfare of small and marginal farmers, they opine.

Majority of the stakeholders both from public and private sector strongly feel that Nepal must prepare ahead in terms of developing suitable legislation to protect its rich genetic resources of the country. In view of the dependence of majority of the population on agriculture and predominance of small-scale subsistence agriculture, it needs to adopt farmers' rights legislation to reward farming communities for their contribution in conservation, innovation and indigenous knowledge. Since more than 90 percent of seed supply occurs through informal systems in Nepal, the country may prefer to strengthen farmers' right on traditional varieties and promotion of onfarm conservation by strengthening local seed system (Sthapit and Shah, 2001).

Key policy issues and concerns

The genetic wealth, which forms the key dimension of the natural, economic and social capital of Nepal, is facing new challenges from the complex liberal and global market forces. While liberal and open economic policies are likely to bring new opportunities to spur economic growth and development, they are also likely to have some

negative impacts. The multilateral arrangement for trade liberalisation espoused by the WTO will definitively bring adversities, particularly on the livelihoods of poor farmers (Gauchan 2002). As the country is rich in genetic resources, the major policy issues that will have profound implications on Nepal's future agricultural and economic development will be IPRs, farmers' rights, trade, exchange, equitable access and benefit sharing, and sustainable utilisation of available wide genetic diversity in the country. The present PGRFA policy issues that are of major concerns are:

- How to protect the rapidly eroding genetic resources?
- Which IPRs (patent, *sui generis*, plant breeders' rights, and farmers' rights) work best for the least developed agrarian country like Nepal?
- How to recognise the ongoing contributions of farmers and rural communities who have conserved these genetic resources over millennia?
- What are the ways to ensure access to and exchange of genetic resources and their fair and equitable sharing of benefits arising from the use of such resources at the local, national and international levels?
- What are the mechanisms to safeguard food safety, human health, and preserve rich local biodiversity and broader environment from possible entry and use of biotechnological products in the context of free trade and open economic policy?

Suggested actions for PGRFA policy development

Since PGRFA activities often span different sectors, such as agriculture, forestry, environment, trade and commerce ministries including private and I/NGOs sectors, the effectiveness of national PGRFA conservation and use depends greatly on collaboration between these stakeholders. The suggested actions in the development of PGRFA policy are outlined in Box 10.2.

Box: 10.2

Suggested actions for the PGRFA policy development in Nepal

- Increase activities for awareness creation and understanding on PGRFA policy through various means: news media, debates, seminars and policy advocacy
- Include PGRFA as a priority sector in the Tenth Plan documents and initiate the process for overall development of its national umbrella policy for PGRFA conservation and utilisation
- Review and adaptation of PGRFA legislation at the national level in accordance with international requirements and national development objectives
- Develop mechanisms for the participation of all the stakeholders including farming communities and CSOs in the policy making process
- Develop national capacity in PGRFA management, policy formulation and implementation through external support, resource mobilisation, and training
- Initiate registration and documentation of genetic resources at the local and national levels
- Enhance conservation and utilisation of valuable local genetic material through investment in both *in-situ* and *ex-situ* conservation, plant breeding and biotechnological research
- Develop and strengthen network of stakeholders at the local and national levels for information sharing, policy debates and discussion
- Strengthen and revitalise existing linkage forum such as NABC and ATWG through coalitions, alliances and partnership in R&D activities

In addition, existing PGRFA related legislation [(e.g. Seed Act (1988), Plant Protection Act (1972) etc.] need to be reviewed, adapted and harmonised in accordance with TRIPS and CBD requirements and national needs. Similarly, proposed national legislation on Access and Benefit Sharing (under approval) should be revised in accordance with recent ITPGRFA, so that effective instruments are made available for conservation, management, access and use. Wider consultation and coordination among the relevant stakeholders are needed to prioritise policy research issues, enhance linkages, and amend and harmonise the existing policies so that they be compatible with the WTO provisions.

Conclusion and lessons learned

Despite the importance of agriculture in the national economy and predominance of informal seed supply systems in the farmers' livelihood, plant genetic resource conservation for food and agriculture has not yet been recognised as an important part of biodiversity conservation in Nepal. Present programmes on biodiversity are more focused on forestry resource including wildlife than overall genetic diversity encompassing food and agricultural crops.

Nepal presently lacks overall policy for the conservation and sustainable utilisation of PGRFA. While there is no legislation directed solely towards PGRFA, there is a patent law used for industrial products; and several other laws that bear on PGRFA. Government policies tend to promote modern plant varieties. Existing draft legislation such as Access and Benefit Sharing and other policy related to PGRFA need to be reviewed, adapted and harmonised in accordance with the national needs and the requirements of TRIPS, CBD and the ITPGRFA. There is a need for adequate preparation with legal infrastructure before Nepal becomes a WTO member. Guidance and assistance from international expertise such as those available with IPGRI, FAO, and UNDP etc. are required for the development of overall PGRFA policy and formulation of *sui generis* legislation.

Many stakeholder groups have limited awareness on recent international and national policy issues on the conservation, utilisation, IPRs, biosafety, trade, exchange, equitable access and benefit sharing. There is a wide gap between rapid changes in international policy issues/debates and national level awareness. Decisionmakers willing to conserve PGRFA lack appropriate information and knowledge on the formulation of policy instruments and legislation in accordance with the needs and goals of Nepalese agro-economy. Institutions and stakeholders involved in the development of PGRFA priorities, action plans and policies are scattered in different ministries. The flow of information between government ministries as well as within the same institutions is often irregular and *ad hoc*. There is a divergence in the perception of stakeholders on the perceived implications of Nepal joining the WTO. The country also lacks expertise and

appropriate institutional arrangements for developing and implementing policies, strategies, action plans and programmes.

The case study being conducted in association with Nepal component of *In-situ* Agro-biodiversity Conservation Project has enhanced the level of awareness on PGRFA of the decision makers in the government ministries. The process has provided some information to update and inform key decisionmakers and important stakeholders. It has also provided strong inputs and groundwork to initiate globally coordinated Genetic Resource Policy Initiative (GRPI) project in Nepal. A by-product of the policy case study was to build associations among the stakeholders such as government, I/NGOs and private sector. In February 2002, the project workshop organised in Kathmandu provided an additional opportunity to develop links among important stakeholders. For the regular policy feedback and appropriate policy formulation, a forum representing diverse but relevant stakeholders in Nepal is needed. NABC should be strengthened and developed as such forum. In addition, it should take care of regular monitoring and evaluation of policies.

In order to minimise past weaknesses in the policy formulation process, the future development of potential PGRFA policy should be guided by the realistic research and consultation process. Active participation of important stakeholders from public and private sectors, I/NGO, and farming communities is essential. Coordination and flow of information need to be improved through both means – horizontal between different ministries and sectors; and vertical between the policy making and field levels.

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A Log-frame of *Sui Generis* System to Protect Farmers' Rights: Pakistan's Perspective

Wajid H. Pirzada

Introduction

These days, ideas and knowledge value currency as an increasingly important area of trade. The value attached to a product(s), in this context, lies in the level of invention, innovation, research, design and testing involved in technological development of such product(s). Many products that used to be traded earlier as low-technology goods or commodities are now being traded as value-added products, which contain a higher level of technology [invention] and characteristics [design] in their value e.g. new varieties of plants.

The innovator(s)/creator(s) of such products/process(es) would like to secure right(s) to prevent others from using their invention(s) – intellectual property (IP). These rights, known as intellectual property rights (IPRs), imply an ownership of ideas, including literary and artistic works, inventions, signs for distinguishing goods of an enterprise and other elements of industrial property. The extent of protection and enforcement of IP varies widely around the world, which at times may lead to disputes among trading parties.

It is for the first time that the World Trade Organisation (WTO) has brought both agriculture and IP [life form] in the fold of trade. Patenting of life forms [plant varieties], through the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), has paved the way for commercialisation [privatisation] of [local, indigenous] knowledge and plant genetic resources. As the diversity of plant genetic resources is basic to agricultural development and sustainability, food security and [food and agriculture] trade growth, new IPR regime can implicate sustainable [agricultural] development. Erosion of indigenous knowledge and genetic wealth, through tighter IPRs, may thus implicate food security and threaten the livelihood of the custodians of natural resources. The small farmers of South – the custodians of 90 percent of world genetic resources – will thus become more

vulnerable. This necessitates the [better] understanding of [emerging] international trade regime under the WTO, formulation of national IPR system, with particular focus on protection of plant genetic resources, and reflection of public interests.

The TRIPS Agreement

TRIPS envisages narrowing down of the gaps/differences in IP regimes of its member countries bringing the IPRs in the fold of international trade rules. TRIPS [Annex 1C of Uruguay Round (UR) 1986-94], in this regard, is reckoned to be the most comprehensive multilateral Agreement on IP.

The major argument advanced in favour of IPRs protection is that by rewarding inventors, it gives them incentive to create inventions from which the community benefits. It, however, has generated certain controversies, because allegedly of ambiguities contained in it. To understand TRIPS, its controversial provisions and their implications, we need to know the salient features of TRIPS.

Understanding TRIPS

The Preamble of the Agreement describes the key objective of the Agreement as "to reduce distortions and impediments to international trade, and taking into account the need to promote effective and adequate protection of IPRs, and to ensure that measures and procedures to enforce IPRs do not themselves become barriers to legitimate trade."

Its Preamble identifies following need-based objectives:

- The applicability of the basic principles of GATT 1994 and of relevant international IP Agreements or Conventions;
- The provision of adequate standards and principles concerning the availability, scope and use of trade-related IPRs;
- The provision of effective and appropriate means for the enforcement of trade-related IPRs, taking into account differences in national legal systems;

- The provision of effective and expeditious procedures for the multilateral prevention and settlement of disputes between governments; and
- Transitional arrangements aiming at the fullest participation in the results of negotiations.

In summary, TRIPS addresses five broad issues about how,

- the basic principles of trading system and other international IP agreement should be applied?
- to give adequate protection to IP rights?
- countries should enforce those rights adequately in their own territories?
- to settle disputes on IP between WTO members?, and
- to make special transitional arrangements during the period when the new system is being introduced?

The Agreement recognises the need for multilateral framework of principles, rules and regulations dealing with international trade in counterfeit goods. In particular, it acknowledges:

- that IPRs are private rights;
- the underlying public policy objectives of national systems for the protection of IP, including developmental and technological objectives;
- the special need of the least developed country (LDC) members in respect of maximum flexibility in domestic implementation of laws and regulations in order to enable them to create a sound and viable technological base;
- the importance of reducing tensions by reaching strengthened commitments to resolve disputes on TRIPS issues through multilateral procedures; and
- the desire to establish a mutually supportive relationship between the WTO and the world.

TRIPS came into force on 01 January 1995. It provides five years grace [transitional] period to developing countries (DCs) (Article 65), and 11 years to LDCs (Article 66) so as to help them phase in. Accordingly, all the WTO members are bound to provide IP [patent] protection latest by 01 January 2006. It, however, is worth noting that transition period allowed to DCs [including Pakistan] has expired on 01 January 2000. As such non-compliance could invite disputes and litigation. And if a country fails to comply with IPR obligations, trade sanctions can also be imposed as Agreement is enforced through Dispute Settlement Understanding (DSU). A number of DCs have already been placed on the priority watch list of the special 301 provisions of the United States (US) Trade Act for denying IP protection or market access to US firms.

The Agreement requires members to observe the WTO's core principles - namely Most Favoured Nation and National Treatment (MFN and NT clauses), with respect to IP. Accordingly, a country cannot recognise patents on inventions by its nationals [individuals/organisations] without giving similar rights to foreign nationals for similar intellectual pursuits [Article 3]. It further shall not discriminate among nationals of different (foreign) countries [Article 4].

TRIPS Council of the WTO, under Article 68, monitors the implementation of the Agreement/compliance by member countries, besides providing consultative forum on IPRs.

One of the main features of TRIPS is that it requires the WTO members to meet certain minimum standards for protection of IP implying that TRIPS is a minimum standards Agreement, which allows members to provide more extensive protection of IP, if they so wish. Thus, member countries cannot provide lower level of protection in the areas covered under TRIPS. They, however, are not obliged to provide a higher level of protection than what Agreement stipulates.

The Agreement recognises, under its Article 27, patents on inventions, both products and processes, in all fields of technology. It also requires parties, under Article 42-49, to provide fair and effective judicial procedures and remedies for right holders claiming infringements.

The Agreement covers distinct types of [intangible] property, for which term Intellectual Property (IP) is coined, namely: copyrights, trademarks; geographical indications, industrial designs, patents, the layout-designs of integrated circuits, and undisclosed information.

Accordingly, depending upon the types of IP, the protection can be provided e.g. books, paintings and films come under copyrights; inventions can be patented and product(s) logos can be registered as trademarks; and so on.

Inventions covered, under the Agreement, for the purpose of protection must qualify the following criteria:

- They must be new;
- They must involve inventive step(s); and
- They should be capable of industrial application.

In regard to the minimum standards, under the Agreement, each of the main element is defined namely:

- subject matter to be protected;
- right(s) to be conferred;
- permissible exception(s) to those right(s); and
- minimum duration of protection.

The Agreement sets these standards by requiring: First, that the substantive obligations of the main Conventions of the World Intellectual Property Organisation (WIPO), the Paris Convention for the Protection of Industrial Property (Paris Convention – Treaty administered by WIPO) and Artistic Works (Bern Convention – Treaty administered by WIPO), in their most recent versions, be complied with. Second, with the exception of the provisions of the Bern Convention on moral rights, all the main substantive provisions of these Conventions are incorporated by reference and thus become obligations, under TRIPS, among member countries.

With regard to patent protection, the Agreement provides that:

- Patent protection must be available for at least 20 years.
- It must be available for both products and processes.
- Article 27 further provides that "subject to provisions of paragraphs 2 and 3, patents shall be available and patent rights enjoyable without discrimination as to place of invention, the field of technology and whether the products are imported or locally produced."

Governments can, however, refuse to issue patent for an invention if its commercial exploitation is prohibited for reasons of order *public i*.e. public order or morality. They can also exclude:

- diagnostic, therapeutic and surgical methods,
- Plants and animals (other than micro organisms), and biological processes (other than microbiological processes) for the production of plants or animals.

Box: 11.1 Anti-thesis: Main concerns shown by stakeholders of IP

- Constructive ambiguity of TRIPS.
- TRIPS is in clear conflict with CBD seeking sovereign [local and indigenous] community rights to the plant genetic resources.
- TRIPS defies the rights [on plant genetic resources (PGRs)] of Prior Informed Consent (PIC) and benefit sharing, which other multilateral Agreements, e.g. CBD ensure.
- Implementation of TRIPS [patent regime] implies access of North to genetic resources of South – 90 percent of the world's biodiversity, implying corporate control of food and medicine supplies.
- Farmers in South have to pay royalties to gene patentees, for reuse of seeds. TRIPS discourages small-scale production, sale and exchange of seed.
- Global TRIPS regime can, through tighter IPRs, displace and thus further marginalise the poor and disadvantaged farmers of the South.
- The traditional knowledge of the indigenous communities is being used by multinational corporations (MNCs) of the developed countries to identify specific genes for product development which tantamount to the theft of centuries old knowledge.
- Patent Laws do not recognise traditional knowledge and ownership system.

- The industrialised world has failed to honour promises under TRIPS for technical [technology transfer] and financial assistance.
- As the industrialised world introduced patent legislation in this field after they had reached a certain level of technological competence. They have access to both technology and capital, which most DCs lack. There is therefore no level playing field. From 1990-1999, some 25,000 [biotech] patents were granted across the world. While Japan and the US had 74.6 percent share and the EU had 19 percent, the DCs share was only seven percent.
- Tighter IPR regime makes technology costly, thus blocking the prospects for industrial and technological development in DCs.
- The possible negative impact of IPRs on health care in DCs is well documented.
- There is a lack of clarity in criteria or rationales used to determine the exclusions in TRIPS Article 27.3 (b).
- The law ignores the cultural diversity from plant varieties to human life.
- TRIPS protects the interests of industrial lobbies of developed world.
- Shift in research focus, and rush and push of commercial interests are putting profits before people - money talks louder than need.

These concerns have compounded with expansive patents on life forms, which could be exemplified by:

- US patent [1995] on turmeric, for healing wounds, granted to two researchers of University of Mississippi. As turmeric has been used since centuries in the Indian sub-continent, US patent on turmeric, without benefit sharing as provided under Articles 8 (j) and 15 of CBD, implies infringement of art and common knowledge of custodians of genetic resources.
- US patent on quinoa [#5304718] granted to researchers of Colorado State University.

These controversies have bred many disputes, with following manifest signs and symptoms:

- The African Group has asked for the review of TRIPS.
- The Third World Network, Malaysia has floated a proposal for the amendment of Article 27.3 (b) suggesting its replacement.

- Some 200 organisations from 35 nations have challenged a patent right that has been exclusively granted to Multinational Corporation M/s W Grace for the use of pesticide extract from *neem* seeds.

In this context, the most pertinent provisions of the Agreement that fall under Article 27.3 (b) relate to PVP, requiring members to provide some form of protection to all plant [botanical] genera and species.

The mandatory review of the TRIPS provisions was due four years after the date of entry in to force of the WTO Agreement. Accordingly, TRIPS Council started review process in 1999. Several rounds of meeting have already taken place in the TRIPS Council on this issue. Paragraph 19 of the Doha Ministerial Declaration also reinforced the need to conduct such a review taking into account, among others, the relationship between TRIPS and CBD. No progress, however, has so far been made in this regard.

Article 27.3 (b) of TRIPS gives member countries choice[s] to opt for and design a national IPR system, which meets national/public interests within the framework of TRIPS. Plant varieties, however, must be protected either by patents or alternatively by a special system - *sui generis* [such as breeders' rights provided in the International Union for the Protection of New Varieties of Plants (UPOV)]. However, UPOV is largely criticised since it is created to serve the interests of the commercial breeders of the developed countries and their MNCs and not for the farmers of developing countries.

The member countries also have obligations, under other pertinent International Agreements - such as CBD, which have close interface with TRIPS. As such, there is a need for harmonising IPR obligations under TRIPS and CBD and other multilateral treaties on IPRs.

Counterbalancing TRIPS with CBD

TRIPS and CBD both include important provisions dealing with IP. TRIPS emphasises patents and other IPRs defined under conventional IP regimes. Until now, these rights have been primarily obtained and owned by inventors and corporations

involved in the formal research sector in developed countries; indigenous and traditional knowledge has not received equivalent legal protection.

CBD, in contrast, calls on parties in Article 15 to ensure that a share of benefits from genetic resources returns to the providers. In Article 8 (j), it requires parties to encourage the return of benefits from biodiversity related traditional knowledge to the indigenous and local communities that are its custodians.

TRIPS, therefore, needs to be counterbalanced with IPR related provisions of CBD. Besides international forums, national institutions responsible for policy formulation can help bring the required balance. A better understanding of CBD would be rewarding in this regard *(See Annex 11.1)*.

Compliance with TRIPS Article 27.3 (b)

1. Members have to implement some form of IP protection for plant varieties, either through patents or an effective *sui generis* system or a combination of both. Members have been left free to determine the appropriate method of implementing the provisions of the Agreement, within their own legal system and practices.
2. Nationals of other member state(s) have the same right; as granted to nationals of the country concerned (NT clause).
3. Any advantage, favour, privilege or immunity granted to national of any other country has to be granted immediately and unconditionally to nationals of all other member states (MFN clause).
4. A judicial procedure must be in force to permit action against any infringement of protected rights.

Designing national IPR system in Pakistan

Being a founding member of the WTO, Pakistan is a signatory to TRIPS. Accordingly, Pakistan had to comply with TRIPS with effect from 01 January 2000. Pakistan is also a party to other multilateral agreements such as the Convention establishing WIPO since 1977, and the Bern Convention since 1970. This necessitates the review of

national IPR law and IPR related policies so as to make them compatible with the WTO regime.

According to GATT /WTO jurisprudence, a domestic law is deemed to be in conformity with the international treaty unless it mandates a measure, which is repugnant to the treaty. With this in view, Pakistan needs to modernise and revamp national IPR system. In this context, it also needs to introduce plant variety protection (PVP) regulations as well.

The guiding principles

The International Plant Genetic Resources Institute (IPGRI) has suggested the policymakers to look into various pertinent questions before formulating a national policy on IPRs such as:

- What kind of domestic seed industry exists?
- What kind of public breeding sector exists?
- What kind of [seed] supply system is in place?
- To what extent is farm-saved seed used in the country?
- What is the current capacity of the breeders?
- What do the local breeders want to do in the next 5-10 years?
- Are external inputs to agriculture low or high?
- What are the country's needs and objectives?
- What is the country's biotechnological capacity?
- What are the goals and realistic expectations of biotechnology sector?
- What kind of strategic alliance(s) will the country want to enter in the next 5-10 years and how involved will other countries be?

As indicated above, TRIPS identifies three types of IPR systems for genetic resources/plant varieties protection, namely: patenting under TRIPS; or evolving a *sui generis* system; or a plant varieties protection regime, combining both IPR and *sui generis* system.

The governments in DCs have to opt for one of these three options for purpose of conformity to the WTO regime. They may have to strike a balance, in this regard, between the liberalisation of trade in agriculture/genetic resources, under the WTO, and local sectoral priorities as identified and set by the national development plans.

In this regard, one needs to understand what [alternate PVP regime] *sui generis* system, proposed under TRIPS implies? The *sui generis* is a latin word meaning "of its own kind". In its broader meaning, it is a system specially designed for such a purpose. In a rather narrow sense, the term *sui generis* shall imply a protection system specially designed for genetic resources/plant varieties. In this regard, one may benefit from CBD. A balance of priorities/interests thus built in the *sui generis* system in different areas related to plant variety protection would be rewarding in this context. This, however, needs to be demonstrated by DCs that such a system is effective and is in conformity with the WTO regime on IPRs.

A sustainable trade could be an effective means to generate economic value, help alleviate poverty, reduce inequality, regenerate environmental resources and sustain development. Pakistan also needs to appreciate that trade in food and farm products has a close nexus with biodiversity and environment and food securities of local communities. In this context, The World Conservation Union (IUCN) views that some types of trade, in general, impacts biodiversity [environment and food security]. Such an impact depends on the product traded, the method of production, and the mode of transport etc. Accordingly, international obligations under CBD guide the Parties to this effect. It provides:

> "Each Contracting Party shall, as far as possible and appropriate, in particular for the purpose of Article 8 [*in-situ* conservation] to 10 [sustainable use of components of biodiversity]: Identify processes and categories of activities which have or likely to have significant adverse impact on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques" [Article 7].

Synergistic integration of CBD obligations with that of TRIPS, therefore, may help bring the required balance; and thus meeting the cherished objective of sustainable development in this area.

The country needs to explore, at first instance opportunities/options available for striking the required balance, under CBD in comparison to TRIPS or other alternative(s) available, for the purpose of PVP.

National IPR regime and [sustainable] agriculture

The impact of [international] trade paradigm under the WTO regime, seeking liberalisation of trade in genetic [agro-food] resources on sustainable [agricultural] development of DCs [like Pakistan], shall primarily depend on: the nature of agricultural economy and the extent to which trade liberalisation and agricultural development are integrated.

In general, access to genetic resources, under TRIPS, may have long-term socio-economic implications for both sustainable agriculture and livelihoods of the custodians of natural resources - the farmers. A lopsided policy environment can, therefore, compromise rights of farmers and/or interests of commercial sector. It can also impact the process of biotechnological development to a greater extent. For instance, non-protection of plant varieties can lead to erosion of genetic treasure and agro-biodiversity. On the other hand restrictions on commercial sector (a non-patent regime) can impact international trade related to biotechnology – international technology transactions, and mobilisation of scientific knowledge. It is, therefore, imperative to strike a balance while formulating national policies governing IPR, so as to represent local needs and simultaneously further socio-economic development through mobilisation of knowledge and stimulation of innovative biotechnological development in the country.

In this context following are some relevant provisions under the TRIPS Agreement:

"Members shall give effect to the provisions of this Agreement. Members may, but shall not be obliged to, implement in their law more extensive protection than is required by this Agreement, provided that such protection does not contravene the provisions of the Agreement. Members shall be free to determine the appropriate method of implementing the provisions of this Agreement within their own legal system and practice" (Article 1).

Recognising the underlying public policy objectives... developmental and technological objectives (Preamble).

The protection and enforcement of IPRs should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations (Article 7).

Members may, in formulating or amending their laws and regulations, adopt measures necessary to protect public health and nutrition, and to promote public interest in sectors of vital importance to their socio-economic and technological development, provided that such measures are consistent with the provisions of this Agreement (Article 8).

These provisions become pertinent to the national cause of Pakistan, keeping in view the vital importance of agricultural sector in Pakistan's economy, nutritional health and socio-economic development; and the need for sound [bio] technological base as to underpin agro-industrial development.

As such, these provisions imply flexibility, within TRIPS framework, to match agricultural development and biotechnological objectives with the international obligation(s); and carve out strategy which suits best the national public interests. Further, the need identified- Preamble " recognising also the special needs... to create a sound and viable technological base" for LDC's can also be extrapolated to the advantage of DC's while developing national IPR regime, identifying development of sound technological base as one of the national policy goals. Such a tailor-made National IPR System can, therefore, cater best to national

technological, corporate and farming sectors yet honouring the international commitments.

Pakistan's Patent Ordinance 2000 and PVP

Patent Ordinance, promulgated on 02 December 2000 to amend and consolidate the law relating to the protection of inventions, provides under Section 7.4 "Patents shall not be granted:(b) for animals or plants other than micro organisms and essentially biological processes for the production of animals or plants, but this prohibition shall not apply to microbiological processes or products or products of such processes; and for diagnostic and surgical methods for the treatment of humans or animal".

This implies that Pakistan has excluded from the patentability the plants and animals under TRIPS opting for the provision of a *sui generis* system or alternatively for PVP regime combining both *sui generis* and TRIPS as provided under Article 27.3(b).

With this option in view, a log-frame for national IPR system, in the light of contemporary national IPR regimes for plant genetic resources is proposed below:

Guiding principles for the national IPR system

- Conformity with TRIPS,
- Development of *sui generis* system,
- Counterbalancing TRIPS with CBD [within its framework],
- Establishment of [local] Central Registry,
- Protection of traditional [local/indigenous] knowledge,
- Food and livelihood security of custodian communities,
- Documentation [protection] of national gene pool,
- Risk assessment,
- Safeguards against GMOs,
- Strengthening of [biotech.] research capacity,

- Conservation [preservation] and [sustainable] development of genetic resources,
- Integration of environmental, agricultural and trade development [plans],
- Sustainable development [trade in genetic resources],
- Free and fair [shared] access to plant genetic resources,
- Mobilisation of communities [breeders],
- Prior Informed Consent,
- Benefit sharing,
- Technology transfer,
- Mobilisation of knowledge,
- Investment in genetic resource development,
- Technical and financial assistance [as provided in the TRIPS Agreement] by industrialised world.

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Annex: 11.1

Understanding CBD: Some of the relevant provisions of CBD are reproduced below:

Article 8 [*In-situ* Conservation]

Each Contracting Party shall, as far as possible and as appropriate: (j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional life-styles relevant for the conservation and sustainable use of biological diversity and promote their wider application with approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from utilisation of such knowledge, innovations and practices;

Article 15 [Access to Genetic Resources]

1. Recognising the sovereign rights of states over the natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.

2. Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other contracting parties and not impose restrictions that run counter to the objectives of this Convention.

3. For the purpose of this Convention, the genetic resources being provided by Contracting Party, as referred to in this Article and Article 16 and 19, are only those that are provided by Contracting Parties that are countries of origin of such resources or by the Parties that have acquired the genetic resources in accordance with this Convention.

4. Access, where granted, shall be on mutually agreed terms and subject to provisions of this Article.

5. Access to genetic resources shall be subject to Prior Informed Consent (PIC) of the Contracting Party providing such resources, unless otherwise determined by that Party.

6. Each Contracting Party shall endeavour to develop and carry out scientific research based on genetic resources provided by other Contracting Parties with full participation of, and where possible in, such Contracting Parties.

7. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with Article 16 and 19 and, where necessary, through the financial mechanism established by Article 20 and 21 with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilisation of genetic resources with the Contracting Party providing such resources. Such sharing shall be on mutually agreed terms.

Article 16 [Access to and Transfer of Technology]

1. Each Contracting Party, recognising that technology includes biotechnology, and that both access to and transfer of technology among Contracting Parties are essential elements for the attainment of the objectives of this Convention, undertakes subject to the provisions of this Article to provide and/or facilitate access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment.

2. Access to and transfer of technology referred to in paragraph 1 above to developing countries shall be provided and/or facilitated under fair and most favourable terms, including on concessional and preferential terms where mutually agreed, and, where necessary, in accordance with the financial mechanism established by Articles 20 and 21. In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms, which recognise and are consistent with the adequate and effective protection of intellectual property rights. The application of this paragraph shall be consistent with paragraphs 3, 4 and 5 below.

3. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that Contracting Parties, in particular those that are developing countries, which provide genetic resources are provided access to and transfer of technology which makes use of those resources, on mutually agreed terms, including technology protected by patents and other intellectual property rights, where necessary, through the provisions of Articles 20 and 21 and in accordance with international law and consistent with paragraphs 4 and 5 below.

4. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that the private sector facilitates access to, joint development and transfer of technology referred to in paragraph 1 above for the benefit of both governmental institutions and the private sector of developing countries and in this regard shall abide by the obligations included in paragraphs 1, 2 and 3 above.

Each Contracting Party, recognising that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.

WTO and Its Economic Implications to Sri Lankan Farming Community

Roshen Epaarachchi

Overview of agriculture and food sector in Sri Lanka

The role of agricultural sector in the national economy

Agriculture continues to be an important sector in the Sri Lankan economy. In 2000, it accounted for about 19 percent of the gross domestic product (GDP), 18 percent of total exports, and 34 percent of total employment. Agriculture still remains the main source of income for the rural population which accounts for 87 percent of the total population. The annual average growth rate in the agriculture has been stagnant around two percent for the period 1990-2000. The contribution of the agriculture sector to total GDP too has been declining considerably during the last decade.

Labour force in agriculture

The population of Sri Lanka was recorded at 18.8 million in 2001. One third of the total labour force is involved in agriculture activities, registering a decline of six percent since 1990 (Figure 12.1). Though the main occupation of the rural population is agriculture, development in other sectors and low farm wages have led to the movement of labour out of the agricultural sector since the mid-eighties.

Figure 12.1: Agriculture labour force as a percentage of total labour force

Source: Annual Report, Central Bank of Sri Lanka, Various issues

Land use for crop production

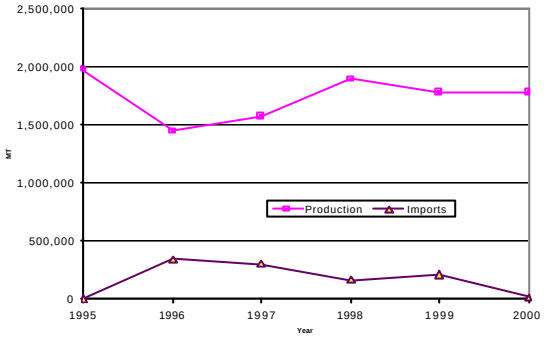
The intensity of agriculture land use has decreased considerably during the last decade. It declined by about 20 percent during the period from 1990 to 2000. The cultivation of subsidiary food crops also declined by 40 percent during the same period and it has created a negative impact on the extent of the total agriculture land in the country. The extent of land used for paddy cultivation decreased to 730,000 hectares (ha) in 1997, representing a 15 per cent reduction since 1990. However, 878,000 ha of paddy were cultivated in 2000.

Similarly, the plantation crops have also demonstrated declining trends during the past decade. Land used for tea and rubber cultivation both has declined by 20 percent since 1990. Same situation has been observed in relation to coconut cultivation. There has also been a considerable decline in the cultivated land area of other field crops. Potato cultivation has fallen to 3,642 ha in 2000, almost a 52 percent reduction in cultivated land area since 1990. During the same period, big onion and chilly cultivation has also declined considerably.

Figure 12.2: Rice Production and Imports

Agricultural commodity production, imports and exports

Paddy/Rice



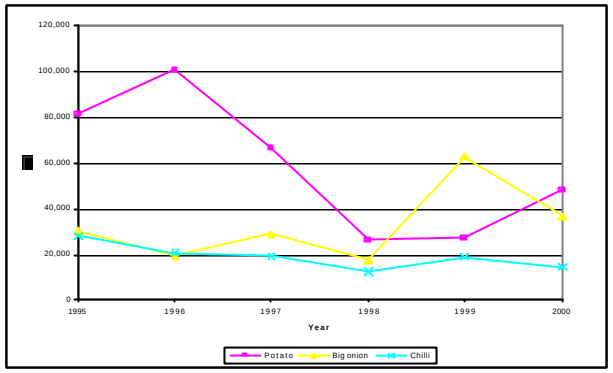
Source: Annual Report, Central Bank of Sri Lanka, Various issues

Paddy production increased slightly between 1995 and 2000. The average paddy production of 2.8 million metric ton (Mt) was recorded in 2000. The average paddy yield for the decade was 3.55 Mt per ha. There was a slight improvement in the average yield during the decade. The average paddy farm size has got smaller over the years. The current paddy production meets 95 percent of the domestic rice requirement (Figure 12.2).

Other field crops

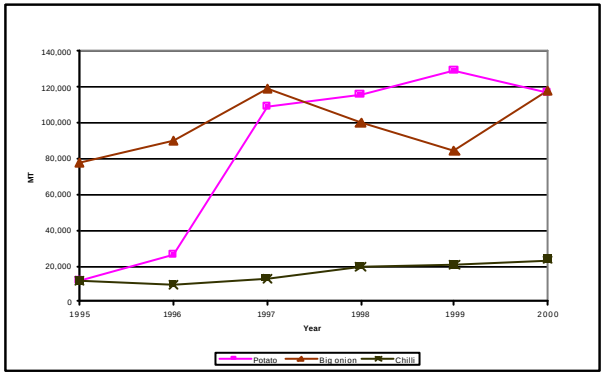
The domestic production of high value cash crops or other field crops (OFC) such as potato, big onion, and chillies decreased considerably over the past decade (Figure 12.3 and 12.4). Since 1996, local producers of these crops have faced difficulties competing with cheaper imports of these commodities as a result of the relaxation of import restrictions. In addition, frequent, ad-hoc, and incoherent adjustments in tariff rates have discouraged a large number of producers. As a result, these farmers shifted completely away from the cultivation of these crops.

Figure 12.3: Field crops production in Sri Lanka, 1995-2000



Source: Annual Report, Central Bank of Sri Lanka, Various issues

Figure 12.4: Field crop imports in Sri Lanka, 1995-2000



Source: Annual Report, Central Bank of Sri Lanka, Various issues

Potato production fluctuated during the 1995–2000 period. The lowest production of 26,000 Mt was recorded in 1998. Potato remained a highly protective crop until early 1996. Since the removal of import restrictions in 1996, local potato production faced stiff competition from cheaper imports resulting in a sharp decline in the domestic production until 1998. In 2000, 116,000 Mt of potatoes were imported. This amount accounted for 70 percent of the total domestic availability.

As in the case of potato, chillies production also decreased between 1995 and 2000, from 28,000 Mt in 1995 to 14,000 Mt in 2000 while chillies imports increased from 11,000 Mt in 1995 to 23,000 Mt in 2000. The domestic production of big onion showed a declining trend between 1995 and 1998. In 1995, 30,000 Mt of big onion were produced domestically. The lowest production of 17,000 Mt was recorded in 1998. Although the domestic production in 2000 was higher than that of the period during 1995-98, it still met only 23 percent of the domestic requirement.

Sugar

Sugar production declined from 71,000 Mt in 1994 to 48,000 Mt in 2001. Local production accounted for only 10 percent of the annual domestic sugar requirement. As a result, the country continues to depend on bulky imports. The import of sugar is now subject to a specific tariff rate, and the average annual import volume of sugar has been estimated at around 400,000 Mt during the last five years. During the same period, the government has attempted to protect local sugar producers by imposing an ad valorem duty on imports – a heavy burden to the consumer. In addition, per capita sugar consumption has increased from 20 kgs in 1988 to 33 kgs in 1997.

Experiences from the implementation of WTO commitments

Reductions in internal support (Subsidies)

Production, inputs subsidies and credit concessions are the most common forms of internal support extended to the agricultural sector. The government also wrote off cultivation loans given to farmers by the two state banks on several occasions in the recent past. The provision of internal support to the sector had continued at varying levels during the 1995 – 2000, as stated below in each of the agricultural sub-sectors. However, total value of direct and indirect subsidies in the non-plantation agricultural sector as a percentage of the total government expenditure has been less than one percent.

Production subsidies

Replanting and new planting subsidies are the most significant forms of support extended to tea, rubber, coconut and other export crops (OECs). In the tea sector, necessary funds for these subsidies are generated from the cess on tea exports. The Coconut

Development Board (CDB) has also utilised funds raised from the export cess to provide support to the sector in the form of subsidies. In 1996, the CDB restructured these support schemes with the intention of utilising this cess funds in a more effective manner. Cess on rubber exports was removed in 1996.

Table 12.1: Production subsidies granted for other export crops

Subsidy	1995	1996	1997	1998	1999
Other export crops (Rs. in million)	18	22	27	32	53
Subsidy as a % of total government expenditure	0.007	0.008	0.009	0.009	0.016

Source: Annual Report, Central Bank of Sri Lanka, Various issues

Production subsidies for OECs have not been increased in a consistent manner during the past five years (Table 12.1). During this period, subsidies have primarily been given for new planting and replanting.

Fertiliser subsidy

The most important subsidy granted to the agricultural sector is the fertiliser subsidy which is considered an essential component of the new planting and re-planting subsidy package for paddy and OFCs.

Table 12.2: Fertiliser subsidy

	1995	1996	1997	1998	1999	2000
Fertiliser subsidy (Rs. in million)	1,300	1,500	1,900	2,200	1,500	1,700
Fertiliser subsidy as a % of total government expenditure	0.5	0.57	0.69	0.64	0.45	0.37

Source: Annual Report, Central Bank of Sri Lanka, Various issues

The fertiliser subsidy that had been in place since the 1970s was removed in 1989 before being re-introduced in 1994. This subsidy was again revised in 1995. Under the new scheme, upper

limits of subsidies payable to importers were determined. These ceilings were readjusted from time to time depending on the changes in the world market price of fertilisers. In 1997, the fertiliser subsidy scheme was further revised making it applicable only to urea[1]. This was done in order to target the subsidy towards more needy farmers. Seventy five percent of urea users are paddy farmers. Although the total value of the fertiliser subsidy as a percentage of the total government expenditure increased until 1997, it has declined steadily since then (Table 12.2).

Irrigation subsidy

The irrigation subsidy is another important indirect subsidy granted primarily to the paddy sector in the form of free irrigation water. In Sri Lanka, irrigation water is provided to the farmers free of charge. Estimated annual costs of operation and maintenance (O&M) of different irrigation schemes in 1995 are as follows: Rs. 1556 per ha in rehabilitated major irrigation schemes outside Mahaweli area: Rs. 1331 per ha in newly constructed major irrigation schemes in Mahaweli area; Rs. 600 per ha in rehabilitated minor irrigation schemes (World Bank, 1996).

In order to irrigate small farms (0.5 - 1 acre) in the dry zone during the inter-seasonal period between *Yala* and *Maha*, the Agricultural Development Authority (ADA) of the Ministry of Agriculture in 1989 introduced the agro wells programme.[2] During the inter-seasonal period, most farmers cultivate vegetables, and other short-term crops using water from agro wells (Table 12.3).

Table 12.3: Irrigation subsidies through agro wells programme

	1995	1996	1997	1998	1999	2000
Subsidy released (Rs. in million)	9.05	20.7	26.5	42.5	31.4	25.4
Subsidy released to farmers as a % of the government expenditure	0.004	0.008	0.01	0.012	0.009	0.006

Source: Ministry of Agriculture

[1] Fertiliser subsidy is a price subsidy to the farmer. At present, farmers are charged Rs.350 for a 50 Kg bag of urea. The government pays importers the difference between the import price of fertiliser and the price paid by the farmer.

[2] Agro wells are constructed in private lands. In some cases, a well is shared by two or more farmers.

Interest subsidy

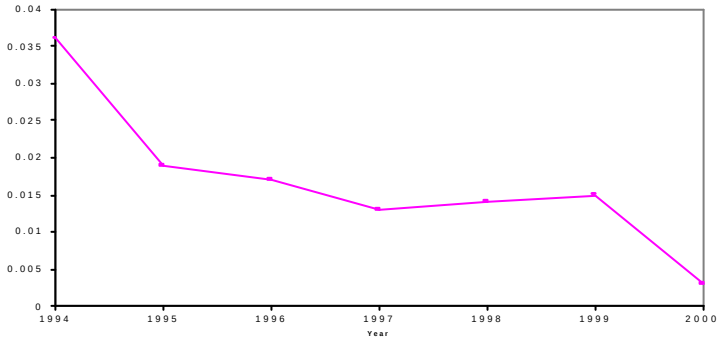
In 1996, the government introduced the New Comprehensive Rural Credit Scheme (NCRCS) under which interest subsidies are granted by the two state banks on short-term and long-term cultivation loans. Approximately, 70 percent of the total allocated credit is granted to paddy producers while the balance is given to the OFC producers. During the 1996-97 period, the money was lent at an annual interest rate of 16 percent with an interest subsidy of 7.5 percent. In 1998, loans were given at an annual interest rate of 12 percent with an interest subsidy of 10 percent.

Table 12.4: Interest subsidy

	1995	1996	1997	1998	1999	2000
Interest Subsidy (Rs. in million)	50	44	35.9	46.3	50.3	15.3
Interest subsidy as a % of total government expenditure	0.019	0.017	0.013	.014	0.015	0.003

Source: Annual Report, Central Bank of Sri Lanka, Various issues

Figure 12.5: Interest subsidy as a percentage of government expenditure



Source: Annual Report, Central Bank of Sri Lanka, Various issues

Figure 12.5 shows that the interest subsidy on cultivation loans as a percentage of government expenditure has declined over the past few years (Table 12.4). A significant drop in loan disbursement to the agricultural sector has been the main reason for this decline. Poor performance of the non-plantation sector could be considered as a disincentive for the state banks to consider giving new cultivation loans. Unsatisfactory level of loan repayment has also significantly contributed to this situation. Cultivation loans given to farmers who were unable to repay their debts were written off several times in the past.

Issue of seeds

The Seed and Planting Material Centre of the Department of Agriculture continues to issue a variety of seed material. In 1995, 4,100 Mt of seed material was issued for a range of OFCs, such as maize, soya bean, green gram and paddy. Subsequently, in 1996, there was a seven percent decline in issue of seeds, followed by a further two percent decline during 1997. The government's policy was to gradually hand over seed production to the private sector. As a result, some of the government paddy seed farms were privatised. Duty-free import of seed and planting material was already in place. The government also allowed import of seed cleaning machines, sorting and grading machines, seed packing machines, and seed testing equipment free of duty.

Reductions in import tariffs

Sri Lanka's agricultural trade is now governed predominantly by a progressive tariff regime. While tariffs on agricultural commodities are currently bound at 50 percent, in 1995 the tariff structure was reformed to a three-band system from a thirteen-band structure in 1990 and four-band structure in 1991. Import duty rates in 1995 were levied at 10, 20 and 35 percent and were subsequently revised in November 1998 to 5, 10 and 30 percent across the board (Table 12.5). Import duties on agricultural products however, remain outside the bounds of this tariff structure and agricultural commodities are subjected to a standard duty rate of 35 percent. This departure from the three-band tariff system is justified, as the agricultural sector needs more time to adjust in the medium term to lower tariff rates, after the recent liberalisation of all non-tariff barriers (NTBs) in the sector in 1996. The three bands structure was reduced to a two-band structure of 10 and 25 percent in 2000. However, the import

duty rate on selected agricultural products was maintained at a higher rate of 35 per cent in order to provide protection to local farmers.

Table 12.5: Tariff structures

Period	Tariff structures
1990	Thirteen Bands
1991	Four Bands (10, 20, 35, 45)
1995	Three Bands (10, 20, 35)
1998	Three Bands (5, 10, 30) Select agricultural items maintained 35
2000	Two Bands (10, 25) Select agricultural items maintained 35

Source: Annual Report, Central Bank of Sri Lanka, Various issues

In addition, preferential tariffs have been granted for certain countries under preferential trading arrangements such as the Bangkok Agreement, the Agreement on the Global System of Trade Preferences (GSTP) and the South Asian Preferential Trading Arrangement (SAPTA). Under the SAPTA, Sri Lanka has offered tariff concessions to member countries on over 120 items, of which the largest category of concessions was for imports of live animals and animal products. Sri Lanka also entered into a bilateral trade agreement with India; the Indo-Sri Lanka Free Trade Agreement signed in December 1998, which became effective from March 2000. Under this Agreement, Sri Lanka offered complete duty exemptions on approximately 300 items, and a 50 percent preferential margin on a further 900 items, but almost all the agricultural items are in the negative list.

Furthermore, customs surcharges have been levied from time to time on agricultural commodities as a measure of emergency protection based on harvest seasons and production levels. *Ad hoc* duty waivers and exemptions still exist for some agricultural commodities and have had distortive effects on agricultural commodity markets and domestic production. The granting of waivers and exemptions has typically disrupted predetermined trade policies and distorted market signals in the past. However, the bound rate of 50 per cent applies to both tariffs and these surcharges. Para tariff measures such as Goods and Services Tax (GST) and Defence Levies are also charged on duty to raise funds and to maintain port services for national defence.

Reductions in applied import protection

Until 1996, imports of many agricultural products were subject to import control systems such as licensing which were stringently implemented in the past. In particular, some agricultural items such as red onions and potatoes were subjected to a complete import ban at one time. In the middle of 1990, many of these licensing requirements were relaxed on most agricultural commodities. In 1994, licensing requirement for paddy (rice in husk) was liberalised and in 1996, license controls for major commodities such as potatoes, big onions, red onions and chillies were also eliminated.

Licensing requirements now exist only for a select list of commodities on the grounds of national security, public health, environmental protection and domestic producer protection. However, these license controls are usually implemented in an *ad hoc* manner. Paddy or rough rice is considered as a strategic national agricultural crop and requires import license. This is done to provide protection to domestic production and to prevent from being inflicted by pests and diseases. In addition, imports of wheat and meslin as well as wheat and meslin flour remained under license control due to contractual obligations between the Government and Prima Ceylon Ltd. But it was over in 2000.

Reductions in export subsidies

There is limited number of export subsidies provided for commodities in the agricultural sector. Some of these subsidies granted since 1995 are outlined in Table 6. In particular, subsidies on non-plantation export crops have been estimated at less than one percent of export earnings from the specified commodities (Athukorale and Kelegama 1997). In addition, State sponsored export promotion services are available free of charge.

Table 12.6: Export incentives granted to agricultural sector, 1995–2000

1995	1996	1997
1. Duty rebate scheme 2. Manufacture-in-bond scheme 3. Duty free clearance of	1. Duty rebate scheme continued 2. Manufacture-in-bond scheme continued	1. Duty rebate scheme, bonded-warehouse scheme, inward processing scheme further implemented 2. Bank guarantees and insurance

1995	1996	1997
machinery scheme 4. Joint venture (JV) with Russia (Bondsmen Concept) to help reduce the cost of storage of tea small holder exporters 5. A JV also with Pakistani to re-establish lost tea market 6. Bank guarantees and insurance schemes provided by Sri Lanka Export Credit Insurance Corporation (SLECIC)	3. Duty-free clearance of machinery scheme 4. Bank guarantees and insurance schemes provided by SLECIC 5. Financial assistance for small and larger scale exporters 6. Hundred percent rebates on quoted freight rates on Air Lanka for exporters of cut flowers, foliage, fruits and vegetables	schemes provided by SLECIC 3. 10 year tax holiday and duty free imports of machinery and equipment for existing and new companies engaged in the export of fresh and processed fruits and vegetables which undertake a cultivation of a minimum area of 5 ha. 4. Hundred percent rebates on quoted freight rates on Air Lanka for exporters of cut flowers, foliage, fruits and vegetables 5. Export Development Board continued to provide a wide range of services, with a special reference to developing and promoting mainly non-traditional agricultural exports. 6. Fifty percent interest rate subsidy on loans for the purchase of tea bagging machinery 7. Import duty and other tax exemptions on capital goods used for the processing of tea for export 8. Cash grants for exporters who increase the volume and export price of processed tea over the previous year 9. Subsidies on imported packing materials for exports of fresh fruit and vegetables.

Export Incentives granted Cont....

1998	1999	2000
1. Duty-free imports of machinery and equipment such as green houses, planting material, packaging material, refrigerated trucks for existing and new companies engaged in producing export market products. 2. Bank guarantees and insurance schemes provided by SLECIC.	1. Duty-free imports of machinery and equipment such as green houses, planting material, packaging material, refrigerated trucks for existing and new companies engaged in producing about products for export market. 2. Board of Investment (BOI) incentives such as tax holidays and import duty exemptions on capital goods and raw material and also exempted from the provisions of the Exchange Control Act.	1. Bank guarantees and insurance schemes provided by SLECIC 2. Duty free clearance of machinery scheme 3. Export Development Board continued to provide a wide range of services, with a special reference to developing and promoting mainly non-traditional agricultural exports.

Source: Annual Reports, Central Bank of Sri Lanka, Various issues

Export incentives and institutional support

Through various market development and incentive schemes, successive governments have attempted to promote the export of agricultural products and products from agro-based industries. The Export Development Board (EDB), SLECIC, Board of Investment (BOI) and a number of ministries offer several programmes aimed at identifying export markets while playing an important role in facilitating and increasing trade awareness. The EDB provides technical and skills development support to exporters. The SLECIC provides export insurance and guarantee services for the development of exports. Similarly, the development authorities for tea, rubber and coconut also provide institutional support to the respective industries utilising funds raised by export cess on each of the products. Tea Board is administering the tea cess and Coconut Cultivation Board utilised cess collection from the coconut

to provide subsides to the industry. Yet, the effectiveness of these efforts in increasing the export volume of large, small and medium-scale agro-based industries has been marginal [Bangladesh, India, Mynmar, Sri Lanka, Thailand – Economic Cooperation (BIMST-EC) Sectoral Committee Meeting, 2001].

Investment incentive policy

General principles governing investment incentives for export companies under the BOI Law and the normal laws are summarised below.

- All raw material inputs for the purpose of export processing can be imported duty-free.
- Investors are entitled to import duty exemption for capital and intermediate goods provided that minimum export criteria are met or if such imports are met by companies engaged in export-oriented sectors as defined under the BOI Law and the Customs Ordinance.
- If an income tax holiday is not applicable, income from exports is taxed at a maximum rate of 15 percent. The normal rate of income tax in the country is 35 percent except for agriculture, fisheries, tourism, and construction. For these sectors, the rate is 15 percent.

An investor who is not entitled to a tax holiday is eligible for the following investment tax allowances:

- An investment up to Rs. 250 million attracts an investment tax allowance of 75 percent of the capital against a maximum of 50 percent of tax allowance for the assessable income in the year in which the acquisition and use of the plant, machinery or equipment occurs.
- An investment exceeding Rs. 250 million (or an investment undertaken in a designated "backward area") attracts an investment tax allowance of 100 percent of the capital, against a maximum of 75 percent of tax allowance for the assessable income.

Incentive policy under the BOI

A combination of exemptions including income tax, customs duty, and foreign exchange controls is conferred on a company by way of signing an agreement with the BOI. Investment in areas such as the production and processing of non-plantation agricultural produce, research on high quality seeds and seed production, cultivation under poly-tunnels and drip-tunnels using advanced technology, the development of marketing infrastructure such as storage facilities, and the development of the dairy and the livestock sector is entitled for these concessions. In addition, an investment of Rs.10 million employing 20 or more people are entitled to a 10-year tax holiday. In the case of agricultural projects, the minimum area to be cultivated is five ha. If these conditions are met, the project will be entitled to the import of all project-related goods duty-free. Export oriented industries would enjoy duty exemption on raw materials imported for the purpose of export processing. For agricultural sector investments, many items have been exempted from duty under the Customs Ordinance and are, thus, available to all projects irrespective of their export orientation. However, the exemption from the GST, the National Security Levy (NSL), and the Excise Tax is not conferred on a company by virtue of signing an agreement with the BOI. Furthermore, the government is encouraging agro-based exports and agricultural investment by providing an array of fiscal incentives to prospective investors. The BOI and the Department of Inland Revenue offer an array of investment incentive schemes aimed at encouraging investment and export-oriented manufacturing activities (Table 12.7).

Table 12.7: Main agro-industry incentive scheme

Scheme/Requirements	Incentives offered
1. Inland revenue: Agriculture and animal husbandry companies	10-year tax holiday, and thereafter, 15 percent concessionary tax rate, tax exemption on dividends. One-year duty free import of machinery and equipment.
2. Inland revenue: Use of advanced technology (employ 50 persons, an investment of at least Rs. four million and have MoF approval)	5-year tax holiday, tax exemption on dividends, 1-year duty-free import of machinery and equipment.
3. BOI agro-processing: new and existing companies must invest Rs. 2.5 million, add 20 workers and five ha of land and must export at least 50 percent of total output.	10-year tax holiday, 10-year concessionary tax of 15 percent, capital goods and raw materials can be imported duty free.
4. BOI agricultural marketing: No minimum investment, employment or new-land requirement. Must export 90 percent of output from a new company.	5-year tax holiday, 15-year concessionary tax at 15 percent, duty free raw materials for export goods and exemption from foreign exchange control.
5. Thrust industry (rubber): New and existing companies making a minimum investment of Rs. 50 million, exporting at least 90 percent of output and employing at least 50 persons.	10 to 20-year tax holiday depending on investment scale, concessionary tax rate of 15 percent up to 20 years. Duty exemption on import.
6. BOI investment in difficult areas: No minimum investment requirements, minimum of 50 percent exports, 150 new employees.	5 to 8-year tax holiday, thereafter, concessionary tax rate of 15 percent for 8-12 years. Duty free importation of capital goods and raw materials used for exports. Exemption from exchange control if 90% is exported.
7. BOI investments in designated zones: exporting at least 50 percent of output and employing 150 persons.	5 to 8-year tax holiday, and thereafter, concessionary tax rate of 15 percent up to 20 years. Duty free importation of capital goods and raw materials for export.
8. Out grower schemes: minimum cultivation area of five ha for export of fresh and processed fruits and vegetables	10-year tax holiday for out grower farms, duty free equipment, and machinery. Land given by the government for free.
9. Greenhouse agriculture, minimum investment of Rs. 10 million	10-year tax holiday.
10. Agricultural marketing	Duty-free import of refrigerated trucks and tax holidays for up to 5 years.

Source: Tabor. S, S. Abeyratne and R. Epaarachchi, (2000)

Export charges and quantitative restrictions

Since the elimination of export duties and ad-valorem sales taxes on all plantation crops in 1992, the export cess remained unchanged. There are a limited number of agricultural export commodities, which are subjected to export cesses and surcharges, as outlined in Table 12.8. The revenue raised from these charges is channelled back into each sector through the relevant development authority in the form of incentives and subsides.

Table 12.8: Export cesses and surcharges, 1999

Commodity	Amount levied in SL Rs.	Beneficiary
Crustaceans (Shrimps or prawns)	10.00 /kg	Sri Lanka Export Development Board
Coconut -Desiccated Shell/Seed	2.00 /kg 0.75/kg	Coconut Development Authority
Pure Ceylon Tea	2.50 /kg 0.0035 /kg (Tea medical Levy)	Sri Lanka Tea Board
Coconut Milk Powder	0.45 /kg	Coconut Development Authority
Copra	0.90 /kg	Coconut Development Authority
Coconut Ekels	0.10 /kg	Coconut Development Authority
Coconut Shell pieces	0.20 /kg	Coconut Development Authority
Coconut Oil	0.40 /kg	Coconut Development Authority
Fruit juices and vegetable juices of coconut (cream)	0.45 /kg	Coconut Development Authority
Extracts, essences and concentrates of coffee, tea.... Instant tea	2.50/kg 0.0035/kg (Tea medical levy)	Sri Lanka Tea Board
Animal leather	40.00 /Sq.ft	Sri Lanka Export Development Board
Coconut Abaca	0.25 /kg	Coconut Development Authority

Source: Sri Lanka Customs Tariff Guide, 1999.

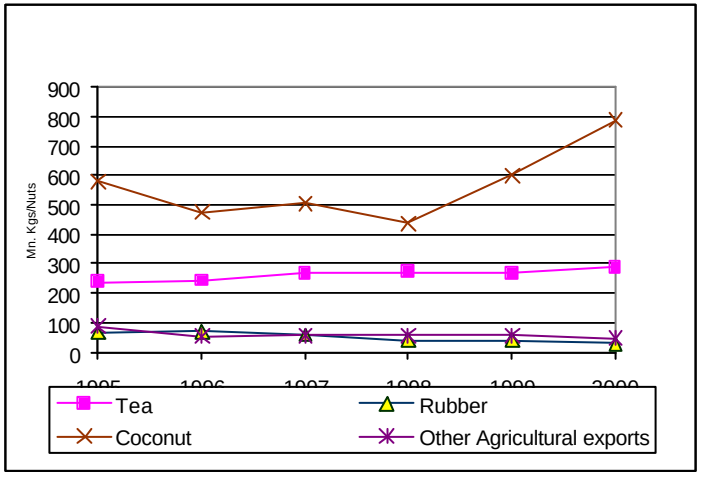
Currently, there are no quantitative restrictions (QRs) on exports, though a select list of commodities are subject to licensing requirements and other export restrictions for reasons of cultural value, health and environmental safeguards.

Impact of the implementation of WTO commitments

Impact on exports

There has not been a significant impact on export quantities due to the implementation of the WTO commitments in trading-partners of Sri Lanka. In particular, export quantities of commodities such as rubber and other agricultural commodities have been declining during the same period, as highlighted in Figure 12.6. However, this declining trend can primarily be attributed to decreases in world demand for these commodities, in addition to increasing costs of production in each of the above-mentioned sectors. Export quantities of tea, on the other hand, have increased slightly, especially after 1995 and can likewise be attributed to such internal factors as the improved efficiency after privatisation of tea plantation and the increase in value-added tea exports, targeting new export markets.

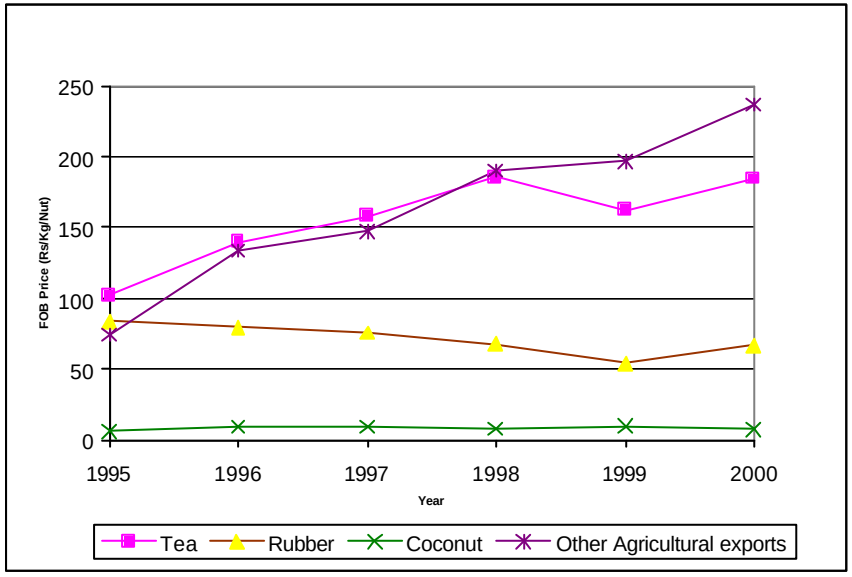
Figure 12.6: Quantity of major agricultural exports, 1995-2000



Source: Annual Reports, Central Bank of Sri Lanka, Various issues

Export prices have not been affected directly by the WTO measures in trading-partner countries. While price of rubber has declined considerably between 1995 and 2000, coconut price has remained relatively unchanged, as highlighted in Figure 12.7. However, price of tea and other agricultural exports has demonstrated significant increasing trends in the post Uruguay Round Agreement on Agriculture (URAA) period and this can be attributed to an increase in international demand, especially from the CIS and Middle Eastern countries.

Figure 12.7: Prices of major agricultural exports, 1995-2000



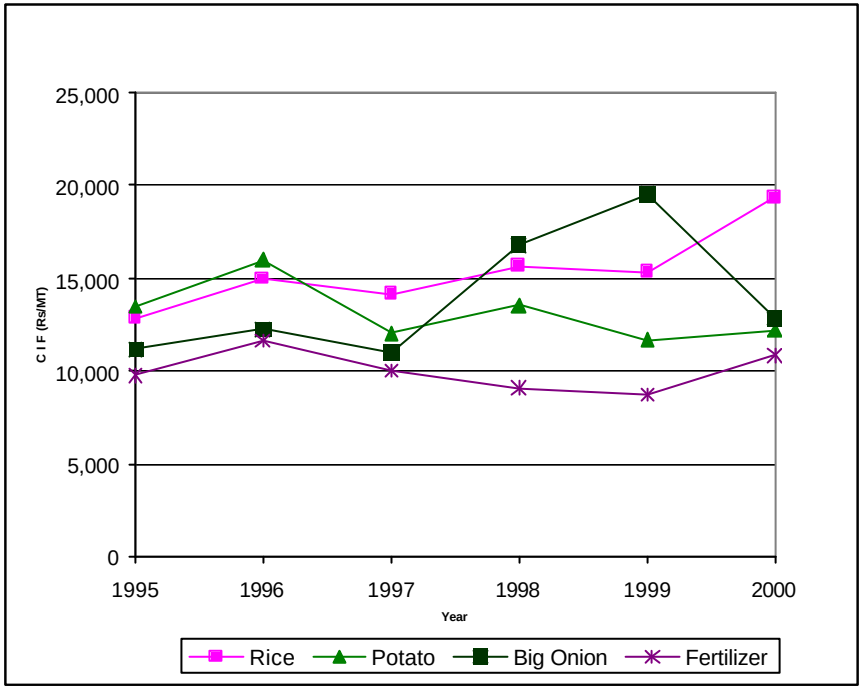
Source: Annual Reports, Central Bank of Sri Lanka, Various issues

Impact on imports

Imports of most agricultural commodities have demonstrated increasing trend during the post URAA period. This can be attributed in part, to the liberal changes in Sri Lanka's tariff structure and the relaxation of license controls on many agricultural commodities. However, certain internal factors have had a significant influence on the levels of agricultural commodity imports. In particular, potato and big onion imports increased

during this time due to reduced local production. Similarly, despite the increasing fertiliser subsidy and low duty on fertiliser imports, quantity of fertiliser imports increased after 1995. However, rice imports fluctuated significantly during the period of 1995–2000, mainly due to seasonal and environmental changes such as drought.

Figure 12.8: Prices of major agricultural imports, 1995-2000



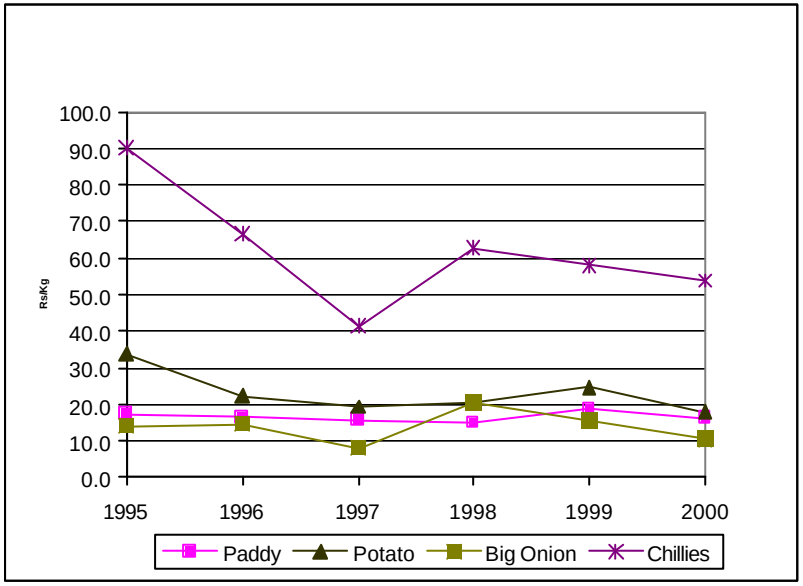
Source: Annual Reports, Central Bank of Sri Lanka, Various issues.

Similarly, Figure 12.8 illustrates nominal prices of major agricultural imports show an increasing trend during the post URAA period and can be attributed to international liberalisation in these particular agricultural commodity markets. However, when taking the continual devaluation of the Sri Lankan Rupee into account, the real import prices have remained relatively constant.

Impact on domestic agricultural commodity prices

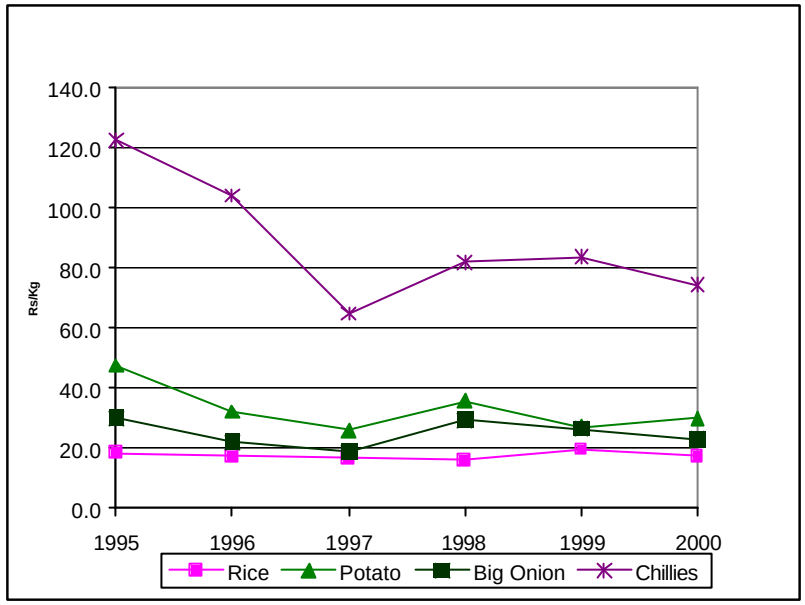
As shown in Figures 12.9 and 12.10, both agricultural producer and retail prices (in real terms) demonstrated declining trends during the post-Uruguay Round period.

Figure 12.9: Trends in real producer prices of major agricultural commodities, 1995-2000



Source: Annual Reports, Central Bank of Sri Lanka, Various issues

Figure 12.10: Trends in real retail prices of major agricultural commodities, 1995-2000



Source: Annual Reports, Central Bank of Sri Lanka, Various issues

As Sri Lanka is a net-importer of most agricultural commodities, these declining prices can be specifically attributed to the recent changes in the country's licensing structures that came into being because of implementation of policies that were agreed upon during the UR. The resulting inflows of low-priced agricultural imports exerted downward pressure on both producer and retail prices during this period.

Impacts on agricultural incomes

Agricultural income declined by 14 per cent in real terms between 1986/87 and 1996/7, as highlighted in Table 12.9, and currently constitutes the lowest income-occupation in the country.

Table 12.9: Mean monthly income in agriculture, forestry and fisheries, 1986/87 vs. 1996/97 (Rupees) [3]

1986/87	1996/97	
Real	Nominal	Real
807	2,252	693

Source: Consumer Finances and Socio-Economic Survey, 1996/97, Central Bank of Sri Lanka.

This can be mainly due to increase in costs of production and the resulting decline in profit margins in the agricultural sector. Since the liberalisation of the agricultural sector, increased competition from lower priced imports of agricultural commodities have also resulted in lower producer prices, and this in turn has led to lower agricultural incomes. Accordingly, in 1986/87, 41 percent of income earners were employed in the agriculture sector while in 1996/97 this proportion declined to 28 percent [Consumer Finance and Socio-economic Survey (CFS), 1996/1997].

Impacts on agricultural industries

The implementation of the Uruguay Round has not resulted in the expected increase in market access, especially for the exports of the SAARC countries. This can mainly be attributed to the presence of 'dirty tariffication'[4] practices, the occurrence of tariff escalation and the use of a range of NTBs by developed countries. Studies have shown that tariff escalation, in particular, has been found to be high, for example, in the case of rubber products to the EU, Japan and the United States (US), and as a result, has discouraged the exports of processed goods from South Asia.

While this sentiment is expressed through the common voice of the SAARC countries, as far as Sri Lanka's export is concerned; there has been no significant change in trading patterns as a result

[3] Real prices have been deflated to 1996/7 values

[4] 'Dirty tariffication' refers to a phenomenon which occurs in the process of converting non-tariff barriers to tariffs, where the countries concerned can inflate base rate data, so that the resulting tariff equivalents are very high.

of implementing the URAA. In the tea sector in particular, exports had been subject to a liberal trade environment prior to the URAA, and some of the importers of developed countries such as the UK, THE EU and the US did not impose import duties or other restrictions on bulk or packeted tea. While tea importers of many of the developing countries did impose tariff and non-tariff measures, some of these importers were not signatories to the WTO during that period.

Impact of the SPS Agreement

While Sri Lanka is still in the process of fully complying with the Sanitary and Phytosanitary (SPS) Agreement, there are a number of emerging issues which have impeded the country's ability to thoroughly assess the legitimacy of national as well as international SPS standards (UNCTAD, 1999). One such impediment is the lack of information regarding prevailing SPS measures and their degree of consistency with the SPS Agreement. As a result, estimates of the impact of SPS regulations have been found to be unreliable. In addition, there are a limited number of accredited laboratory facilities and a significant lack of financial resources to acquire such expertise in the assessment of SPS standards. This has caused critical problems not only for exporters but for importers as well.

However, this situation provides a strong leverage to the developed countries to use SPS as a barrier against imports from developing countries. Therefore, the developing countries are far behind the developed countries in the area of the SPS standards. The developing countries do not have adequate financial, technical and institutional capability to cover this gap within a short period of time.

Moreover, special and differential (S&D) clauses governing developing countries such as Sri Lanka have not been visible in their application to local exporters. In general, there is also a lack of awareness of the contents of these S&D clauses, as a result, the benefits granted have not been fully reaped.

Despite these constraints, there are some standards-mechanisms in operation that help to adapt to the changing international environment. The Sri Lanka Standards Institution

(SLSI) is the national body responsible for setting and monitoring food standards. It is also the national inquiry point for the implementation of the SPS Agreement. In this capacity SLSI is responsible for the dissemination of information to exporters, regarding changes to trade partners and product standards in various industries.

In the case of food items, SLSI adheres to international health and safety standards and guidelines, such as Codex standards, as strictly as possible (FAO, 1995). Sri Lanka is a member of the Codex Alimentarius Commission (CAC), which has set 237 food commodity standards, 41 hygienic practice codes, and over 3,200 maximum residue limits for pesticides. By adhering to harmonised food standards and testing and inspection procedures, potential NTBs can be eliminated.

In addition, SLSI has recently proposed the initiation of an independent National Accreditation Body, which will assist in facilitating the smooth flow of exports. It will specifically be an umbrella organisation governing a National Standards Body, a National Measurement Laboratory, other testing laboratories as well as Conformity Assessment Bodies.

A Plant Protection Act[5] has recently been revised and gazetted, in line with some of the SPS requirements. The biggest constraint facing the government in amending the plant quarantine regulations is the inability to provide the necessary and complementary testing facilities, due to resource constraints.

Strategies for the new WTO negotiations

Future position as SAARC

It was decided since the meeting of the trade ministers held in Bandos Island held prior to the Seattle Ministerial Conference of the WTO that for the forthcoming WTO rounds on agriculture, the

[5] Taken from the Plant Protection Ordinance (Chapter 447) of the Gazette of the Democratic Socialist Republic of Sri Lanka, issued on 17/5/99.

SAARC member states should assume a collective position relating to key policy issues that are relevant to the region[6].

In particular, the SAARC members should highlight the difficulties encountered by developing and least developed nations in having access to markets of developed countries. The UR negotiations have not resulted in increased market access for exports of developing countries as expected, mainly due to the presence of tariff peaks, tariff escalation and NTBs.

In keeping with these issues, the SAARC members should place emphasis on disparities that exist in this regard, in the relevant agreements. The group should also request that developed countries give priority to the concessional transfer of technology to LDCs.

Moreover, the SAARC countries should highlight the need to extend the full S&D clauses granted to developing and least developed countries, even further. The use of these clauses with regard to specific issues needs to be addressed, in light of the large commitments already made by developed countries under the Uruguay Round.

Furthermore, the SAARC member states should request that least developed member countries be allowed duty free and quota free access for their exports and exemptions from anti dumping duties, safeguard actions, and NTBs. Appeals are also being made for export subsidies to be exempt from competitiveness thresholds and for industry development subsidies to be included in the list of permitted subsidies.

Future Position for the Food Security

The issue of food security has been identified as a major objective to be pursued by the global community during Rome Declaration on World Food Security and the World Food Summit Plan of Action in 1996. World Food Summit in 1996 concluded that the food security exists when all people at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary

[6] See SAARC Commerce Ministers Declaration, Bandos Island, Maldives, 7-9 August 1999.

needs and food preferences for an active and healthy life. An average person requires 2,200 calories of food everyday. According to the United Nations World Food Programme classifications, Sri Lanka is ranked as a low income, food deficit country. This indicates that people have low average levels of income and that the country imports food to supplement its domestic production. It is therefore necessary to focus on the domestic food production sector to ensure food security.

It appears that food availability in the country is not sufficient to meet future requirements due to factors such as, low agriculture production, import and export imbalances, environmental hazards, and civil disturbances. Therefore, Sri Lanka needs to increase its domestic food production by improving yields and efficiency within the farming system and, ensuring sustainable usage of resources. At the same time, a sound policy framework is essential.

The Agreement on Agriculture (AoA) has made references to non-trade concerns (NTCs) such as food security and environmental protection that would have to be taken on board while the agreement is being implemented by the WTO member countries. But in 1998, the Organisation for Economic Cooperation and Development (OECD) Ministerial meeting has discussed the multifunctional character of agriculture within the context of NTCs. It has clearly noted that beyond its primary function of supplying of foods, agricultural activities can also shape the landscape, provide the environmental benefits, such as land conservation, the sustainable management of renewable natural resources and the preservation of biodiversity, and contribute to the socio-economic viability of many rural areas. Because of this multifunctional character, agriculture plays a particularly important role in the economic life of peasant areas in the country.

Summary and conclusion

Over the years, Sri Lanka has liberalised its trade regime much faster than what is required for confirming to the requirement of the WTO. But, the increased protection and subsidies in the developed countries, have denied the market access opportunities for Sri Lanka and other developing countries.

Overall impact on Sri Lanka's trade and traders during the implementation of the URAA has been minimal. Likewise, importers of agricultural commodities have not been affected significantly by the implementation of the URAA. Sri Lankan traders have benefited from the reductions in import duties and the resulting increase in competitiveness and demand for their products. The role of state trading enterprises has been trimmed down to a bare minimum.

Domestic producers/farmers are coming under increasing pressure from cheap imports from abroad. Therefore, there should be a mechanism to protect the interests of farmers in a less developed country like Sri Lanka.

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Farmers' Rights: Their Relevance for Central Himalayas

Ghayur Alam

While discussing about farmers' rights in the context of the World Trade Organisation (WTO), we are mainly concerned with two rights – a) rights to save, exchange and sell seeds; b) and right to recognition and compensation for their role in protecting and improving genetic resources and traditional knowledge.

Both types of rights have become the focus of intense debate. This is largely for two reasons. Firstly, certain provisions of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) have the potential to limit farmers' traditional rights to save exchange and sell seeds. Secondly, recent years have seen a sharp increase in the role of intellectual property rights (IPRs) in agriculture. This has led to a demand that the role of farmers and rural communities as sources of genetic material and indigenous knowledge should also be recognised and compensated. Let us discuss the nature of these rights in some detail.

Conventionally, IPRs were not recognised in agriculture. This situation was changed when some developed countries introduced plant breeders' rights (PBRs) to protect commercially developed plant varieties. The tendency to provide strong protection to inventions involving living forms began to strengthen in the 1980s. Agricultural research in developed countries, especially research involving biotechnology, began to be dominated by large private companies. These firms consider the protection of inventions through strong IPRs crucial for the protection of their business interests.

These companies are interested in extending their IPRs worldwide. Pressure from these companies and their governments led to the inclusion of TRIPS in the discussions leading to the formation of the WTO. In the case of agriculture, TRIPS requires developing countries to provide protection to plant varieties, microorganisms, non-biological processes and microbiological

processes for the production of plants and animals. While microorganisms and non-biological processes and microbiological processes are to be protected by patents, countries are free to choose patents or an effective *sui generis* system to protect plant varieties.

There has been intensive debate over what constitutes an effective *sui generis* system, as it is open to different interpretations. The most widespread *sui generis* system for the protection of plant varieties is the one established by International Union for the Protection of New Varieties of Plants - known as "UPOV". UPOV was established by the International Convention for New Varieties of Plants, which was signed in Paris in 1961. The Convention, which became effective in 1968, was however revised in 1972, 1978 and 1991.

Currently, there are two versions of UPOV: the 1978 version and 1991 version. For the purpose of this discussion, the main difference between the two versions of UPOV relates to the freedom of farmers to save, exchange and sell protected seeds. The 1978 version recognises farmers' right to save protected seeds for planting. The 1991 version, on the other hand, requires the farmers to obtain permission from the right holders to save and plant protected seeds.

The use of UPOV as a model for *sui generis* to be adopted by developing countries has attracted severe criticism. These Conventions were developed to suit the conditions of developed countries, where plant-breeding is primarily carried out by commercial breeders. Therefore, the main objective of these Conventions is to provide incentives to commercial breeders by protecting their rights over varieties. The situation is different in developing countries where farmers play an important role in the improvement of germplasm and breeding of new varieties. Also, much of the formal breeding work in these countries is carried out by public sector institutions. It is felt that UPOV Conventions, which do not recognise the farmers' role in breeding, are not suitable for developing countries.

Unlike UPOV, the concept of farmers' rights explicitly recognises the role of farmers and indigenous communities in developing and preserving genetic material and landraces. It also

recognises the need to ensure a more equitable distribution of benefits between farmers, who are the main source of germplasm used in breeding, and commercial plant breeders. The farmers' rights are important for the following reasons:

Equity: It is felt that society has a moral obligation to ensure that farmers receive a fair share of economic value created by their role in improving and conserving genetic material.

Conservation: It is well-known that farmers have played a crucial role in the conservation of biodiversity. It is important that society recognises and encourages this role, through incentives such as benefit sharing.

Preservation of farmers' practices: Traditional farmers and communities meet their seed requirements through saving and exchanging with other farmers and communities. This practice has played an important role in the development and diffusion of improved farmers' varieties. There is a tendency in developed countries to restrict the scope of this practice. Farmers' rights are seen as a way of ensuring that farmers in developing countries are permitted to save and exchange seeds for planting purposes. This will ensure that farmers will continue to play their role in improving germplasm and varieties.

The national PBR legislation of some of the developing countries have made the provision to acknowledge farmers' rights. In some countries, this also includes mechanisms for benefit sharing between communities and commercial breeders. For example, India has adopted an Act called "Protection of Plant Varieties and Farmers' Rights Act" in 2001. The Act has a number of provisions to protect farmers' rights. These include:

a. Explicit recognition of farmers' rights.

b. The farmers will be entitled to save, use, and exchange seeds of varieties protected under the Act. However, they will not be entitled to sell branded seeds of a protected variety.

c. Applicants for registration of new varieties will be required to provide information on the parental lines used in the

development of a new variety. They will also be required to provide information relating to the contribution made by farmers and local communities in the development of the new varieties.

d. Farmers and local communities can make claims for benefit sharing and compensation on the basis of contributions they have made to the development of protected varieties. Any compensation granted will be deposited in the National Gene Fund. The Fund will also receive the annual fee paid by the breeders for the registration of new varieties. These resources will be used to provide farmers and communities with the compensation due to them.

It is clear that the Act takes into account a number of concerns pertaining to farmers' rights. However, it has been criticised by some observers as biased in favour of formal plant breeders, as it does not recognises farmers' property rights; it only provides for financial compensation for the use of genetic material and varieties developed by farmers (Kothari, 1999). It has also been criticised, as it does not require the breeders to take prior informed consent from the farmers for the use of the latter's varieties and genetic material. Claims can only be made after a variety has been registered. It also puts the responsibility for making claims on farmers and communities. The ability of farmers and communities to do this will be seriously limited by their lack of information about the registration of new varieties (Cullet, 2000).

Relevance of farmers' rights in Central Himalayas

Let us now see how farmers' rights are relevant to farmers in mountain areas. The observations are focused on the farmers in the state of Uttaranchal in the Central Himalayan region. However, these observations are also valid for similarly placed mountain areas in other regions.

About 80 percent of farmers in Uttaranchal practice subsistence agriculture (Maikhuri *et al.*, 1977). The agricultural productivity is low there. This is for a number of reasons. The average per capita cultivated land is only 0.2 hector (ha), and up to 85 percent of it has no irrigation. Also, the use of chemical

fertilisers and high yielding varieties (HYVs) is lower than in the plains (Rawat and Kumar, 1996). Furthermore, farmers do not have access to quality seed. For example, a study of 59 tribal villages in the area found that farmers' access to new seed was extremely limited. The seeds used in these villages were highly susceptible to disease and pest. This also affects agricultural productivity (Bisht, n.d).

Traditional crops continue to occupy an important role in the area. For example, in the districts of Pauri, Tehri, Chamoli and Almora, Jhungra – a traditional crop - accounts for 26 percent, 19 percent, 25 percent and 23 percent of the total cultivable area (Rawat, n.d). As farming is largely traditional, the area under commercial crops is very small. For example, in most of the blocks in Garhwal, less than five percent of the cultivated area is under commercial crops.

How are farmers' rights relevant to the Central Himalayan region?

Let us first discuss the farmers' rights to save, exchange and sell seeds. How often do the farmers in the Central Himalayas replace old seeds with new? What are the important sources of seeds? How do the farmers decide whether to use their own seeds, or exchange them with their neighbours or purchase new seeds from the market? How important is the use of proprietary seeds? The answers to these questions are important. The impact of WTO-induced laws [such as India's Plant Variety Act] on farmers' access to seed will largely depend on the way farmers get their seeds. For example, the Indian Act prohibits farmers from selling branded seeds. This provision of the Act will largely affect only those farmers: a) who use proprietary seed; and b) who are engaged in the trade of seeds as a commercial activity. On the other hand, the Act will have little impact on farmers whose links with the private market are weak, and who do not use proprietary seeds.

It is here important to note that there is little systemic information on seed use and seed replacement activities of farmers in Central Himalayas. For example, we do not know the frequency of seed replacement by the farmers in the area. Again, we do not know how important various sources of seeds are. Most importantly, we do not have much information on the penetration

of proprietary seeds in the region. We are currently engaged in a research study to examine some of these questions.

The limited evidence from the region suggest that:

- farmers in Central Himalaya have only limited access to both new varieties and new seeds. This implies that the rate of seed replacement is low, and farmers largely depend on either their own seeds, or exchange with other farmers.

- traditional crops continue to be important. This implies that the role of private plant breeders is small. The role of proprietary and branded seed is even smaller.

As saved and exchanged seeds play the most significant role in this area, the Plant Variety Act, which recognises farmers' rights to save and exchange seeds, would protect the existing rights and practices of the farmers in the region. However, as the use of proprietary seeds is small in this area, the farmers will not be affected by the Act's restriction on the sale of branded seeds by farmers. Therefore, we can tentatively suggest that the effect of TRIPS on farmers' right to choose their seed will not be significant in the Central Himalayan region.

Now, let us examine the role of farmers in conserving and improving germplasm and indigenous knowledge. As is widely appreciated, the mountain regions are very important sources of both germplasm and indigenous knowledge. This is also true in the case of Central Himalayas. For example, more than 40 crops species and numerous farmers' selected landraces are cultivated in the region (Maikhuri *et al.*, 1977). The area is also an important source of spices, herbs and indigenous knowledge. The farmers have maintained this wide variety through judicious crop composition and rotation.

The idea that farmers should have recognition for their contribution to the development of agriculture and medicines is obviously important for the farmers of Central Himalayas. As they are an important source of genetic material and traditional

knowledge, the farmers in the area will be eligible to receive both recognition and compensation.

India's Plant Variety Act provides farmers and local communities with the opportunity to claim benefit sharing and compensation for their contribution to the development of protected varieties. However, there are some conceptual and practical problems in the implementation of these provisions of the Act. Most importantly, the Act does not require a breeder to take prior informed consent from local communities and farmers for the use of genetic material developed by them. This implies that the farmers and local communities are required to approach the authorities to make claims. In order to do this, the communities would need to have information on the registration of new varieties and the sources of variation used in the development of new varieties. The farmers in Central Himalayas (and in other mountain regions) lack the skills and resources necessary for this. It is, therefore, clear that the chances of farmers and local communities receiving benefits for their contribution to agriculture and medicine are very slim.

We can conclude that the recognition of farmers' right to receive compensation for their contribution, provided by the Act, is a major step in correcting the current imbalance between farmers and commercial plant breeders. However, the Act is unlikely to help the farmers significantly to receive the recognition and benefits they deserve. This needs to be changed. Most importantly, the commercial plant breeders should be required to take prior informed consent from the communities whose material is used in the development of new varieties. This will greatly increase the possibility that farmers will receive a share of the profits, which accrue to breeders from the sale of new varieties.

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Annex: I

Brief Report of the Roundtable on Protecting Farmers' Rights in the Hindu-Kush Himalayas

30 October 2002
Bishkek, Kyrgyzstan

In order to put the issue of farmers' rights to livelihood on the agenda of the Bishkek Global Mountain Summit (BGMS) held in Kyrgyzstan from 29 October to 01 November, SAWTEE together with International Center for Integrated Mountain Development (ICIMOD) and German Technical Cooperation (GTZ) organised a Roundtable on Protecting Farmers' Rights in the Hindu-Kush Himalayas (HKH) in a sideline of the Summit on 30 October.

Participated by 24 participants, the Roundtable mostly dwelt upon the difficulties and problems faced by the mountain farming communities in the HKH region, particularly in the context of liberalisation, globalisation and the World Trade Organisation (WTO) Agreements. The Rc
Sainju, former vice-chairman of the National Planning Commission (NPC) – Nepal and presently Chairman of Institute of Integrated Development Studies (IIDS), Kathmandu. Three panelists made their presentations at the Roundtable.

Dr. Ghayur Alam, Director of Center for Sustainable Development (CSD), Dehardun, India made his presentation on *Farmers' Rights: Their Relevance for Central Himalayas*. Pointing out the relevance of farmers' rights to the Central Himalaya Region, he enumerated the farmers' rights as: a) the right to save, exchange, and sell seeds; and b) the right to receive recognition and compensation for their contribution in conserving and developing genetic material, land races and indigenous knowledge.

He said, "Farmers in Central Himalaya have only limited access to both new varieties and new seed. This implies that the rate of seed replacement is low, and farmers largely depend on either

their own seed, or exchange with other farmers." He added that the mountain regions including the Central Himalaya are very important sources of both germplasm and indigenous knowledge. For example, more than 40 crops species and numerous farmers' selected land races are cultivated in the region. The farmers have maintained this wide variety through judicious crop composition and rotation, he mentioned.

Commenting on recently approved India's Plant Protection Variety and Farmers' Rights Bill, Dr. Alam clarified that this Bill provides farmers and local communities with the opportunity to claim benefit sharing and compensation for their contribution to the development of protected varieties. However, according to him, there are some conceptual and practical problems in the implementation of these provisions of the Bill. Most importantly, the Bill does not require a breeder to take prior informed consent from local communities and farmers for the use of genetic material developed by them. This implies that the farmers and local communities are required to approach the authorities to make claims. In order to do this, the communities would need to have information on the registration of new varieties and the sources of variation used in the development of new varieties. The farmers in Central Himalayas and in other Himalayan regions lack the skills and resources necessary for this. It is therefore clear that the chances of farmers and local communities receiving benefits for their contribution to agriculture and medicine are very slim.

Another panelist, Dr. S. Bala Ravi, Advisor (TRIPS and Biodiversity), M.S. Swaminathan Research Foundation, Chennai made his presentation on *Biodiversity, Farmers' Rights, Biotechnology and Patents*. He remarked that the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement under the WTO system requires patent protection to "microorganisms, microbiological and non-biological processes" and the products derived therefrom. It is interpreted to mean that the biotechnological processes and the transgenic plants are patentable subject matters in all WTO Member countries. This helps in consolidating privatisation of important genes and bio-resources. What is equally disturbing is that these intellectual property protection (IPR) regimes do not recognise the rights arising from the past, present and future contributions of farmers in conserving,

improving and making available plant genetic resources. He also pointed out that the manner in which IPR has been allowed under TRIPS on biological material contravenes the basic tenets of the Convention on Biological Diversity (CBD) and said that TRIPS is an open encouragement to biopiracy and plagiarisation of bioresource related traditional knowledge.

Dr. Ravi, while talking about the threats of biotechnology for mountain farmers, highlighted that major hazards from agriculture biotechnology may arise from the unnatural intervention in life forms and its release into environment, in violation of some of the basic tenets of natural evolution. It is also accompanied by incomplete understanding of the complexities of life with consequent inadequacy in providing reasonably precise methods to predict possible consequences on food and biosafety.

Likewise, Mr. Ratnakar Adhikari, Executive Director of SAWTEE, Kathmandu made his presentation on *Mountain Farmers in the Cobweb of Globalisation*. He mentioned that mountains are rich storehouses of biodiversity, minerals, forests and water, yet mountain people are among the poorest in the world. Majority of the mountain community depends on farming for their livelihood and farmers constitute majority of the mountain population around the world. Mountain farmers face a number of inherent problems such as lack of access to market, input, technology and requisite infrastructure (including transportation and communication) due to their natural locational disadvantage.

He also pointed out that the globalisation and liberalisation forces accompanied by the WTO system have made the mountain people's lives more miserable since the policies and programmes under these paradigms are, more often than not, unbalanced and in most cases improper and partial.

Lamenting the double standards of the developed countries, Mr. Adhikari revealed, "Despite the fact that developed countries have succeeded in opening up the market of the developing countries for the export of their subsidised agricultural products, they continue to remain highly protectionist themselves. Agreement on Agriculture (AoA) is an attempt to reduce protectionism in developed as well as developing countries.

However, the way it was crafted and is being implemented one can be sure it would take long time for the agricultural sector of the developed countries to be brought within the WTO discipline." He further commented on the TRIPS Agreement and the Agreement on Sanitary and Phytosanitary (SPS) Measures and Technical Barriers to Trade (TBT). He said that while most of the impacts of globalisation are common both for plain farmers and farmers of the mountainous regions, the latter ones, being much more vulnerable, poor and voiceless, may face disproportionate burden of adjustment. He therefore suggested that unless and until corrective measures are taken to reverse this trend and serious efforts are made to integrate the mountain farmers first into the national economy and then into the global economy it could create disastrous social and political backlash. It is necessary for developing countries to have policy autonomy at the national level to protect largely vulnerable communities, be they mountain, tribal or other ethnic communities.

After the presentation of the papers from the panelists the participants broadly discussed the need to draft a declaration on farmers' rights and widely disseminate during the Summit. Summing up the discussion, chairperson Dr. Mohan Man Sainju stressed that the world is in a “race against the clock” in the war against hunger. "We will not get victory over that unless and until we succeed in protecting the rights of the mountain farming communities," he said. Realising that cooperation at local, national, regional and international levels is a key to unlock the problems faced by such communities, he stated, "This Summit can play a vital role in creating a sense of mutual understanding and cooperation among the key partners. This roundtable should therefore highlight the importance of this type of cooperation while feeding its outcome during the Summit discussion."

Ultimately, the Roundtable came up with some key recommendations to be included in the BGMS Declaration.

- Most pernicious forms of agricultural protection, which are impairing the ability of the mountain farmers to compete in the international market, should be put to an end.

- Member countries of the WTO should be provided with flexibility to protect mountain biodiversity and mountain farmers.
- Member countries of the WTO should be allowed to decide what kind of *sui generis* legislation they would like to enact for the protection of plant varieties so that the rights of the farmers to save, reuse, exchange and sell seeds are protected.
- In order to protect mountain farmers, who are the custodian of genetic resources, we call upon WTO Member countries to accept the supremacy of CBD over the TRIPS Agreement of the WTO.
- In order to ensure market access of the mountain agricultural products, it should be made mandatory for all the countries to design national product, safety and environmental standards based on multilaterally agreed international standards.
- Technical assistance should be provided to the mountainous developing countries to implement WTO Agreements including those on intellectual property rights and standards.
- Special arrangement should be made, within the WTO system, to facilitate the export of mountain niche products.

These recommendations were presented in a Plenary Session subsequently held after the conclusion of various roundtables.

Annex: II

Brief Report of the Second Regional Consultation Meeting on Farmers' Rights

17-18 August 2002
Kathmandu, Nepal

Together with International Centre for Integrated Mountain Development (ICIMOD), SAWTEE has been implementing a three year programme titled Protecting Farmers' Rights to Livelihood in the HKH region from the year 2001 in five South Asian countries, namely Bangladesh, India, Pakistan, Nepal and Sri Lanka. The programme is being implemented through SAWTEE's five partner organisations: Bangladesh Environment Lawyers Association (BELA) in Bangladesh; Consumer Unity & Trust Society (CUTS) in India; Sustainable Development Policy Institute (SDPI) in Pakistan; Forum for Protection of Public Interest (Pro Public) in Nepal; and Law & Society Trust (LST) in Sri Lanka. Funded by Ford Foundation and ActionAid, the project envisages annual consultation. The first consultation was held in Kathmandu on 12-13 July 2001. The second Regional Consultation was held on 17-18 August 2002 to provide a platform to SAWTEE's partner organisations to discuss the following issues:

- The status of the project after one year of the operation of the programme;
- Exchange of national experience in regards to project operation with other partner organisations; and
- Preparing plan of action and proposed activities for the next two years of the project period.

During the programme, the participants linked the rights of the farmers to the issue of ethics, social justice, environment protection and survival of human race. They pointed the issue of double standards at the WTO. The thrust of the participants, which included representatives from various civil society organisations

(CSOs) from Bangladesh, Pakistan, India, Nepal and Sri Lanka, was to seek ways in which farmers' rights as human rights are ensured along with a sustainable growth of the agriculture sector in the region.

Minister of State for Agriculture and Cooperatives, Nepal, Hon'ble Laxman Prasad Mehta, inaugurated the programme and said that the threats posed by some of the WTO Agreements are so real that if we are not able to protect our farmers, not only their livelihood security will be jeopardised, but the food security situation will also worsen.

Likewise, Dr. Posh Raj Pandey, Programme Manager of Nepal's Accession to the WTO and President of the Executive Committee of SAWTEE said that infringement of farmers' rights in any form is likely to put their livelihood at risk and for the areas like the HKH region where farmers have no alternative to income sources apart from farming, protection of their rights is necessary.

Delivering his keynote address during the inaugural session of the programme, Dr. S. Bala Ravi of M.S. Swaminathan Research Foundation, Chennai, stressed that the developed countries want to regulate the agriculture in developing as well the least developed countries (LDCs), which means putting the farmers out of decision making process at all levels. He also lashed out at the provisions of the TRIPS Agreement, which allows patenting of plant varieties, non-biological and microbiological processes. The participants added that the patenting provisions might only aggravate the present economic and technological inequity and endanger the livelihood and food security options of the people, especially in the poorer countries. They also pointed out that farmers are uncertain of their rewards in domestic agricultural policy, particularly in South Asia and therefore when the WTO begins to put pressure on them, things will become even more uncertain.

Similarly, Dr. Suman Sahai, Convener, Gene Campaign, India said that the UPOV system is not suited for the developing countries. She also highlighted the salient features of Convention of Farmers and Breeders (CoFaB) as an alternative to UPOV. Mr. Mahfuz Ullah, Secretary General at Centre for Sustainable Development, Bangladesh strongly argued that intellectual property

right is basically a problem of the developed countries and is designed to create an atmosphere of global superintendence of the developing and LDCs. “Farmers are losing their rights as custodians of biodiversity and agricultural exports from underdeveloped economies would face many restrictions in the form of non-trade barriers,” he said.

The participants during the programme also realised that the region need not just good policies, but also efficient institutions to implement them. The urgency is also to define “farmers” and their “rights” - so as to be explicit about whose rights we want to protect.

During the programme, the project implementing partner organisations of SAWTEE also briefed on the progress made during the first year of the project. During the first year, the partner organisations have completed their activities of site selection and publication of briefing papers, and they were also in advance stage of completion of field research.

The participants identified the issues of concern for farmers’ rights. At the last day of the Meeting, all the participants worked in country specific groups and devised research agendas for the next year of the Farmers’ Rights Programme. All the groups also identified the research topics, networking and implementation issues in regards to farmers’ rights and the project.

The two-day Meeting was divided in to five different sessions: Key Policy Issues and Concerns; WTO Agreements and Farmers’ Rights in Partner Countries; Presentation of Progress Reports by the Partner Organisations; Other Issues Related to Farmers’ Rights to Livelihood; and Identification of Issues of Concern for Farmers’ Rights to Livelihood.