



SEPTEMBER 2016

Working Paper Series No. 24

---

# Intellectual Property Rights in Protecting New Plant Varieties and Farmers' Traditional Knowledge: The Case of Rice in Sri Lanka

---

DILANI HIRIMUTHUGODAGE  
PARAKRAMA A. SAMARATUNGA



INSTITUTE OF POLICY STUDIES OF SRI LANKA



ISBN 978-955-8708-94-1

**National Library and Documentation Services Board -Cataloguing-In-Publication Data**

Hirimuthugodage, Dilani

Intellectual Property Rights in Protecting New Plant Varieties and Farmers' Traditional Knowledge: The Case of Rice in Sri Lanka / Dilani Hirimuthugodage and Parakrama A. Samaratunga - Colombo: Institute of Policy Studies of Sri Lanka, 2016.

44 p. ; 30cm. - (Working paper series ; No. 24)

ISBN 978-955-8708-94-1

i. 338.17318095493 DDC 23

ii. Title

iii. Samaratunga, Parakrama A. (co.author)

iv. Series

1. Rice - Economic aspects - Sri Lanka



**Parakrama Samaratunga** was a Research Fellow and Head of Agricultural Economic Policy research at the IPS. Prior to joining the IPS in 2003, he served in the Department of Agriculture of Sri Lanka, first as an Agricultural Economist and later as the Director, Socio-Economics and Planning.

He received his BSc (Agriculture) with honours from the University of Peradeniya in Sri Lanka and went on to specialize in agricultural economics at post graduate level and earned his M.S from the University of the Philippines at Los Banos. He received his PhD in the field of Agricultural and Natural Resource Economics from La Trobe University in Melbourne, Australia.



**Dilani Hirimuthugodage** is an Economist by training, with research interests in agricultural economics, intellectual property rights, econometrics, and economic modelling.

She holds a BA in Economics with a Second Class (Upper) and Masters in Economics (Distinction Pass) from the University of Colombo. In addition she is a part qualified candidate of CIMA-UK.  
dilani@ips.lk

Please address orders to:  
Institute of Policy Studies of Sri Lanka  
100/20, Independence Avenue, Colombo 7, Sri Lanka  
Tel: +94 11 2143100 Fax: +94 11 2665065  
Email: [ips@ips.lk](mailto:ips@ips.lk)  
Website: [www.ips.lk](http://www.ips.lk)  
Blog 'Talking Economics': [www.ips.lk/talkingeconomics](http://www.ips.lk/talkingeconomics)  
Twitter: @TalkEconomicsSL  
Facebook: [www.facebook.com/instituteofpolicystudies](http://www.facebook.com/instituteofpolicystudies)



**INSTITUTE OF POLICY STUDIES OF SRI LANKA**

---

Working Paper Series

**No.**  
**24**

---

# **Intellectual Property Rights in Protecting New Plant Varieties and Farmers' Traditional Knowledge**

The Case of Rice in Sri Lanka

---

DILANI HIRIMUTHUGODAGE  
PARAKRAMA A. SAMARATUNGA

## IPS Publications

- Sri Lanka: State of the Economy 1998 (October 1998)
- A Strategy for Nature Tourism Management in Sri Lanka (November 1998)
- Effective Local Governance - The Foundation for a Functioning Democracy in Sri Lanka (May 1999)
- Labour Legislation and Female Employment in Sri Lanka's Manufacturing Sector (July 1999)
- Monitoring the 20/20 Compact on Budget and Aid Restructuring in Sri Lanka (August 1999)
- The Impact of Credit on Small & Medium - Scale Industries (SMIs) in Sri Lankas (September 1999)
- Sri Lanka: State of the Economy 1999 (October 1999)
- How Successful is Samurdhi's Savings and Credit Programme in Reaching the Poor in Sri Lanka? (November 1999)
- The Integrated Rural Development Programme in Sri Lanka: Lessons of Experience for Poverty Reduction (December 1999)
- The Economic Cost of the War in Sri Lanka (January 2000)
- Designing Retirement - Income - Security Arrangements: Theory, Issues and Application to Sri Lanka (February 2000)
- South Asia Economic Journal (March 2000)
- Policy Impact Analysis in Contemporary Sri Lanka (March 2000)
- Review of Literature Linking Macroeconomic Policies to Household Welfare in Sri Lanka (March 2000)
- Annotated Bibliography of Macroeconomic and Adjustment Policies in Sri Lanka (May 2000)
- Review of Poverty Related Data and Data Sources in Sri Lanka (May 2000-2001)
- A literature Survey of Macro Econometric and CGE Models in Sri Lanka (June 2000)
- Sri Lanka: State of the Economy 2000 (October 2000)
- Effectiveness of Welfare Programmes in Improving Estate Performance in Sri Lanka (December 2000)
- The Problems of Measuring Cost of Living in Sri Lanka (June 2000)
- An Economic and Environmental Analysis of Shrimp Farming Industry in Sri Lanka (September 2001)
- Sri Lanka: State of the Economy 2001 (October 2001)
- Regional Economic Cooperation in South Asia: A Sri Lanka Perspective (November 2001)
- The Implications of the Changing Role of Governance in Sri Lanka (December 2001)
- Policies and their Implications for the Domestic Agricultural Sector of Sri Lanka: 1995 - 2000 (August 2002)
- Sri Lanka Electricity Industry: Long Term Thermal Generation Fuel Options (September 2002)
- Irrigation and Agriculture in Sri Lanka (October 2002)
- Forward Contracts: A Market Based Alternative to Government Intervention in Agriculture Marketing in Sri Lanka (January 2003)
- The Delivery of General Education in Sri Lanka - An Alternate Approach (March 2003)
- Assessment of the Pension and Social Security Benefit Scheme for the Self-Employed Persons in Sri Lanka (August 2003)
- Assessment of the Farmers' and Fishermen's Pension and Social Security Benefit Scheme in Sri Lanka (August 2003)
- Assessment of the Employees' Provident Fund in Sri Lanka (August 2003)
- Cross Border Competition: Implications for Sri Lanka (December 2003)
- Ready Made Garment Industry in Sri Lanka: Facing the Global Challenge (June 2004)
- Liberalization of International Air Transport in Sri Lanka: Policy Options. (July 2004)
- Economic Policy in Sri Lanka: Issues & Debates - A Festschrift in Honour of Gamani Corea (September 2004)
- Sri Lanka: State of the Economy: 2004 (October 2004)
- Governance Issues in Poverty Reduction in Sri Lanka (October 2004)
- Identification of the Poor in Sri Lanka: Development of Composite Indicator and Regional Poverty Lines (December 2004)
- Phoenix from the Ashes? Economic Policy Challenges and Opportunities for Post-Tsunami Sri Lanka (April 2005)
- Sri Lanka's National Accounts (May 2005)
- Input Output Tables for Sri Lanka - 2000 (June 2005)
- Labour Standards and International Trade: The Case of EU GSP Concessions to Sri Lanka (July 2005)
- Regulatory Impact Assessment: A Tool for Better Regulatory Governance in Sri Lanka? (August 2005)
- Impact of Trade Liberalisation on Poverty and Household Welfare in Sri Lanka (September 2005)
- South Asia After the Quota System: Impact of the Mfa Phase-Out (October 2005)
- Decentralization and Provincial Finance in Sri Lanka: 2004 - An Update (November 2005)
- Sri Lanka National Health Accounts 2000-2002 (December 2005)
- Microfinance in Sri Lanka : A Household Level Analysis of Outreach and Impact on Poverty (December 2005)
- A Framework for Social Accounting Matrices (SAMS) of Sri Lanka (January 2006)
- Devolution Revisited: Towards A More Effective Devolutionary Polity (February 2006)
- Livelihoods in Post-Tsunami Sri Lanka: "Building Back Better"? (April 2006)
- Rural Land Sector in Sri Lanka: Major Characteristics, Determinants and Implications for Land Policy (May 2006)
- Utilization of Preferential Trade Arrangements: Sri Lanka's Experience with the EU and US GSP Schemes (January 2007)
- Beyond Twenty Million: Projecting the Population of Sri Lanka 2001-2081 (March 2007)
- Disaster Management Policy and Practice in Sri Lanka: Sharing Lessons among Government, Civil Society and Private Sector (April 2007)
- Population Ageing, Policy Responses and Options to External Retirement Coverage Case Study of Sri Lanka (May 2007)

- Sri Lanka: State of the Economy 2007 (September 2007)
- South Asia in the WTO (November 2007)
- Mahinda Chinthana: A Commentary on Policy Options (October 2007)
- Sri Lanka National Health Accounts 2003-2004 (July 2008)
- Trade, Innovation and Growth: The Case of Sri Lankan Textile and Clothing Industry (July 2008)
- Sri Lanka: State of the Economy 2008 (September 2008)
- Educational Opportunities for the Poor in Sri Lanka: Assessing Spatial Disparities (November 2008)
- Gaining Competitive Advantage through the Protection of Geographical Indications: An Analysis of the Tea, Sapphire and Cinnamon Industries of Sri Lanka (May 2009)
- Impact of Information Technology (IT) in Trade Facilitation on Small and Medium Enterprises (SMEs) in Sri Lanka (July 2009)
- Sri Lanka: State of the Economy 2009 (September 2009)
- International Migration Outlook – Sri Lanka, 2008 (October 2009)
- Ecotourism for Sustainable Forest Management in Sri Lanka (November 2009)
- Mainstreaming Climate Change for Sustainable Development in Sri Lanka: Towards A National Agenda for Action (December 2009)
- Targeting and Distribution of Post-Disaster Aid-A Case of the Fishery Sector in Post-Tsunami Sri Lanka (April 2010)
- Sri Lanka: State of the Economy 2010 (October 2010)
- Conservation vs. Conversion: Examining the Case of the Diyawanna Oya Wet Land Area in Sri Lanka (December 2010)
- Microinsurance in Sri Lanka: Combating Multiple and Overlapping Vulnerabilities (October 2011)
- Sri Lanka: State of the Economy 2011 (October 2011)
- Impact of Migration and Remittances on Investment in Agriculture and Food Security in Sri Lanka (February 2012)
- Sri Lanka National Health Accounts 2005–2009 (September 2012)
- Fostering Innovation to Fast-forward Growth in Sri Lanka (December 2012)
- Sri Lanka: State of The Economy 2012 (October 2012)
- Migration Profile-Sri Lanka (2013)
- Climate Change Issues in Sri Lanka (2013)
- Hand Book on the India- Sri Lanka Free Trade Agreement (2013)
- Incentivizing Foreign Investment in Sri Lanka and the Role of Tax Incentives (2013)
- Private Hospital Health Care Delivery in Sri Lanka : *Some Issues on Equity, Fairness and Regulation* (2013)
- Sri Lanka: State of The Economy 2013 (2013)
- State of the Sri Lankan Alcohol Industry and Analysis of Governing Policies (2013)
- Female Entrepreneurship and the Role of Business Development Services in Promoting Small and Medium Women Entrepreneurs in Sri Lanka (2014)
- Labour Migration in Sri Lanka: Select Annotated Bibliography (2004-2014) (2014)
- Sri Lanka: State of The Economy 2014 (October 2014)
- Female Employment for Inclusive Growth:Trends,Issues and Concerns of Female Labour Force Participation in Sri Lanka (2014)
- Sri Lankan Female Domestic Workers in the Middle East: Does Recruitment Through an Agent Minimize Vulnerability? (2014)
- Sri Lanka National Health Accounts 2010 - 2011 (2014)
- Can People in Sri Lanka's Estate Sector Break Away from Poor Nutrition: What Causes Malnutrition, and How it Can be Tackled (2014)
- Health Statistics 2013 (2014)
- Towards a Stronger, Dynamic and Inclusive South Asia (2014)
- Returning Home: Experiences & Challenges (2014)
- Repositioning in the Global Apparel Value Chain in the Post-MFA Era: Strategic Issues and Evidence from Sri Lanka (2014)
- Banking on SME Growth: Concepts, Challenges and Policy Options to Improve Access to Finance in Sri Lanka (2014)
- An Assessment of the Implementation of Guidelines in School Canteens: A Case Study from the Western Province of Sri Lanka (2015)
- Health and Socio-economic Determinants of Malnutrition in the Plantation Sector of Sri Lanka: A Review (2015)
- Transforming Health Care Delivery in Sri Lanka (2015)
- Sri Lanka: State of The Economy 2015 (October 2015)
- Climate Change Issues in Sri Lanka-Volume 2 (2016)
- Facilitating Trade between India and Sri Lanka (2016)
- Health Statistics 2014 (2016)
- Re-Defining Urban Areas in Sri Lanka (2016)
- Challenges For Free Health Care in a Neo-Liberal Economic Environment Sri Lanka Experience (2016)

# Table of Contents

---

LIST OF TABLES & LIST OF FIGURES	II
ACRONYMS	III
ACKNOWLEDGEMENT	IV
EXECUTIVE SUMMARY	V
<hr/>	
1. Introduction	01
2. Objectives of the Study	03
3. TRIPs Agreement and the Agriculture Sector	03
3.1 The TRIPs Agreement	04
3.2 Agriculture in the TRIPs Agreement	04
3.3 Traditional Knowledge of Farmers	05
3.4 Implementing Rules and Regulations Complying with TRIPs Agreement	06
4. Laws Relating to New Plant Varieties and Farmers' Traditional Knowledge in Sri Lanka	08
4.1 Intellectual Property Rights Act No. 36 of 2003	08
4.2 Fauna and Flora Protection Ordinance as amended by Fauna and Flora Protection (Amendment) Act No. 49 of 1993	09
4.3 Forest Ordinance as amended in 1995	09
4.4 Rubber Control Act / Tea Control Act	09
4.5 Plant Protection Act No. 35 of 1999	09
4.6 Seed Act No. 22 of 2003	10
4.7 UN Convention on Biological Diversity (CBD)	10
4.8 Proposed Act on New Plant Varieties 2011	10
5. Economics of Intellectual Property Rights	11
6. Research Methodology	13
6.1. Data Collection	13
6.2. Data Analysis	14
7. Results	16
7.1 The Importance of IPR System for Sri Lankan Agriculture	16
7.2 The Institutions Responsible in Preparing IPR Rules	16
7.3 Identifying the Main Stakeholder in Improving New Plant Varieties	16
7.4 Main Issues in Protecting New Plant Varieties and Farmers' Traditional Knowledge in Sri Lanka	16
7.5 Identified Issues and Existing Laws	18
7.6 Remedies and Responsible Institutes	19
8. Conclusions and Recommendations	22
Bibliography	24
Annexure	26

## List of Tables

Table 1: NVivo 10: Nodes and Coding References	19
Table 2: Matrix Analysis on Identified Issues and Existing Laws	20
Table 3: A Matrix on Issues, Remedies and Responsible Institutes	22

## List of Figures

Figure 1: Article 27 in the TRIPs Agreement	05
Figure 2: Research Methodology	13
Figure 3: Data Analysis Process	15
Figure 4: Importance of IPR System for Sri Lanka as Perceived by Different Stakeholders	16
Figure 5: Institutions Responsible for Making IPR Rules & Regulations	17
Figure 6: Main Stakeholders in Improving New Plant Varieties	17
Figure 7: Issues Faced by Sri Lanka in Protecting New Plant Varieties and Farmers' Traditional Knowledge	17
Figure 8: NVivo-10: A Tree Map	18
Figure 9: NVivo 10: Word Cloud as Illustrated in NVivo -10	21

**Acronyms**

CBD	Convention on Biological Diversity
CMS	Cytoplasmic Male Sterile
DNA	Deoxyribonucleic Acid
DoA	Department of Agriculture
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
IP	Intellectual Property
IPRO	Intellectual Property Rights Office
IPRs	Intellectual Property Rights
IPS	Institute of Policy Studies of Sri Lanka
KIIs	Key Informant Interviews
LST	Law and Society Trust
MNCs	Multi-National Companies
MoA	Ministry of Agriculture
PVPR	Plant Variety Protection Rights
R&D	Research and Development
TRIPs	Trade Related Intellectual Property Rights
WTO	World Trade Organization

# Acknowledgement

This report would not have been possible without the assistance, support and coordination of various individuals and institutions. Authors highly appreciate their valuable contributions and take this opportunity to thank them all.

A special gratitude goes to the National Science Foundation of Sri Lanka (NSF), for funding the study, and to Dr. P.R.M.P. Dilrukshi, Senior Scientific Officer of NSF for her support and guidance throughout. NSF Working Committee on "Science & Technology Policy Research" is very much acknowledged for reviewing the draft and providing comments to improve the report.

The publication of the study was made possible with the financial support from the Think Tank Initiative (TTI) of the International Development Research Centre (IDRC).

We also highly acknowledge the support given by the officials of the Department of Agriculture in the Central, North-Western and Southern Provinces and a special note of thanks goes to all the Agrarian Instructors in Dambadeniya, Ankumbura, Elpitiya and Benthara-Elpitiya for their support in coordinating the field work.

The authors are grateful to all stakeholders who participated in the expert consultation, focused group discussions, key informant interviews and perception survey for dedicating their valuable time and sharing their knowledge and experiences with us.

Project Officer, Ms. Nadeesha Rajawardena is acknowledged for her valuable contributions towards the study.

Authors further acknowledge with gratitude Dr. Saman Kelegama, Executive Director, Institute of Policy Studies of Sri Lanka (IPS), for his valuable support extended towards the success of this study and the publication. Research Committee of the IPS is also greatly acknowledged for reviewing and providing comments to improve the report.

We also would like to acknowledge the support extended by Mr. D. D. M. Waidyasekara for editing the report and also owe a special gratitude to the Publication Unit of the IPS for their valuable support in preparation of the publication.

Last but not the least, all the research and support staff members of the IPS, who helped us in various ways are also acknowledged with gratitude.

---

# Executive Summary

Sri Lanka is an agricultural country. In the face of growing scarcity of land, water and emerging challenges of climate change, productivity gain in agriculture is the option available to increase agricultural output in the country. Productivity improvement should be achieved by introducing new technology generated through sustained investments. A well-established Intellectual Property Rights (IPRs) system will help to encourage innovations, technology transfers, product development, development of new plant varieties, etc.

Being a signatory to the Trade Related Intellectual Property Rights (TRIPs) agreement, by 2006 it was compulsory for Sri Lanka to formulate its Intellectual Property (IP) regulations to comply with the TRIPs agreement and to provide legal protection to new plant varieties via patents or by an effective sui generis system or by both. Although Sri Lanka passed its Intellectual Property Rights Act in 2003 to comply with the TRIPs agreement, it does not allow patenting of plants. Due to the inability of securing necessary protection, the Sri Lankan agricultural sector had to face several difficulties in international trade and it has also lost a number of opportunities to use its own plant varieties for the benefit of future generations. Further, several cases of bio-piracy and loss of patentability of new plant varieties were encountered due to the lack of an effective IPRs system.

Presently, Sri Lanka produces almost all its seed paddy requirements. Majority of farmers (nearly 90 per cent) use seeds paddy produced by themselves from their previous crops or borrowed from neighbouring farmers. Thus, it is imperative to protect their inventions and knowledge in a systematic manner, too. As of date, Sri Lanka does not have a proper system to protect farmers' traditional knowledge.

The objectives of this study are to identify the best possible protection method for new plant varieties and farmers' traditional knowledge in Sri Lanka, focusing mainly on the seed paddy sector. Further, to propose feasible techniques and methods to enhance productivity and investments in the agriculture sector by implementing a strong intellectual property rights system.

To achieve the said objectives, the methodology of the study consisted of literature survey, key informant interviews based on guidelines, perception survey using a semi-structured questionnaire, focus group discussions with traditional farmers and an expert consultation workshop with main stakeholders in the field. The expert consultation workshop helped to triangulate study findings from the perception survey and field survey. Preliminary findings were presented to the expert consultation workshop before finalizing the report.

The study identified several issues in protecting new plant varieties and farmers' traditional knowledge faced by Sri Lankan plant breeders such as: lack of plant breeders interest in new innovations, no legal framework to get ownership, lack of incentives for plant breeders, no reward system for breeders etc. Furthermore, exchanging genetic resources is difficult with other countries as Sri Lanka does not have a proper system to exchange genetic resources with other countries. Presently, Sri Lanka does not develop a Deoxyribonucleic Acid (DNA) bar coding system to confirm the genetic identity of varieties. In terms of farmer's traditional knowledge Sri Lanka still does not have any documents or a registry like India or Thailand which maintain records on traditional knowledge.

The study also found that considering the country's economy, agricultural patterns, farming systems and the existing intellectual property laws, the sui generis system which is proposed in the TRIPs agreement, as the most appropriate protection method for Sri Lankan new plant varieties. In addition, the study identified the need of a separate institute to monitor and document the existing knowledge of farmers as well as the need of a separate committee to protect farmer's traditional knowledge. Furthermore, the importance of implementing the new draft law on 'Protection of New Plant Varieties Act' was also highlighted.

# කාරක මණ්ඩල සාරාංශය

ශ්‍රී ලංකාව අනාදිමත් කලක සිටම කෘෂිකාර්මික රාජ්‍යයකි. ඉඩම්, ජලය නිගනාවය ඉහළ යාම සහ දේශගුණ වෙනස්වීම් අභියෝග මතු වී ඒම වැනි අභියෝග හමුවේ කෘෂිකර්මාන්තයෙහි ඵලදායිතාවය ඉහළ නැංවීම රටේ කෘෂි අස්වනු ඉහළ නැංවීම සඳහා අත්‍යවශ්‍යයෙන්ම කළ යුතුව පවතින්නකි. කෘෂිකාර්මික ඵලදායිතා වර්ධනය සඳහා නිරසාර ආයෝජන හරහා නව්‍ය තාක්ෂණ හඳුන්වාදීම සිදු කළ යුතු වීම අවශ්‍යම සාධකයකි. නව්‍යකරණය, තාක්ෂණ හුවමාරුව, නිපැයුම් සංවර්ධනය, නව බේට වර්ග නිර්මාණය ආදිය සඳහා අවශ්‍ය අනුබලය ලබාදීම සඳහා මනාව ස්ථාපනය කරන ලද බුද්ධිමය දේපොළ ගිණිකම් රාමුව (IPR) මගින් සහයෝගය ලැබේ.

2003 වර්ෂයේදී වෙළෙඳුම් ආශ්‍රිත බුද්ධිමය දේපොළ ගිණිකම් (TRIPs) ගිවිසුමට අත්සන් තැබූ රාජ්‍යයක් වශයෙන් ශ්‍රී ලංකාව අතිවාර්ධනයෙන් බුද්ධිමය දේපොළ රෙගුලාසි ක්‍රියාවට නැංවීම සඳහා බැඳී සිටී. ජේටන්ටි බලපත්‍ර හරහා නව පැළෑටි වර්ග සහ ඵලදායි ස්වභාවික පද්ධතිය හෝ දෙකම සඳහා නීතිමය ආරක්ෂාවක් ගිණි වේ. නමුත් ශ්‍රී ලංකාව 2003 වර්ෂයේදී TRIPs ගිවිසුමට අනුකූලව සිය බුද්ධිමය දේපොළ ගිණිකම් පනත සම්මත කළ අතර එමගින් පැළෑටි සඳහා ජේටන්ටි ලබාදීමට අවසර දීමක් සිදු නොවේ. අවශ්‍ය වන සුරක්ෂිතතාවය පවත්වාගැනීමේ නොහැකියාව නිසා ශ්‍රී ලාංකික කෘෂිකර්මාන්තය ජාත්‍යන්තර වෙළෙඳාමේදී විවිධ දුෂ්කරතාවයන්ට මුහුණ පාන අතර අනාගත පරපුරේ ප්‍රයෝජනය සඳහා යොදාගත හැකි සිය ගිණිකාරත්වය යටතේ පවතින පැළෑටි වර්ග භාවිතය සඳහා අවස්ථා රාශියක්ම අහිමි කරගැනීමටද සිදුව තිබේ. තවද ඵලදායි IPR රාමුවක් නොමැති වීම නිසා ජෛව විවිධත්ව කොල්ලකෑම් සහ නව පැළෑටි වර්ග කිහිපයකම ජේටන්ටි ගිණිකාරත්වය අහිමිවීම වැනි සිදුවීම් රාශියක් වාර්තා වී තිබේ.

අද වන විට ශ්‍රී ලංකාව සිය බිත්තර වී අවශ්‍යතාවය බොහෝ දුරට තමන්

විසින්ම සම්පූර්ණ කර ගනී. ගොවීන්ගෙන් බහුතරයක් (සියයට අනුවක් පමණ) තම බිත්තර වී අවශ්‍යතාවය ඔවුන්ගේ පෙර කන්නයේ අස්වනුවලින් හෝ අසල්වැසි ගොවීන්ගෙන් ලබා ගැනීම සිදු කරති. එම නිසා ඔවුන්ගේ නිපැයුම් සහ දැනුම විධිමත් ලෙස ආරක්ෂා කරගැනීම අත්‍යවශ්‍ය කරුණකි. මේ වන විට ශ්‍රී ලාංකික ගොවීන්ගේ සම්ප්‍රදායික දැනුම රැකගැනීම සඳහා විධිමත් ක්‍රියාමාර්ග අනුගමනය කිරීමක් දැක ගත නොහැක.

මෙම අධ්‍යයනයෙහි අරමුණ වන්නේ වී වගා ක්ෂේත්‍රය කෙරෙහි මූලික අවධානයක් යොමු කරමින් නව පැළෑටි වර්ග සහ ශ්‍රී ලංකාවේ ගොවීන් සතු පාරම්පරික දැනුම සඳහා විශිෂ්ට ආරක්ෂණ ක්‍රමවේදයක් හඳුනාගැනීමයි. තවද ඵලදායිතාවය ඉහළ නැංවීම සඳහා භාවිතා කළ හැකි තාක්ෂණයන් සහ ක්‍රමෝපායන් යෝජනා කිරීම සහ සවිමත් බුද්ධිමය දේපොළ ගිණිකම් රාමුවක් ක්‍රියාත්මක කරමින් කෘෂිකර්ම ක්ෂේත්‍රයෙහි ආයෝජන සිදුකිරීමද අපේක්ෂිතය.

ඉහත කී අරමුණු සාක්ෂාත් කරගැනීම සඳහා වන අධ්‍යයන ක්‍රමවේදයට විද්වත් සමීක්ෂණ, මාර්ගෝපදේශන අනුව ප්‍රධාන තොරතුරු ලබා දෙන්නන්ගේ සම්මුඛ සාකච්ඡා, අර්ධ ආකෘතිගත ප්‍රශ්නාවලි උපයෝගී කරගනිමින් සිදුකරන අවබෝධතා සමීක්ෂණ, සම්ප්‍රදායික ගොවීන් සමග සිදුකරන ඉලක්කගත කණ්ඩායම් සාකච්ඡා සහ ක්ෂේත්‍රයේ ප්‍රමුඛ සහයෝගීතාකරුවන් සම්බන්ධ කරගෙන සිදුකරන ප්‍රවීණයින්ගේ උපදේශන වැඩමුළු ආදිය අන්තර්ගත වේ. ප්‍රවීණයින්ගේ උපදේශන වැඩමුළුව විද්වත් සමීක්ෂණ සහ ක්ෂේත්‍ර සමීක්ෂණවලින් සොයාගත් දෑ ත්‍රිකෝණාධාර මිණුමක් සඳහා උපකාරී වේ. වාර්තාව අවසන් කිරීමට පෙර මූලික සොයාගැනීම් ප්‍රවීණයින්ගේ උපදේශන වැඩමුළුවට ඉදිරිපත් කෙරේ.

ශ්‍රී ලාංකීය බීජ අභිජනනකරුවන් මුහුණ දෙන නව පැළෑටි වර්ග ආරක්ෂා කරගැනීම සහ ගොවීන්ගේ පාරම්පරික දැනුම සම්බන්ධ ගැටළු කිහිපයක් මෙම

අධ්‍යයනය මගින් හඳුනාගන්නා ලදී. බීජ අභිජනනකරුවන් නව්‍යකරණයන් සඳහා උනන්දු නොවීම, ගිණිකාරත්වය ලබා ගැනීමට නෛතික රාමුවක් නොතිබීම, බීජ අභිජනනකරුවන් සඳහා දිරිගැන්වීම් නොමැතිවීම, අභිජනනකරුවන් ඇගයීමේ ක්‍රමවේදයක් නොතිබීම ඒවා අතර ප්‍රධාන වේ. එපමණක් නොව වෙනත් රටවල් සමග ජාන සම්පත් හුවමාරු කරගැනීමේ නිසි ක්‍රමවේදයක් ශ්‍රී ලංකාව සතූ නොවීම නිසා තවත් අසීරුතා උද්ගත වීම වැලැක්විය නොහැක. විවිධ පැළෑටි වර්ගයන්හි ජානමය අනන්‍යතාවය සනාථ කරගැනීම සඳහා ඩීඔක්සිකරණ අම්ල (DNA) නිරූ සංබේත ක්‍රමවේදයක් ශ්‍රී ලංකාවේ සංවර්ධනය කිරීමක් සිදු නොවේ. සම්ප්‍රදායික දැනුම පිළිබඳව වාර්තා පවත්වා ගනු ලබන ඉන්දියාව හෝ තායිලන්තය මෙන් අප ගොවීන්ගේ සම්ප්‍රදායික දැනුම තවමත් කිසිදු වාර්තාගත කිරීමක් හෝ ලේඛනගත කිරීමක් සිදුකර නොමැත.

රටේ ආර්ථික තත්ත්වය, කෘෂිකාර්මික ආදර්ශ වගා ක්‍රමවේද සහ පවත්නා බුද්ධිමය දේපොළ නීති පිළිබඳව සලකා බලමින් TRIPs ගිවිසුමෙන් යෝජිත ස්වභාවික පද්ධතිය ශ්‍රී ලාංකීය නව පැළෑටි වර්ග සඳහා වඩාත් උචිත ආරක්ෂණ ක්‍රමවේදය බව අධ්‍යයනය හරහා සොයා ගැනීමට හැකියාව ලැබිණි. ඊට අමතරව ගොවීන්ගේ දැනුම නියාමනය සහ ලේඛන ගත කිරීම සඳහා වෙනම ආයතනික ව්‍යුහයක අවශ්‍යතාවය මෙන්ම ගොවීන්ගේ සම්ප්‍රදායික දැනුම ආරක්ෂා කිරීම සඳහා වෙනම කමිටුවක අවශ්‍යතාවයද මෙම අධ්‍යයනය හරහා හඳුනා ගැනිණි. තවද, 'නව පැළෑටි වර්ග ආරක්ෂා කිරීමේ පනත' නීතියක් බවට පත්කිරීම සඳහා කෙටුම්පත් කිරීමේ වැදගත්කමද ඉස්මතු කරනු ලැබිණි.

# நிறைவேற்றுச் சுருக்கம்

இலங்கை ஒரு விவசாய நாடாகும். நிலப் பற்றாக்குறை நிலைமையின் கீழ், நீர் மற்றும் காலநிலை மாற்றத்தின் அதிகரித்து வரும் சவால்களுக்கு மத்தியில், இலங்கையில் விவசாய உற்பத்தியை அதிகரிப்பதற்குக் காணப்படும் தெரிவொன்றாக விவசாயத்தில் உற்பத்தித்திறன் காணப்படுகின்றது. நிலைபெறுதகு முதலீடுகளின் ஊடாக உருவாக்கப்பட்ட புதிய தொழில்நுட்பத்தினால் உற்பத்தித்திறன் முன்னேற்றம் அடையப்பெறுதல் வேண்டும். புத்தாக்கங்கள், தொழில்நுட்ப பரிமாற்றங்கள், உற்பத்தி அபிவிருத்தி, புதிய பொறித்தொகுதி பல்வகைமைகள் போன்றவற்றின் அபிவிருத்தி முதலியவற்றுக்கு ஊக்கமளிப்பதற்கு நன்கு உதாபிக்கப்பட்ட புலமைச்சொத்து உரிமைகள் முறைமை (IPRs) உதவி புரியும்.

வர்த்தகத்துடன் தொடர்புடைய புலமைச் சொத்து உரிமைகள் உடன்படிக்கையில் (TRIPs) கையொப்பமிட்டவர் என்ற வகையில், 2006 ஆம் ஆண்டளவில், வர்த்தகத்துடன் தொடர்புடைய புலமைச் சொத்து உரிமைகள் உடன்படிக்கையுடன் ஒத்துப் இணங்கும் வகையில் இலங்கை தனது புலமைச் சொத்து ஒழுங்குவிதிகளை உருவாக்குதல் மிக முக்கியமாக இருந்ததுடன் அத்தோடு ஆக்கவுரிமை அல்லது வினைத்திறனான சுய ஜெனரிஸ் முறைமை அல்லது இரண்டின் ஊடாகவும் புதிய பொறித்தொகுதி வகைகளுக்கு சட்டப்பாதுகாப்பை வழங்குதலும் வேண்டும். வர்த்தகத்துடன் தொடர்புடைய புலமைச் சொத்து உரிமைகள் உடன்படிக்கைக்கு (TRIPs) இணங்க 2003 ஆம் ஆண்டில் புலமைச் சொத்துக்கள் பாதுகாப்பு உடன்படிக்கையை இலங்கை நிறைவேற்றிய அதே வேளை, தாவரங்களை ஆக்கவுரிமைப்படுத்துவதற்கு அவ்வுடன்படிக்கை அனுமதிப்பதில்லை. தேவையான பாதுகாப்பை அடைந்து கொள்வதற்கு இயலாமையின் காரணமாக, சர்வதேச வியாபாரத்தில் பல்வேறுபட்ட சிக்கல்களுக்கு இலங்கையின் விவசாயத்துறை முகங்கொடுக்க வேண்டி ஏற்பட்டது அத்தோடு எதிர்கால சந்ததியினர்களுக்கான எமது சொந்த தாவரங்களின் பல்வேறுபட்ட பலன்களை பயன்படுத்திக் கொள்வதற்கான வாய்ப்பினை நாம் இழந்துள்ளோம். மேலும், வினைத்திறனான வர்த்தகத்துடன் தொடர்புடைய புலமைச் சொத்து உரிமைகள் உடன்படிக்கையில் (TRIPs) முறைமையின் குறைபாடு காரணமாக உயிரியல் கடத்தல்கள் தொடர்பான பல வழக்குகள் மற்றும் புதிய தாவர வகைகளின் ஆக்கவுரிமை இழக்கப்பட்டன.

தற்பொழுது, இலங்கையின் விதை நெல் தேவையினை முழுமையாக இலங்கையில் உற்பத்தி செய்து கொள்கின்றது. பெரும்பாலான விவசாயிகள் (அதாவது 90 சதவீதமான விவசாயிகள்) தமக்குத் தேவையான விதை நெல் தேவையினை தமது முன்னைய போக அல்லது முன்னைய வருட தானியங்களிலிருந்து அல்லது தமது அயலவர்களிடமிருந்து பெற்றுப் பயன்படுத்திக் கொள்கின்றனர். இருந்த போதும், விவசாயிகளுடைய புத்தாக்கங்கள் மற்றும் அறிவினை ஒழுங்கு முறையில் பாதுகாத்துக் கொள்வது அத்தியவசியமாக உள்ளது. இன்று வரை, விவசாயிகளின் பாரம்பரிய அறிவினை பாதுகாத்துக் கொள்வதற்கான சிறந்த முறையையொன்றினை இலங்கை கடைப்பிடிக்கவில்லை.

விதை நெல் சார் துறை தொடர்பாக பிரதானமாக கவனம் செலுத்தி இலங்கையில் விவசாயிகளின் பாரம்பரிய அறிவு மற்றும் பல்வேறுபட்ட புதிய தாவரங்களினைப் பாதுகாப்பதற்கான மிகச் சிறந்ததும் சாத்தியமானதுமான முறையொன்றை இனங்கண்டு கொள்ளல் இந்த ஆய்வின் குறிக்கோள்களாக உள்ளன. மேலும், வலுவானதொரு புலமைச் சொத்துக்களின் உரிமைகள் முறைமையினை அமுல்படுத்துவதன் ஊடாக விவசாயத்துறையில் உற்பத்தித் திறன் மற்றும் முதலீட்டை மேம்படுத்துவதற்கான முறைமை மற்றும் சாத்தியமான நுட்பங்களை முன்மொழிவதும் இதன் குறிக்கோள்களாக உள்ளன.

மேலே குறிப்பிட்ட குறிக்கோள்களை அடைந்து கொள்ளும் பொருட்டு, விவசாயத்துறையில் பிரதானமாக அக்கறை காட்டுனர்களை உள்ளடக்கிய துறைசார் அறிஞர்களின் ஆலோசனை செயலமர்வுகள், பாரம்பரிய விவசாயிகளுடனான இலக்குக் குழு கலந்துரையாடல்கள், பகுதியளவில் கட்டமைப்புச் செய்யப்பட்ட வினாக் கொத்துக்களைப் பயன்படுத்திய நோக்கு ஆய்வு, வழிகாட்டல்களை அடிப்படையாகக் கொண்ட பிரதான தகவல் அறிதல் நேர்காணல்கள், ஆய்வுக் கற்கை முறைகளினை இந்த முறைமை உள்ளடக்குகின்றது. மனோபாவ ஆய்வு மற்றும் கள ஆய்வு போன்றவற்றின் ஊடாக இனங்கண்டு கொண்ட ஆய்வுகளை பரிமாறிக் கொள்வதற்கு இந்த துறைசார் அறிஞர்களின் ஆலோசனை செயலமர்வு உதவி புரிந்தது.

புதிய புத்தாக்கங்களை மேற்கொள்வதில் விதைத் நாற்றுக்களை உருவாக்குனர்களின் ஆர்வக் குறைவு, ஆக்கவுரிமையினை

பெற்றுக் கொள்வதற்கான சட்டரீதியான வேலைச் சட்டகமின்மை, நாற்றுத் தாவர ஆக்குனர்களுக்கான குறைந்த ஊக்கமளித்தல்கள், நாற்று உருவாக்குனர்களுக்கான விருது வழங்கல்கள் இன்மை முதலியன போன்றன இலங்கையில் உள்ள நாற்றுத் தாவர ஆக்குனர்கள் விவசாயிகளின் பாரம்பரிய அறிவு தொடர்பில் மற்றும் புதிய நாற்றுத் தாவர வகைகளை பாதுகாப்பதில் அடையாளம் காணப்பட்ட பல பிரச்சினைகளாகும். மேலும், ஏனைய நாடுகளுடன் தாவர இழை வளங்களை பரிமாற்றிக் கொள்வதில் பொருத்தமான முறையிலொன்றினை கொண்டிருக்காமையினால் இலங்கை போன்ற ஏனைய நாடுகளுடன் தாவர இழைய வளங்களின் பரிமாற்றமானது கடினமாக உள்ளது. தற்பொழுது, பல்வேறுபட்ட தாவர இனங்களினை இழைய இனங்காணலினை உறுதிப்படுத்திக் கொள்வதற்கு குறியீட்டு முறையொன்றை (Deoxyribonucleic Acid (DNA)) இலங்கை அபிவிருத்தி செய்வதில்லை. விவசாயிகளின் பாரம்பரிய அறிவின் பார்வையில், பாரம்பரிய அறிவு தொடர்பாக இந்தியா மற்றும் தாய்லாந்து போன்ற நாடுகள் பேணுகின்ற தரவுத்தளம் போன்ற தரவுப் பதிவொன்று அல்லது ஆவணமொன்று எங்களிடம் இன்னும் இல்லை.

இங்கையின் பொருளாதாரத்தினை கவனத்திற் கொண்டு ஆய்வு செய்து பார்க்கின்ற போது, வர்த்தகத்துடன் தொடர்புடைய புலமைச் சொத்து உரிமைகள் உடன்படிக்கையில் (TRIPs) முன்மொழியப்பட்டிருக்கின்ற விவசாய முறைமைகள், பயிரிடல் முறைமைகள் மற்றும் தற்பொழுதுள்ள புலமைச் சொத்துச் சட்டங்கள், இழைய வகைகளின் முறைமை போன்றன இலங்கையின் புதிய தாவரங்கள் பாதுகாப்பு தொடர்பான மிகப் பொருத்தமான பாதுகாப்பு முறைகளாக உள்ளன. மேலும், விவசாயிகளின் தற்பொழுதுள்ள அறிவை ஆவணப்படுத்துவதற்கும் கண்காணிப்புச் செய்வதற்கும் தனியானதொரு நிறுவனமொன்றின் தேவை மற்றும்ல்லாது விவசாயிகளின் பாரம்பரிய அறிவினை பாதுகாத்துக் கொள்வதற்கு தனியானதொரு குழுவின் தேவையும் இனங்காணப்பட்டுள்ளது. மேலும், “புதிய தாவரங்களின் வகைகளைப் பாதுகாத்தல் சட்டம்” தொடர்பில் புதிய சட்ட வரைவொன்றினை அமுல்படுத்துவதன் முக்கியத்தும் வெகுவாக அழுத்திக் கூறப்பட்டுள்ளது.

# 1. Introduction

Agriculture sector in Sri Lanka contributes nearly 11 per cent of the country's Gross Domestic Product (GDP) (Central Bank of Sri Lanka, 2013). Nearly 31 per cent of the employed population is engaged in agricultural activities. It is important to note that Sri Lanka is self-sufficient in rice since 2005. The self-sufficiency ratio of rice in 2010 was 113.91 per cent (Department of Census and Statistics, 2010).

Until the 1950s, the Sri Lankan paddy sector has used traditional rice varieties and traditional methods for cultivation, processing, and has used the 'kem system'<sup>1</sup> to control pest diseases. Thereafter, with the increasing population and scarcity of land, the Ministry and the Department of Agriculture has introduced new technology to increase rice productivity after the 1950s. During this period, pure line selection was considered as the most appropriate method for the improvement of rice (Abeysewardena, 2001). The Department of Agriculture has introduced new technology to varietal development, new fertilizer, etc. The main objective of introducing new varieties was to increase yield, improve pest and disease resistance, improve grain quality, etc. During the 1950s, several varieties from other countries too were introduced. For example; 'Ptb 16' from India, 'Mas', 'Remadja' and 'Sigadis' from Indonesia, etc. However, these introductions

were not successful due to long age characteristics and susceptibility to rice disease (Abeysewardena, 2001).

Hybrid rice research was initiated in the late 1970s in Sri Lanka. At the initial stage, Sri Lanka tested several rice hybrids introduced from China. However, there was not any progress due to poor adaptability. Thereafter, Sri Lanka started to develop its own hybrids using Cytoplasmic Male Sterile (CMS) lines introduced from China (Abeysewardena, 2005). The investment in agricultural research had an upward trend during the green revolution starting around the 1970s. However, investment started declining in 1977 and continued on the negative trend thereafter (Samaratunga, 2011). However, most of the government investments were allocated to the rice sector, especially for rice varietal improvement, technology development, farmer awareness programme, etc.

Sri Lankan farmers mainly used two types of rice seeds. A majority of farmers (nearly 90 per cent) use rice seed produced by themselves from their previous crop or borrow from neighbouring farmers. Farmers are aware of the importance of good quality seed for high productivity, thus, they try their best to obtain quality seeds. However, it is not practical to get seed from the formal sector always (Weerasena, 2003). According to the National

Seed Policy Act 1996, the private sector has also got involved in seed production and marketing. However, mainly with regard to the rice sector, the government and farmers are involved in rice seed producing. There are nearly 800 farmers engaged in rice seed production. A majority of farmers had been contract seed growers of the Department of Agriculture (DoA) in the past. As such, they possess the technical know-how to produce quality seed and are recognized as good seed producers at the village level. Practices followed by farmers and the plant varieties that they have used over several years have generated a wide range of cultivated plants. These farming practices specialize the knowledge of farmers in several areas, especially knowledge of science in soil, rotation and mixing of crops, methods of sowing, watering, reaping, saving seeds for future use, etc. Therefore, their knowledge of science in farming is also recognized as an important element in agriculture as much as their labour. This knowledge is a property of the farmers (Farmers' Rights, n.d.).

In most of the developing countries like Sri Lanka, agricultural development is primarily based on different crop varieties grown by farmers (Sahai, 2000). With the process of privatization, many developed countries and some of the large companies thrive to control

<sup>1</sup> It is similar to an integrated pest management system which uses traditional knowledge of farmers.

natural resources and the knowledge associated with farmers for commercial purposes. They attempted to get private ownership over natural resources by obtaining patents on their own. Biological resources have not been registered or documented in most of the developing countries such as Sri Lanka. Thus, some Global Multi-National Companies (MNCs) have engaged in bio-piracy of vital genetic resources and associated traditional knowledge found in the developing countries with the aim of obtaining patent rights for them in their own countries. In this process, the developing countries are at a risk of losing their own genetic resources and farmers' associated traditional knowledge which actually belongs to them (Regine, 2007).

In the recent past, Sri Lanka too had to face many cases of bio-piracy and loss of patents of indigenous knowledge. The well known and quoted example is the 'case of Kothalahibutu (*Salacia reticulata*)', which clearly highlights the exploitation of wild varieties in Sri Lanka. It also includes, the misuse of traditional knowledge on producing drugs using Kothalahibutu wood. All patent rights have been granted to Japan. The patent granted to the Japanese company prevents future generations of Sri Lankans from using and producing similar drugs in Sri Lanka (Law and Society Trust, 2007). Similarly, patent licences have also been obtained by different companies in other countries for Snake Gourd (*Trichosanthes kirilowii*),

Bitter Gourd (*Momordica charantia*), Kekatiya (*Aponogeton crispus*) etc. (Gunewardena, 2006).

Most of the developing countries including Sri Lanka have faced several difficulties in protecting their new plant varieties and farmers' traditional knowledge from the developed world, mainly due to lack of strong rules and regulations. Hence, the need for universally accepted rules and regulations to protect new plant varieties and farmers' traditional knowledge has strongly been felt. Presently, Sri Lanka has some rules and regulations to protect plant and animal varieties. Most of these Acts and Ordinances<sup>2</sup> provide physical protection for natural resources and there are no specific laws relating to new plant varieties and farmers' traditional knowledge. Most of these laws were passed many decades ago. More recently, Sri Lanka has ratified international conventions<sup>3</sup> regarding plant varieties and farmers' rights.

One of the main highlights of the Uruguay Round negotiations was the establishment of the World Trade Organization (WTO). WTO was the first international organization which provided necessary recognition to Intellectual Property Rights. The agreement on Trade Related Aspects of Intellectual Property Rights is the most comprehensive international instrument ever negotiated on intellectual property rights. It establishes minimum universal standards regarding patents,

copyrights, trademarks, industrial designs, geographical indications, integrated circuits and undisclosed information (trade secrets). It further supplements by providing additional obligations to the previously established Paris, Berne, Rome and Washington conventions<sup>4</sup> in their respective fields.

Being a member of the WTO, the Sri Lankan intellectual property rights regime has to be in conformity with the TRIPs agreement. It allows member countries to grant patent protection to micro-organisms, non-biological and microbiological processes and to provide protection for new plant varieties, either by patent or an effective sui generis system or a combination thereof (Article 27, TRIPs agreement).

Sri Lanka passed its Intellectual Property Act No.36 in 2003 to comply with the TRIPs agreement. However, this Act does not have a direct bearing on biodiversity as it does not allow patenting of new plant varieties. In 2000 Sri Lanka drafted an Act for the protection of new plant varieties and in 2011, the Ministry of Agriculture together with the Intellectual Property Rights Office has drafted an Act on 'Protection of New Plant Varieties'. However, these draft Acts are not yet passed.

IPRs have been well formulated and well applied in developed countries than in developing countries<sup>5</sup>. Sri Lanka is also lagging far behind the other

<sup>2</sup> For example: The Fauna and Flora Protection Ordinance, the Forest Ordinance as amended in 1995, the Plant Protection Act No. 35 of 1999 etc.

<sup>3</sup> UN Convention on Biological Diversity (CBD) etc.

<sup>4</sup> Prior to TRIPs, the Paris Convention for the protection of industrial property and the Berne Convention for the protection of literary and artistic work set down the initial foundations for a multilateral framework of an international intellectual property rights regime.

<sup>5</sup> [http://www.sawtee.org/pdf/IPRs%20in%20Agriculture\\_FR%20Nepal2008.pdf](http://www.sawtee.org/pdf/IPRs%20in%20Agriculture_FR%20Nepal2008.pdf)

countries in formulating and implementing property rights pertaining to the agricultural sector, especially on new plant varieties and farmers' traditional knowledge. Therefore, the agricultural sector in Sri Lanka is vulnerable to outside exploitation because of its inability to provide necessary protection for new plant varieties and farmers' traditional knowledge. Hence, having sufficient rules and

regulations to protect new plant varieties and farmers' traditional knowledge is a strongly felt need at present.

Section 2 of the report discusses objectives of the research and Section 3 gives a comprehensive analysis of the main elements of the research topic on the TRIPs agreement, TRIPs and agriculture sector, farmers' traditional knowledge etc. Section 4 covers

existing laws and regulations with regard to the new plant varieties and farmers' traditional knowledge in Sri Lanka. Section 5 explains the conceptual framework of the study while the methodology used in the study is explained in Section 6. Section 7 provides data analysis and finally, Section 8 delivers conclusions and policy recommendations.

## 2. Objectives of the Study

The main objectives of this research study are to identify the best suitable protection method for Sri Lankan agriculture, especially for new plant varieties and farmers' traditional knowledge, focusing on the rice seed sector, and also to propose feasible techniques and methods to enhance the productivity of the sector by implementing a strong IPR system.

The study has identified specific objectives as follows;

- Identifying issues, existing policies and policy gaps relating to IPRs in agriculture
- Evaluate the effectiveness of the present policy framework
- Evaluate the present legal and institutional system relating to new plant varieties and farmers' traditional knowledge.

This will reveal policy gaps, or particular issues and problems that are left without being addressed by the existing policy. The results of this analysis on policies will synthesize accordingly in order to evaluate their effective contribution to the protection of new plant varieties and farmers' traditional knowledge.

## 3. TRIPs Agreement and the Agriculture Sector

The objective of this Section is to provide an understanding on the previous studies carried out in relation to the TRIPs agreement, new plant varieties, and farmers' traditional knowledge. It focuses on allied research studies carried out in developing countries which are members of WTO. Reviewing literature of theoretical background and previous studies relating to the subject helped in formulating the methodology of the study.

This Section consists of two sub-themes namely;

- (i) literature relating to IPRs and new plant varieties, and
- (ii) literature on farmers' traditional knowledge.

Further, it provides a critical evaluation of the available literature under three sub-headings;

- (i) literature which support the TRIPs agreement,

- (ii) literature which oppose the TRIPs protection, and
- (iii) literature which provides alternative solutions in protecting new plant varieties and farmers' traditional knowledge.

### 3.1 The TRIPs Agreement

The TRIPs Agreement is an international agreement which has introduced minimum standards for many forms of Intellectual Property regulations. The TRIPs agreement has constituted Annexure 1C of the Marrakesh Agreement, which established the WTO (World Trade Organization, n.d.).

Intellectual property rights can be described as the right to property which is an outcome of intellectual creativity, in the industrial, scientific, literary and artistic fields. Seven categories of intellectual properties are protected by the TRIPs agreement. They are: copyrights, geographical indications, industrial designs, patents, new plant varieties, trademarks and undisclosed or confidential information (World Trade Organization, n.d.). The TRIPs agreement introduced intellectual property law into the international trading system for the first time and remains the most comprehensive international agreement on intellectual property as at date (Correa, 2000).

The TRIPs agreement also includes all major international conventions and treaties on IPRs. For example: the Berne Convention for the Protection of Literary and Artistic Works (1971); the Paris Convention (1967) for the Protection of Industrial Property; the Rome Convention (1961) and the International Convention for the Protection of Integrated Circuits (Panagariya, 1999).

According to Article 65 of the TRIPs agreement, WTO members must ensure that their laws comply with the minimum



standards laid down in the TRIPs agreement. Developed countries had to implement TRIPs within one year of implementation of the agreement on 1st January 1995, whereas, developing countries had a grace period of four years, i.e., by 1 January 2000 which was later extended to 2006, and least developed countries have a 10 year transition period which could be extended for a further period (Article 66.1 of the TRIPs Agreement). Countries can enforce IPR rules and regulations through civil and administrative procedures or criminal procedures in their respective jurisdictions (World Trade Organization, n.d.).

### 3.2 Agriculture in the TRIPs Agreement

The most important section in the TRIPs agreement with regard to the agricultural sector is described in Section 5. The Article 27 is the main article on agriculture (Figure 1).

The Act provides for two types of protection for new plant varieties; patents and sui generis system. A patent is a legal document which gives the inventor the right to prevent others from manufacturing, using, selling or importing the invention without his permission. Apart from all the intellectual properties granted by TRIPs, the patent can be regarded as the one which has the greatest potential to affect agriculture in the developing world (Weston, 2003).

A sui generis (of its own) system of protection is a special system adapted to a particular subject matter, as opposed to protection provided by the patents. It is a mild or soft form of a patent and it provides a framework of plant breeder's rights through which protection is given to the breeders, researchers, and farmers with regard to the use and exchange of seeds and plant genetic materials (Shanker, 1996).

“The Act provides for two types of protection for new plant varieties; patents and sui generis system.”

The application of IPRs in agriculture, as allowed under TRIPs, has long been debated, mainly due to its provisions under Article 27 (Correa, 2000). Article 27.3 (b) states that the governments can exclude certain kinds of inventions from patenting, i.e., plants, animals and biological processes. Simultaneously, it states that members are required to provide protection for new plant varieties either by patents or by an effective sui generis system or by any combination thereof. Thus, it

has been debated amongst members for a long time.

Given the significant contribution of agriculture in the Sri Lankan economy, and its rich biodiversity, the impact of Article 27 on Sri Lankan agriculture cannot be overlooked. Furthermore, the rapid developments in biotechnology, and lower percentage of private sector investments in agriculture research and development in Sri Lanka, would highlight the inclusion of IPRs in the Sri Lanka agriculture sector (Hirimuthugodage, 2011).

### 3.3 Traditional Knowledge of Farmers

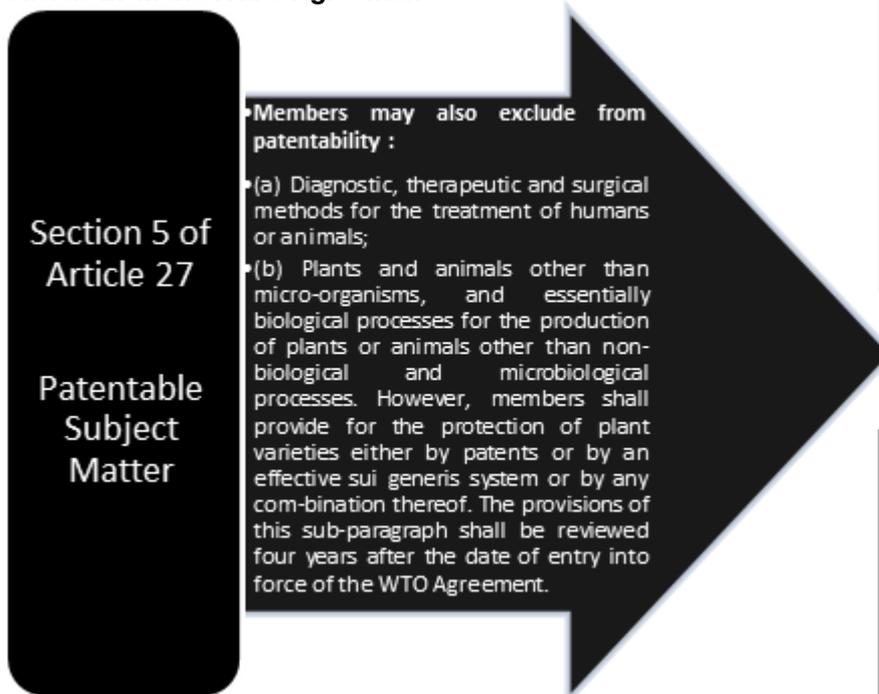
Traditional knowledge is people's awareness and understanding of the system and other information, which is passed on from one generation to the next, usually by word of mouth. Indigenous

“The rapid developments in biotechnology, and lower percentage of private sector investments in agriculture research and development in Sri Lanka, would highlight the inclusion of IPRs in the Sri Lanka agriculture sector”

knowledge is often used interchangeably with traditional knowledge. In agriculture, traditional knowledge of farmers help in the development and adaptation of plants and crops to different ecological conditions (soils, rainfall, temperature, altitude etc. (Mathur, 2003).

Traditional knowledge embraces all kinds of scientific, agricultural, technical, architectural, herbal, medicinal and ecological knowledge. These issues in respect of traditional knowledge and the related biological resources can be divided into three sections; 1) traditional knowledge and biological resources are indispensable; 2) traditional knowledge, in its capacity to maintain biodiversity and the underlying evolutionary processes, contributes also to the long-term survival of humanity as a whole; and 3) traditional knowledge is an asset of international trade.

**Figure 1**  
**Article 27 in the TRIPs Agreement**



Source: The TRIPs Agreement available at:  
[http://www.wto.org/english/tratop\\_e/trips\\_e/trips\\_e.htm](http://www.wto.org/english/tratop_e/trips_e/trips_e.htm).

Much debate on traditional knowledge at international level is taking place in the context of IPRs, more particularly through patents. Traditional knowledge of plant genetic resources is under threat (Trade Insight, 2007). The global push for privatization of biodiversity continues to encourage ownership over these genetic resources. Many countries and the large businesses increasingly want to control these resources and the knowledge associated with them for commercial purposes. Therefore, the need has arisen for protecting the traditional knowledge from Multi-National Companies.

### 3.4 Implementing Rules and Regulations Complying with TRIPs Agreement

IPRs are well formulated and practised well in developed countries rather than in developing countries (Regine, 2007). A number of developing and least developed countries believe that TRIPs has created a way for inventors to obtain “excessively broad patents” in a manner that perpetuates and legitimizes bio-piracy and threatens the rights of local, indigenous and farming communities over their biological resources and associated technological knowledge (Adhikari, 2006).

Further, most developing countries lack the technological and financial resources to fully exploit their natural resources (The TRIPs agreement, A guide for the South, 1997). The Asia-Pacific region has a rich diversity of plants, which have been used

by people for generations. The majority of people in Asia-Pacific still rely directly on this diversity of plants, or plant genetic resources, for food and medicine (GRAIN and Kalpavriksh, 2002). In developing countries, patents of micro-organism and plant variety protection are the most important areas in agriculture (Sahai, 2000), as most of their livelihoods depend on the subsistence agricultural system.

The TRIPs Agreement introduced rules and regulations to protect new plant varieties. It obliges all developing countries to extend their patent laws to life forms or set up sui generis (special) regimes for same. Presently, plant varieties have to be subject to monopoly rights by the year 2000. Asian countries are responding very cautiously. Many governments are trying to come to terms with the sui generis option (Grain, n.d.).

Subsequently, some researchers strongly believe that TRIPs clearly will have negative consequences for the South Asian countries. The level of intellectual property demanded from South Asia and the sectors in which it is demanded, drugs and agriculture, will have together undesirable effects on food self-sufficiency and health care (Sahai, 2000).

On the other hand, it has been identified that the key factor for the development process of a country is the promotion of indigenous, innovative and inventive activity. One of the main ways to accomplish this is to promote intellectual property (Abeysekera, 1999). Therefore, it is important for a country to have clearly defined IPR rules and regulations.

Since Sri Lanka is a member of the WTO, the Govt. of Sri Lanka is obliged to introduce rules and regulations to protect plant varieties and breeder’s rights law and it has to be done without much delay. Some felt that having such a law was necessary to attract new and advanced technologies and to provide incentives to plant breeders (Movement for National Land and Agricultural Reform, 2000).

Sri Lanka passed its Intellectual Property Act No.36 of 2003 to comply with TRIPs. However, this law does not have a direct bearing on biodiversity and farmers’ rights as it does not allow patenting of plants (Weerasinghe, 2004). Presently, most farmers in Sri Lanka depend on hybrid varieties of seeds for higher yields. Thus, providing opportunities for new plant breeders by protecting their rights is a necessary step in achieving higher agricultural productivity. An effective and productive intellectual property system is considered as an important component for agricultural advancement (Abeysekera, 1999).

Most of the developing countries lack the institutional, financial and human capacity to implement a strong IPR regime (Trade Insight, 2007). It is important that the developing countries utilize the flexibilities in the WTO system to use IPRs as a tool to achieve their development objectives. The recent examples of some developing countries indicate that this is possible. India has enacted the Plant Variety Protection and Farmer’s Rights Act, which ensures that those who commercialize the knowledge of plant varieties that have been preserved and developed by farmers or local communities

share the benefits with the latter. The developing countries can also use “geographical indications,” a form of IPR recognized by TRIPs, to promote their “indigenous products” in the international market (Trade Insight, 2007).

Developed countries with industrialized agriculture, like USA and Australia, oriented towards export markets prefer patent protection and a strong sui generis system for the protection of plant varieties. On the other hand, countries like Thailand and India where subsistence farming is prominent and plant breeding is still done largely by the public sector, offer much more limited protection (Beronio, 2002).

Sri Lanka has very few rules and regulations with regard to protecting new plant varieties and farmers' traditional knowledge. Most of these Acts and Ordinances deal with natural resources which collectively indicate a policy in favour of physical protection of natural resources, but there are no specific laws relating to plant genetic resources and farmers. Because of that, several bio-piracy and loss of patentability cases were recorded in Sri Lanka. It was identified that by the year 1985, twelve plants of Sri Lanka were patented in Japan (Gunasekera, 2007).

The Department of Agriculture is the main institution responsible in breeding new varieties and developing crop protection methods. Private sector participation in seed production and distribution were introduced after the enactment of the Seed Act in 2003 (Perera, 2004). Since the new policy was adopted, seed enterprises were established to

produce and market seeds. The DOA encourages farmers to produce their own seeds. By producing their own seeds, farmers save money that would otherwise be spent on purchasing new seeds and also save time searching for new varieties. A study done by the Law and Society Trust (LST) identified that it is important to conserve the traditional varieties and wild relatives of crop plants as still farmers are still highly dependent on those to develop new varieties (Law and Society Trust, 2006).

To achieve these aims, new technologies such as crop production under protected environments (plant houses) and biotechnological methods have all been experimented. Several institutes can be identified as the seed producing and marketing institutes under the guidance of the DOA. For example: Seed Certification and Plant Protection Centre, Plant Genetic Resources Centre, Plant Protection Centre etc. (Ministry of Agriculture, n.d.).

Nearly 90 per cent of Sri Lankan farmers are using rice seeds produced by them from their previous crop or borrow from neighbouring farmers. And the rest comes from the formal seed supply system which is provided by the DoA. Presently, there are nearly 800 farmers engaged in rice production. A majority of these farmers had been the Contract Seed Growers of the DoA in the past (Weerasena and Madawanarachchi, n.d.).

Protecting farmers' traditional knowledge in developing new rice varieties is important as it plays a considerable role in developing new varieties. Apart from that, several companies too are involved in seed production. For

example, several farmer companies, Small Scale Seed Enterprises, Multi-national companies are involved in agribusiness (Weerasena and Madawanarachchi, n.d.).

Nearly 33 per cent of the country's Research and Development (R& D) expenditure in 2008 was spent on agricultural activities and a higher percentage of that was spent on seed variety improvements. While commodity-wise a higher percentage goes to plantation crops, however, a substantial percentage also goes to rice crop too (National Science Foundation, 2008).

“Nearly 90 per cent of Sri Lankan farmers are using rice seeds produced by them from their previous crop or borrow from neighbouring farmers. And the rest comes from the formal seed supply system which is provided by the DoA”

The private sector entered into Asia's seed supply in the 1980s when the World Bank and US-supported seed programs and hybridization of new crops converged. Transnational corporations dominate applications for PVP and patents in developing countries. At present, 97 per cent of all patents are held by nationals of industrialized countries and 90 per cent of all technology and product patents are held by global corporations. More than half of

the current biotech patents on rice are owned by a handful of mostly Western chemical conglomerates (for example: DuPont, Mitsui and Monsanto are the main ones) (Grain, 2001).

Many groups argue that instead of allowing IPR on plant varieties, developing countries should urgently establish mechanisms to protect and encourage farmers' rights and community innovation (Grain, 2001). However, many Asian countries are trying to fulfill

their sui generis requirements under TRIPs in the hope of simultaneously attracting foreign private sector investment for domestic R&D, protecting the farmers, and providing some boost for their own public research systems.

In light of the above, it is imperative for a country like Sri Lanka to implement rules and regulations in line with the TRIPs agreement to protect its rice seed.

## 4. Laws Relating to New Plant Varieties and Farmers' Traditional Knowledge in Sri Lanka

Sri Lanka has already implemented some rules and regulations with regard to protection of plant varieties and farmers' traditional knowledge. Most of these Acts and Ordinances deal with natural resources which collectively indicate a policy in favour of physical protection of natural resources, but are not specific laws relating to plant genetic resources and farmers. Most of these laws were passed many decades ago.

Sri Lankan intellectual property law followed the British law on intellectual property until 1978. Since signing the TRIPs Agreement, the Government of Sri Lanka is obliged to introduce rules and regulations to protect plant varieties and breeders' rights. Having such laws are necessary to attract new and advanced technologies and to provide incentives to plant breeders. Sri Lanka needs to

improve its agricultural technologies to meet the increasing food needs of the growing population.

Sri Lanka passed its Intellectual Property Act No.36 in 2003 to comply with the TRIPs agreement. However, this law does not have a direct bearing on biodiversity and farmers' rights as it does not allow for the patenting of new plant varieties. This section will briefly explain some of the existing laws relating to protection of natural resources.

### 4.1 Intellectual Property Rights Act No. 36 of 2003

The Intellectual Property Rights Act No. 36 of 2003 replaced the code of Intellectual Property Act No. 52 of 1979. This Act has introduced several types of property rights including copyright, related rights, expression of folklore, industrial

**“Since signing the TRIPs Agreement, the Government of Sri Lanka is obliged to introduce rules and regulations to protect plant varieties and breeders' rights”**

designs, marks, patents, unfair competition, undisclosed information, geographical indication etc.

According to this Act, it states that *“plants, animals and other micro-organisms other than transgenic micro-organisms and an essentially biological process for the production of plants and animals other than non-biological*

and Microbiological processes shall not be patentable" (Section (62.1)). However, an invention can be patentable if it is new, involves an inventive step, and is industrially applicable. Thus, identifying new plant varieties can be identified as a new innovation and can be patentable.

Further, with regard to the traditional knowledge of farmers, the Act states about expression of folklore. Section 24 of the Act offers a sui generis form of protection to the expression of Sri Lanka's folklore. Section 5 of the Act says that "*Expression of folklore can be identified as a group oriented and tradition based creation of groups or individuals reflecting the expectations of the community as an adequate expression of its cultural and social identity, its standards and values as transmitted orally by imitation or by other means*" (Section 24).

## 4.2 Fauna and Flora Protection Ordinance as amended by Fauna and Flora Protection (Amendment) Act No. 49 of 1993

This Ordinance dating from 1937 provides for the protection of "National Reserves" which are sub-classified into various types that attract different levels of protection. The most stringently protected area is the "Strict Natural Reserves" of which only there are three, namely Hakgala, Ritigala and Yala (part). Further down the ladder of protection are the Natural Park, Natural Reserve, Jungle corridor, refuge, Marine Reserve and Buffer zone (list as amended by the 1993 Act). In respect of strict natural

reserves, no person other than an official of the Department of Wild Life Conservation may enter or remain therein except with the written permission of the Director General.

## 4.3 Forest Ordinance as amended in 1995

This Ordinance deals with the protection of forests and the regulation of the felling and transportation of timber. It has been amended several times, most recently in 1995. Under this Ordinance, "forest" means all forest, waste, chena, uncultivated or unoccupied land at the disposal of the State. More stringent levels of protection apply to "reserved" and "conservation" forests, both of which are required to be declared by Ministerial order and published in the Government Gazette. This Ordinance also protects "reserved trees" whether found on forest land or not. No cutting, making, looping, girdling, tapping or injuring of any reserved trees is allowed except in accordance with Rules made by the Minister. The Ordinance contains a schedule of reserved trees which provide protection for natural resources.

## 4.4 Rubber Control Act / Tea Control Act

Under these two Acts, it is prohibited to export from Sri Lanka "any seed, root, stump or bud" of any rubber plant or tea plant, without a permit from the Rubber Controller or Tea Controller, as the case may be. These provisions have effect "as if they were part of the Customs Ordinance" and thus they are enforceable by Customs officers at the point of exit.

## 4.5 Plant Protection Act No. 35 of 1999

This Act replaced the Plant Protection Ordinance dating from pre-independence times, but kept in force all regulations gazetted under that Ordinance that were not inconsistent with the provision of the Act. The purpose of the Act is made clear in its long title which states that it is "An Act to make provision against the introduction into Sri Lanka and the spreading therein, of any organism harmful to or injurious to or destructive of plant and for the sanitation of plants in Sri Lanka". The Director-General of Agriculture is in charge of the general administration of this Act and he may nominate one or more "Authorized officers" for the purpose of giving effect to the Act.

The Director General or authorized officer may enter any premises for the purpose of ascertaining whether there are "pests". Such officer is authorized to give directions to the importer of the pests or the owner or the occupier of the premises so as to prevent the pest from spreading. Under Part 1V of the Act there is a right of appeal to a panel of scientists.

There is also provision in Part III to allow the importation of "quarantine pest" or a plant or plant product infested with such pest, for the purpose of scientific study by "a government department or public corporation engaged in scientific research" if there are "proper facilities including trained personnel" for the containment and quarantine of the same. A "quarantine pest" is defined in Section 15 as a pest of "potential economic or

Environmental importance to any area within Sri Lanka”.

The Plant Protection Act is thus a defensive piece of legislation designed to protect Sri Lanka’s plant and plant products from contamination by pests from outside, while not shutting the door to using selected pests beneficial or potential for scientific purposes. It is of importance to farmers to the extent that it seeks to prevent contamination of local agricultural crops by invasive species not hitherto found in Sri Lanka.

#### 4.6 Seed Act No. 22 of 2003

This is an Act to regulate the quality of seed and planting materials and to provide for matters connected therewith or incidental thereto. A National Seed Council was established under this Act. The functions of the Council can be identified as follows;

- Ø To establish guidelines and principles to ensure production and distribution of seed and planting materials of the highest quality
- Ø To undertake periodic review of the progress of seed and planting materials production
- Ø To advise the Minister and other relevant authorities on all matters regarding the production of quality seed and planting materials and the supplying of seed and planting materials industry
- Ø To establish appropriate minimum limits for germination viability, genetic purity, physical purity and appearance of seeds and planting materials and

maximum limits for impurities, damaged seeds, water content and pests (including weed seeds) allowed in seeds available in the market

- Ø To determine the quality and minimum labelling requirements for seed containers and for planting materials available in the market
- Ø To take appropriate action with regard to the protection of new plant varieties

Similarly, Sri Lanka has ratified several international conventions regarding plant varieties and farmers’ rights.

#### 4.7 UN Convention on Biological Diversity (CBD)

This was adopted in 1992 and came into force in 1993. Sri Lanka ratified it in 1994, which was basically focused on conservation of biological diversity.

The objectives of the Convention are the conservation of biological diversity, sustainable use of genetic resources and the fair and equitable sharing of benefits from the use of genetic resources. It is important to note that although the CBD deals with the conservation of biological diversity, the scope of access and benefit sharing is narrowed down to genetic resources. This convention defines genetic resources as genetic material with actual or potential economic value; a definition that is not based on science but on commercial value.

The CBD does not call for any direct action from members.

Rather, it provides a set of policies and objectives and members can take necessary action within the context provided. It therefore acts as a framework convention. In this regard, the CBD provides a set of responsibilities for the conservation of biological diversity and sustainable use, access and benefit sharing as well as a set of corresponding rights.

Although the scope of CBD is to cover all types of genetic resources, there is an important exception that serves as an exclusive clause. This is Article 15.3 which says that the provisions of Articles 15, 16 and 19 apply only to those genetic resources “acquired in accordance with the convention”. This, in other words, excludes all the ex-situ collections that have been acquired before the ratification of the convention and which accounts for the majority of the ex-situ collections held in almost all the gene banks in the world. This is a great disadvantage to a country like Sri Lanka which has readily and freely donated crop germplasm to others for more than four decades.

#### 4.8 Proposed Act on New Plant Varieties 2011

The proposed Act will provide protection for new plant varieties and rights of farmers, plant breeders, and researchers, to encourage the development of new varieties of plants. The Director General of Agriculture and the Director General of Intellectual Property Office are the main administrative officials of the Act.

Furthermore, it has given interpretations for a 'breeder', 'a farmer', 'a variety', 'breeder seeds' etc. which were not addressed in existing laws. It also attempts to fill gaps in the present plant variety registration system by providing a proper system for 'registration of a new variety', 'how to apply for a new variety', 'how to examine registration applications'

etc. Also, it discusses about a compulsory licensing system. The proposed Act has identified some of the existing issues with regard to the new plant variety registration and providing legal protection for same.

It was stated that most farmers presently depend on the hybrid varieties of seeds for higher

yields. Providing possibilities for new plant breeders by protecting their rights is a necessary step in achieving these developments. An effective and productive intellectual property system is considered as an important component for a nation's advancement (Abeysekera, 1999).

## 5. Economics of Intellectual Property Rights

This section explains how economic theory relates to the IPRs and the importance of having IPRs to protect new plant varieties. It explains the relationship between IPRs and economic development. This further discusses whether a strong IPR system accelerates economic growth or whether it hinders economic growth. The analysis emphasizes that a country's IPR system needs to be formulated according to its socio-economic pattern.

Economic theory suggests that intellectual property rights could either improve or limit economic growth in a country. However, evidence is emerging that stronger and more certain IPRs could increase economic growth and foster beneficial technical change, thereby improving development prospects (Maskus, 2000). Nevertheless, the significance of these growth effects would be dependent on the environment in each country. However, with appropriate policies and regulation, IPRs could play an important and positive role in promoting economic growth.

There are two central economic objectives of intellectual property protection. First, is to promote investments in knowledge creation and business innovation by establishing exclusive rights to use and sell newly developed technologies, goods, and services. The second goal is to promote widespread dissemination of new knowledge by encouraging (or requiring) rights holders to place their inventions and ideas on the market (Fink and Maskus, 2005). When there is a lack of intellectual property protection or weak intellectual property rights, firms are not willing to incur costs in research and commercialization activities. In economic terms, weak IPRs create a negative dynamic externality (Fink and Maskus, 2005). Weak IPRs fail to overcome the problems of uncertainty in R&D and risks in competitive appropriation that are inherent in private markets for information. Information is a form of a public good in that it is inherently non-rival and developers may find it difficult to exclude others from using it (Fink

and Maskus, 2005). In economic context, it is socially efficient to provide wide access to new technologies and products, once they are developed at marginal production costs.

International policies on protecting IPRs have gradually changed with time. Presently, rules on protecting patents, copyrights, trademarks, and other forms of IPRs have become a standard element of international trade agreements. Most significantly, during the Uruguay Round of multilateral trade negotiations which implemented the TRIPs agreement, it set out minimum standards of protection for intellectual properties.

In theory, when a country strengthens its IPR protection, it must strike a balance amongst several important trade-offs. In a closed economy, IPRs provide incentives to inventors to develop new knowledge and to authors and artists to create forms of artistic expression (Dixon and Greenhalgh, 2002), which in the long run generate gains from the introduction of the new products.

A weak IPR regime might allow domestic firms to imitate foreign technologies and thereby contribute to economy-wide productivity and income growth. On the other hand, stronger IPRs could be better suited to promoting technology diffusion, by enhancing access to knowledge-intensive foreign inputs and promoting formal technology transfer through joint ventures and licensing agreements (Maskus, 2000).

Many developing countries traditionally did not provide strong protection for intellectual property; instead, they host industries that rely on copying foreign technology and products. Therefore, when introducing IPR reforms it will create several difficulties. According to (Fink and Maskus, 2005) these can be identified as: misallocation of resources, loss of employment in copying industries, higher prices for final and intermediate goods etc.

IPRs affect international trade flows when knowledge-intensive goods move across national boundaries (Maskus, 2000). The importance of IPRs for trade has gained more significance as the share of knowledge-intensive or high-technology products is a significant portion of total exports and imports.

It has been identified that the principles adopted by countries to protect their IPRs as well as the effectiveness with which they are enforced have implications for the development of international trade. Three main factors which deal with IPRs help to accelerate international trade. They can be identified as follows:

- Ø Economic activity in most developed countries is increasingly becoming research- and technology-intensive. As a result, their export products contain more technological and creative inputs that are subject to intellectual property rights.
- Ø With the removal of restrictions on foreign investment by a large number of developing countries, new opportunities are emerging for the manufacture in these countries of patented products.
- Ø Technological improvements in products entering international trade have been matched by technological advances that have made reproduction and imitation simple and cheap (The Peterson Institute for International Economics, n.d.)

The development of international trade can be adversely affected if the standards adopted by countries to protect IPRs vary widely from country to country. The ineffective enforcement of such rights can encourage trade in counterfeit and pirated goods, thereby damaging the legitimate commercial interests of manufacturers who hold or have acquired those rights (Fink and Maskus, 2005).

IPRs could play an important and positive role in promoting economic growth. Indeed, the system of IPRs itself may be structured in particular ways to favour dynamic competition within a system of rights and obligations. It is important to note that national regimes of

intellectual-property protection strongly depend on the level of economic development. Thus, the causation between IPRs and development operates in both directions (Maskus, 2000).

Economists recognize several channels through which IPRs could stimulate economic development and growth. These processes are interdependent and it is appropriate to adopt a comprehensive view of the incentives associated with intellectual property protection (Maskus, 2000). Intellectual property rights could play a significant role in encouraging innovation, product development, and technical change. Developing countries tend to have IPRs systems that favour information diffusion through low-cost imitation of foreign products and technologies.

There is very limited empirical information available on the economic impacts of plant breeders' rights. One recent study was conducted in Argentina, Chile, and Uruguay, which have established such systems (Jaffe and van Wijk 1995; UNCTAD, 1996). The study looked only at qualitative indicators of the effects on private investments in plant breeding, plant breeding policies of public research institutes, international transfer of germplasm, and seed diffusion among farmers. The study shows that the systems of rights adopted have had mixed effects on these Latin American economies. They have markedly improved the ability of private breeders to control local seed markets and prevent unauthorized trade in protected varieties (Maskus, 2000).

Further, countries with weak IPRs could be isolated from modern technologies and would be forced to develop technological knowledge from their own resources. Hence, those countries would obtain fewer spill-over benefits and demonstration effects of new technologies in their economies. Moreover, technologies available to such nations would tend to be outdated.

Theory and the empirical evidence propose that IPRs could generate more international

economic activity and greater indigenous innovation; however, such effects would be conditional on circumstances. Circumstances vary widely across countries and the positive impacts of IPRs should be stronger in countries with appropriate complementary endowments and policies.

Economic theory demonstrates that IPRs could play either a positive or negative role in fostering growth and development. Evidence suggests that the relationship is positive but dependent on other factors

that help to promote benefits from intellectual property protection. In brief, IPRs could be effective in market-based mechanisms for overcoming problems that exist in markets for information creation and dissemination. However, their existence could pose problems in terms of their potential for costs and anti-competitive abuse. Moreover, researchers have identified a few negative impacts of strong IPRs. For example, it might raise difficult economic and social costs, support monopoly pricing system etc. (Fink and Maskus, 2005).

## 6. Research Methodology

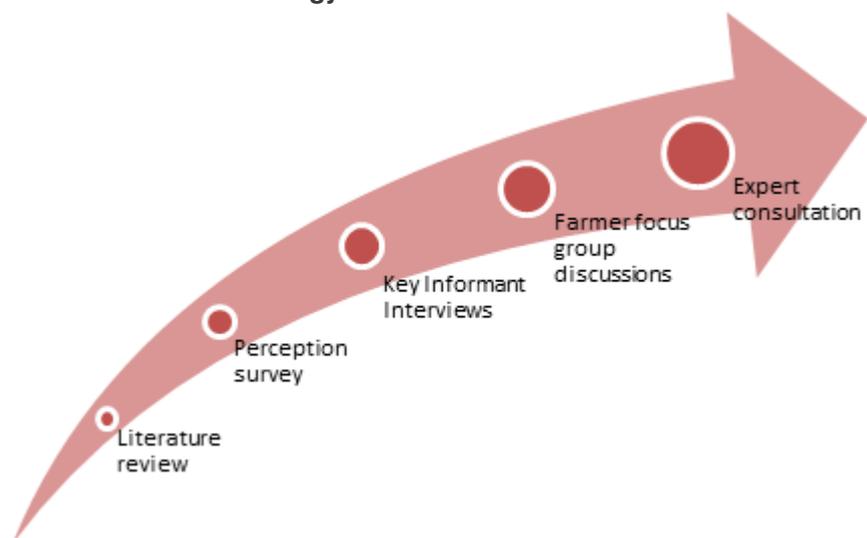
### 6.1 Data Collection

Given the nature of the research questions which are being explored in the study, the methodology used has both qualitative and quantitative components. The methodology of this study consisted of literature review, perception survey, key informant interviews, farmer focus group discussions and expert consultation (Figure 2).

#### **Literature Review**

Existing literature reviewed intellectual property rights in areas such as protecting new plant varieties, protecting traditional knowledge, rice seed sector in Sri Lanka etc. International literature also reviewed IPRs and the agriculture sector, implications of implementing TRIPs agreement in other countries etc. The literature review mainly carried out in referring scientific reports, books, publications, journal articles,

**Figure 2**  
**Research Methodology**



working papers, research reports, web based publications etc.

#### **Perception Survey Amongst Stakeholders**

Perception survey consisted of a survey questionnaire (Appendix 1) which allowed respondents to state their ideas and views on the identified research problem and

the questionnaire provided an opportunity for them to suggest solutions. It was carried out amongst key stakeholders consisting of: researchers, policy makers, academics, media, lawyers and government officials from the Department of Agriculture, Department of Commerce, Department of

Natural Resources, National Intellectual Property Rights Office etc. Perception survey was carried out amongst fifty stakeholders.

### **Key Informant Interviews (KIIs)**

Key informant interviews amongst identified key stakeholders were carried out based on a semi-structured questionnaire (Appendix 2). This was conducted amongst twenty three key informant interviewees who are in the fields of academia, government policy makers, government officials etc.

### **Focus Group Discussions (FGDs)**

Four focus group discussions were carried out in Dambadeniya, Ankumbura, Elpitiya and Benthara-Elpitiya with farmers who are using traditional techniques and methods for their farming activities. Most farmers in the selected areas are cultivating traditional rice varieties and using their own seeds. Focus group discussions were based on pre-prepared focus group guidelines (Appendix 3). There were nearly 12-15 farmers in each FGDs. Annex 5 provides some selected photographs of FGDs.

### **Expert Consultation**

An expert consultation was held at IPS with the participation of main stakeholders in the field. Government officials, policy makers, farmers, academia, private sector experts, legal experts etc. were participants for the event (See Appendix 4 for list of participants). The results identified from the perception survey, key informant interviews and focus group discussions were compiled and presented to the expert consultation workshop. Further, the expert consultation

workshop was based on the pre-prepared questions and they were asked to prioritize identified issues and provide remedies to fill gaps in the existing system. (Refer Appendix 4 for expert consultation guidelines and some photographs of the event).

## **6.2 Data Analysis**

Gathered data were analysed as follows. Existing policies were reviewed and analysed against issues identified from the perception survey, in-depth interviews, and farmer focus group discussions. It provides present policy gaps, or any particular issues that are not being addressed by the existing policy regime.

FGDs and KIIs were digitally audio recorded (with permission). All voice recorded interviews were transcribed, and translated from Sinhala to English. The transcripts were then uploaded to NVivo10, the software widely used for qualitative data analysis. NVivo is a powerful way to do sophisticated data coding and it supports several ways to build theories, either local or more general. NVivo is also very helpful in easily organizing different data types and sources used in the Study (Ozkan, 2004). During FGDs and KIIs, notes were also taken in the event that recording equipment fails.

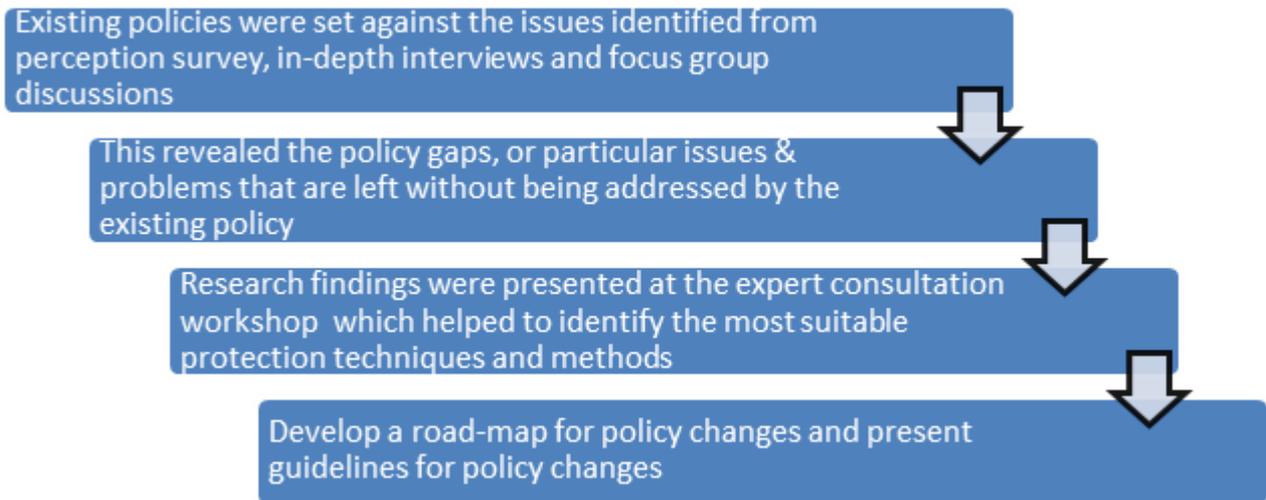
Identified data were presented to expert consultation to identify the most suitable protection method. The expert consultation was supported to develop a road map. Figure 3 explains the data analysis process.

Data analysis is based on perception survey data, key informant interviews and farmer

focus group discussions. The perception survey questionnaire covered significant aspects of the TRIPs agreement and its importance to the Sri Lankan agricultural sector. The main purpose of the questionnaire was to get stakeholders' views on IPRs and its impact on the Sri Lankan agricultural sector. Respondents had to rank their views on the questions given and they were provided numbers 1 to 5, based on the Likert Score System. They were required to tick or highlight the number in their opinion that best represents the strength of the rules and regulations (or the statement) available in Sri Lanka to protect new plant varieties and farmers' traditional knowledge. The lowest number (0) represents the most ineffective, whereas the highest number (5) represents the most effective. If a respondent's view to a question asked is ineffective he/she will mark it as 0, whereas if it is a favourable answer, or if he/she thinks the said statement is highly effective, he/she will mark it as 5. Similarly, if they have moderate views they will record them between 1-5. Analysis is based on the average of all selected stakeholders, whereas some selected questions were analyzed based on stakeholder groups. There were thirty filled questionnaires received from policy makers, academia, government officials, lawyers etc.

The most significant question in the questionnaire was to identify the best possible protection method for Sri Lanka's new plant varieties and farmers' traditional knowledge. The TRIPs agreement suggests two options namely; Patents or Sui generis system. Some selected stakeholders have suggested Sui generis system as

**Figure 3**  
**Data Analysis Process**



the most appropriate method for Sri Lanka. Even though patent protection is an effective method, Sri Lanka being a developing country is faced with severe financial constraints in establishing a patent system for inventions. Sui generis is a weaker system than patenting, whereas in Sui generis system, the right holders can only prevent third parties from commercially exploiting the protected material. Considering the country's agricultural, farming and economic system, 62 per cent of the stakeholders ranked sui generis as the best possible method for Sri Lanka, whereas 38

per cent of them have identified the patent system as the best protection method.

The data were mainly collected from both primary and secondary sources such as Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs). Each category has its advantages and disadvantages, and a good study will contain a number of sources (Creswell, 2003). FGDs and KIIs revealed detailed information on the nature of problems faced by the agriculture sector, especially new plant varieties in Sri Lanka and further, provided some recommendations too.

FGDs and KIIs were digitally audio recorded (with permission). All voice recorded interviews were transcribed, and translated from Sinhala to English. The transcripts were then uploaded to NVivo10, software widely used for qualitative data analysis. NVivo is a powerful way to do sophisticated data coding and it supports several ways to build theories, either local or more general. NVivo is also very helpful in easily organizing different data types and sources used in the Study (Ozkan, 2004).

# 7. Results

## 7.1 The Importance of IPR System for Sri Lankan Agriculture

This was analyzed according to respondent's categories. As illustrated in Figure 4, policy makers who represent the Directors of the Department of Agriculture, Intellectual Property Rights office, and from several Ministries have identified the importance of IPRs in agricultural development of a country and have provided an average of 4. Government officers who represent the Department of Commerce, Ministry of Fisheries and Aquatic Resources, Ministry of Agriculture and Agrarian Services, and the Central Bank have ranked it as 3, which is low compared to other categories. Academia category which involves university lecturers and the private sector, has indicated the importance as 3.75.

## 7.2 The Institutions which are Responsible in Preparing IPR Rules

According to stakeholders' rankings, the responsible institutions and groups in making IPR rules for the agricultural sector are as follows; Department of Agriculture, Intellectual Property Office, Ministry of Legal Affairs, Ministry of Environment and the civil society (Figure 5).

## 7.3 Identifying the Main Stakeholder in Improving New Plant Varieties

According to gathered data, farmers are the main stakeholders in improving new plant varieties. 62 per cent of the respondents have stated that farmers are responsible while 38 per cent of stakeholders identified

that it is a duty of the Department of Agriculture (Figure 6).

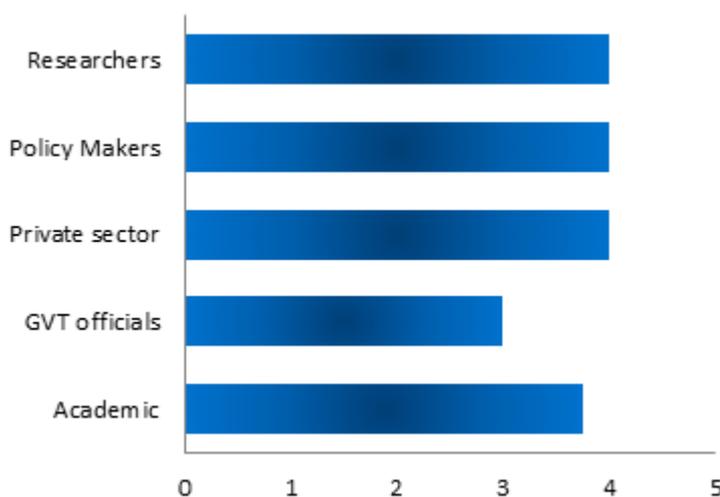
## 7.4 Main Issues in Protecting New Plant Varieties and Farmers' Traditional Knowledge in Sri Lanka

Both descriptive analysis and NVivo qualitative analysis were used to identify the main issues that Sri Lanka is facing in protecting new plant varieties and farmers' traditional knowledge. Figure 7 presents the descriptive analysis of the identified main issues. The main issue identified in the research study was the lack of a proper institutional framework. The second most important issue was the lack of laws and policies relating to new plant varieties and farmers' traditional knowledge, whereas the third factor was the improper enforcement of laws. The hindrance on the implementation process is mainly due to lack of strong and powerful institutions and a very low demand for same from the civil society. Thus, the use of available laws and regulations are very limited. Lack of awareness and knowledge at grass root levels was emphasized as the fourth factor.

Malpractice at grass roots level is ranked as the final issue. All of these issues are inter-linked with each other.

Several nodes<sup>5</sup> were created based on KII & FGD guidelines in

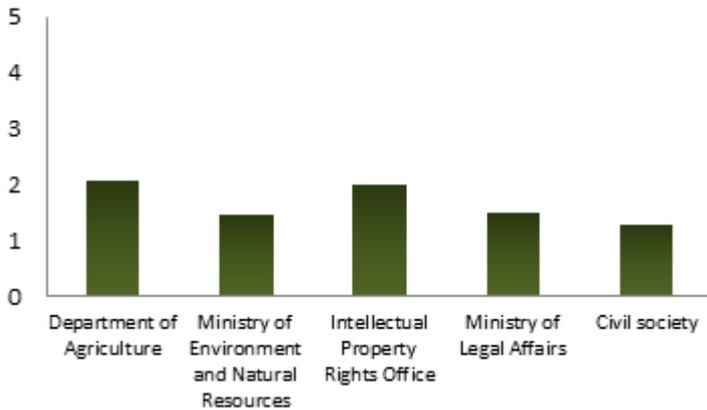
**Figure 4**  
Importance of IPR System for Sri Lanka as Perceived by Different Stakeholders



Source: Based on perception survey.

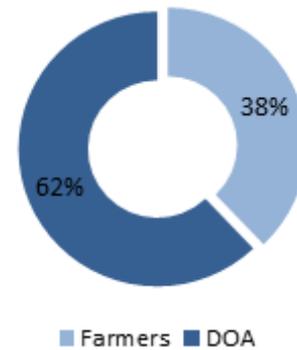
<sup>5</sup> A node is a collection of references about a specific theme, place, person or other area of interest.

**Figure 5**  
Institutions Responsible for Making IPR Rules & Regulations



Source: Based on perception survey.

**Figure 6**  
Main Stakeholders in Improving New Plant Varieties



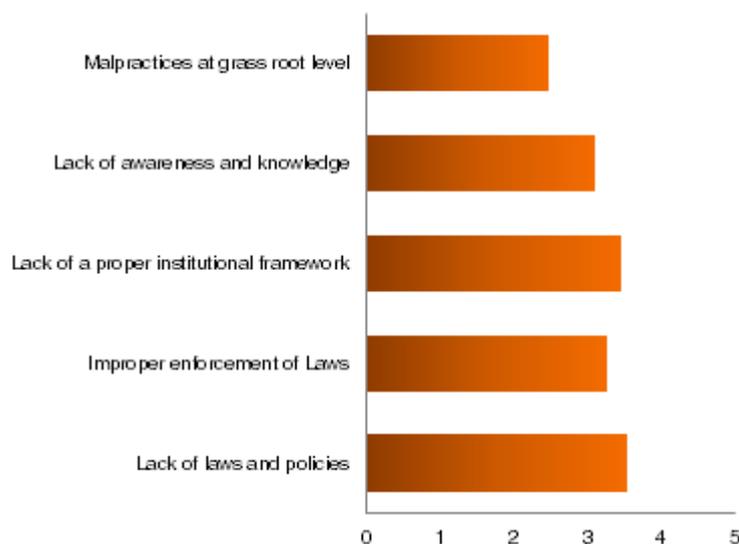
Source: Based on perception survey.

order to identify the importance of different issues. Figure 8 presents a tree map<sup>6</sup> explaining created nodes to analyse gathered information. It shows that most of KIIs and FGDs were given priority

to discuss issues faced in protecting new plant varieties and farmers' traditional knowledge and less priority given to discuss available laws and rice seeds.

Table 1 further explains created nodes and references made by KIIs and FGDs in each node and also the number of items coded in each node. It also highlights that issues on protecting new plant varieties and farmers' traditional knowledge received the highest number of codes. The least number of codes were shown in importance of available plant varieties in improving the agriculture sector in Sri Lanka.

**Figure 7**  
Issues Faced by Sri Lanka in Protecting New Plant Varieties and Farmers' Traditional Knowledge



Source: Based on perception survey.

Figure 9 explains the word cloud<sup>7</sup> which is generated by NVivo -10. It shows visual representation of KII and FGDs data, and it highlights key words which are discussed in KIIs and FGDs. The importance of each word is shown with font size or colour.

This format is useful for quickly observing the most prominent terms and for locating a term alphabetically to determine its relative prominence.

<sup>6</sup> A tree map is a diagram which explains hierarchical data as a set of nested rectangles of different sizes. For example, it uses size to represent the amount of coding at each node. Larger areas are displayed at the top left of the chart, smaller rectangles are displayed toward the bottom right ([http://help-nv11.qsrinternational.com/desktop/concepts/about\\_hierarchy\\_charts.htm](http://help-nv11.qsrinternational.com/desktop/concepts/about_hierarchy_charts.htm)).

<sup>7</sup> It is an image composed of words used in the analysis. The size of each word indicates its frequency or the importance highlighted in collected data.

**Figure 8**  
**NVivo-10: A Tree Map**

Nodes compared by number of items coded



Source: Based on KIIs & FGDs.

## 7.5 Identified Issues and Existing Laws

Table 2 explains matrix analysis of identified issues in protecting new plant varieties and farmers' traditional knowledge. It highlights whether these issues are

addressed in the existing law system or whether the existing laws provide solutions for those identified issues. It is clear that most of the identified issues are not being addressed by the existing laws. The issue on 'importing exotic materials from

abroad' is covered by some of the existing laws and also seed exchange within countries are also covered by IPR Act 2003 and seed Act 2003. However, the proposed Act on new plant varieties has mentioned about most of the identified issues.

**Table 1**  
**NVivo 10: Nodes and Coding References**

Nodes	Number of coding references <sup>8</sup>	Number of items coded <sup>9</sup>
Nodes\Act No. 36 Of 2003	6	6
Nodes\draft bill	7	6
Nodes\existing laws	10	10
Nodes\genetic resources	6	6
Nodes\Importance\of available plant varieties	5	5
Nodes\Importance\of farmer's TK	11	10
Nodes\international conventions, agreements	8	7
Nodes\Issues\protecting new PV	24	14
Nodes\Issues\protecting TK	17	12
Nodes\main institution	12	11
Nodes\main stakeholders	6	6
Nodes\seeds\available laws	3	3
Nodes\seeds\rice seeds	5	5
Nodes\suggestions	11	10
Nodes\technology	10	10

Source: Based on KIIs & FGDs.

## 7.6 Remedies and Responsible Institutes

The identified issues were presented at the expert consultation. The experts consisted of the main stakeholders in the sector. Table 3 explains the matrix analysis on strategies and measures that they have proposed to overcome identified issues and the responsible institutes in implementing these strategies.

According to the suggestions presented at the expert consultation, it is the responsibility of the Ministry of Agriculture, Department of Agriculture and the Intellectual Property Rights Office to propose appropriate new laws to protect new plant varieties and farmers'

traditional knowledge. Further, the Department of Legal Draftsman has the responsibility of drafting new laws or revising the existing laws to assure customary practices of farmers, provide allowances to breeders who introduce new varieties, provide protection for investments etc.

It is important to create awareness on the importance of protecting new plant variety rights. Also, it is of utmost importance to encourage breeders to take necessary measures to protect their rights and further, there is a need to change their attitudes on protecting new plant varieties as some of them do not value the importance of PVPRs. The expert consultation also highlighted the importance of IPS's involvement

in working closely with the Ministry of Agriculture in several instances.

In addition, it is important to appoint a special committee or a group comprised of main stakeholders to authenticate new plant varieties, to maintain a registry of new plant varieties etc.

“Conduct awareness programmes in farm organization levels, establish farmers’ field school, establish farms which are producing different varieties”

**Policy maker at KII**

“My suggestions would be to strengthen the quarantine regulations to protect new plant varieties and to protect farmers’ traditional knowledge. It is important to create an organized programme, create awareness among different levels, that is policy makers, scientists, extension officers as well as agriculture instructors etc. There should be a forum where farmers also come with their views and contact with the people who actually work in the labs”

**Government Official – KII**

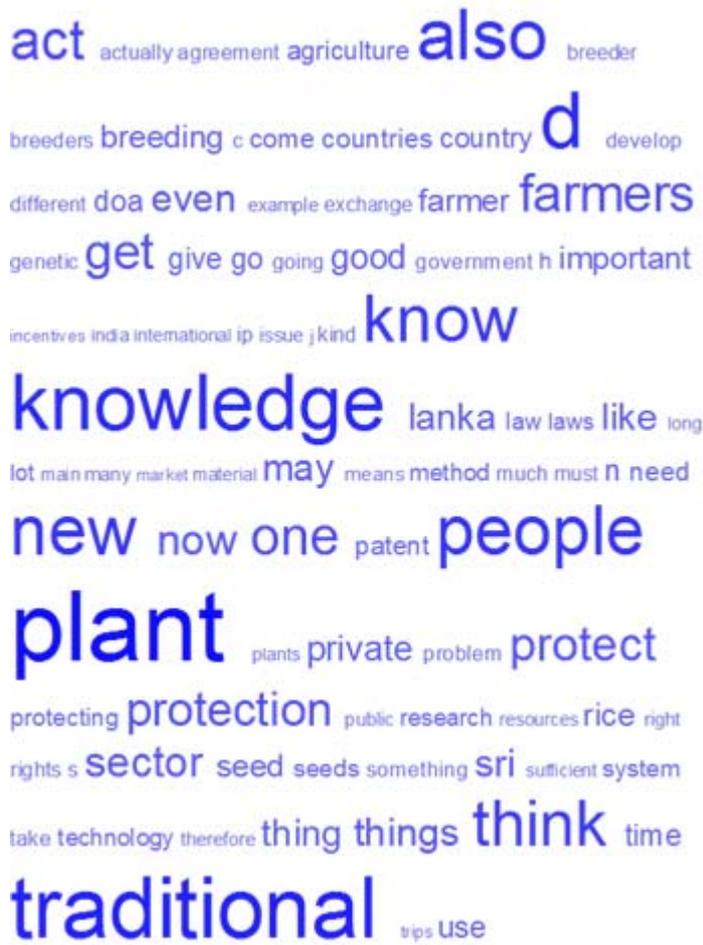
<sup>8</sup> Total number of references for each code.

<sup>9</sup> Number of items coded at selected node by different users.

**Table 2**  
**Matrix Analysis on Identified Issues and Existing Laws**

No.	Existing Laws	Intellectual Property Rights Act No. 36 of 2003	Fauna and Flora Protection (Amendment) Act No: 49 of 1993	Forest Ordinance as amended in 1995	Rubber Control Act/ Tea Control Act	Plant Protection Act No.35 of 1999	Seed Act No. 22 of 2003	UN Convention on Biological Diversity (CBD)	Proposed Act on New Plant Varieties
	<b>Identified Issues</b>								
1	Lack of plant breeders' interest	X	X	X	X	X	X	X	Yes
2	Lack of understanding and commitment by the government	X	X	X	X	X	X	X	X
3	Poor coordination among relevant organizations	X	X	X	X	X	X	X	X
4	No DNA bar coding available to confirm the genetic identity of varieties	X	X	X	X	X	X	X	Yes
5	Lack of incentives for plant breeders	X	X	X	X	X	X	X	yes
6	Difficulties of obtaining good exotic genetic materials from other countries	Yes	X	X	X	Yes	Yes	Yes	Yes
7	Lack of authentic information and regulating body	X	X	X	X	X	X	X	X
8	Drafting and implementation of related legislation are long overdue	X	X	X	X	X	X	X	X
9	Capacity and funds are increasingly lacking	X	X	X	X	X	X	X	Yes
10	There is no reward system for breeders	X	X	X	X	X	X	X	Yes
11	Our genetic variation is low. Thus, we need to exchange seeds with other countries	Yes	X	X	X	X	X	X	Yes
12	Seed exchange is restricted to a certain extent as we can't show our ownership	Yes	X	X	X	X	Yes	X	X
13	No legal framework to get ownership. Therefore, exchange of germplasm is difficult	X	X	X	X	X	X	X	Yes
14	No coordination between farmers, researchers, policy makers etc.	X	X	X	X	X	X	X	X

**Figure 9**  
**NVivo 10: Word Cloud as Illustrated in NVivo -10<sup>10</sup>**



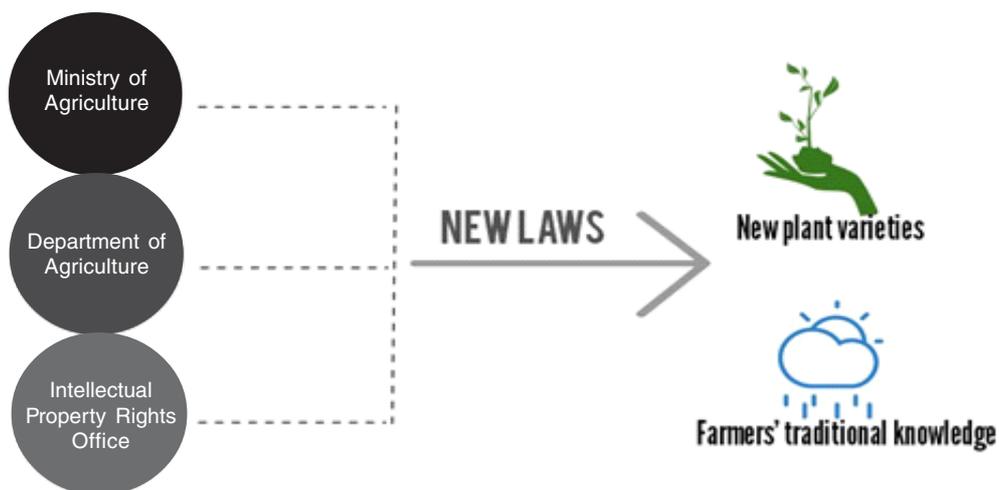
Source: Based on KIIs & FGDs.

“Traditional knowledge also needs to be documented somewhere. Documentation is very tricky. India has a digital library and they use it by putting traditional knowledge into the digital library and prevent other people from patenting. Novelty is taken up at the same time when you put into the public domain, you also can’t use it, you also can’t get it patented. That is why I’m saying that in Sri Lanka we need to have institutional support even to go and find what is the knowledge that we have and we can use for new technology”

**Academia at KII**

“Sri Lanka should adopt its own system to protect traditional crops and farmers’ rights. The TRIPs agreement does not recognize community rights. This is a limitation. At the moment, innovation is low in Sri Lanka, so the IP laws will protect only foreign applicants. We must strengthen the local innovation in this area first”

**Researcher at KII**



<sup>10</sup> It is an image composed of words used in the analysis. The size of each word indicates its frequency or the importance highlighted in collected data.

**Table 3**  
**A Matrix on Issues, Remedies and Responsible Institutes**

Issues	Remedies	Responsible Institute
No formal procedure / law	Enactment of appropriate law	Department of Agriculture (DoA), Ministry of Agriculture (MoA), Intellectual Property Rights Office (IPRO)
Lack of plant breeders' interest on Plant Variety Protection Rights (PVPR)	Make awareness on benefits of PVPR amongst breeders	DoA& Institute of Policy Studies (IPS)
Negligence of policy makers	Appoint a special committee to look into the matter	IPS/ MoA
Negative views for having PVPR from certain elements of the society	Make awareness of this benefits of PVPR especially at international level	MoA
No legislative coverage	No. 36 of 2003 Intellectual Property Act Section 62 (3) stated that plant and animal cannot be patented. According to TRIPs agreement there are two options. First option:- we can't proceed. Therefore we have to establish Sui generis system	DoA, IPR O
Low investments for breeding of new varieties	Assurance of protection for reasonable period to recover the investment	Legal Draftsmen's Department
No incentives for the breeder who has actively contributed	Grant an honorarium for the breeder/s who have contributed for the breeding of commercialized variety	Legal Draftsmen's Department
Who is the technical body responsible for authenticating the new variety	Appoint a competent authority	Panel of National Registry
Farmers' rights	Assuring customary practices of farmers	Department of Legal Draftsman, DoA

Source: Based on views presented at the expert consultation.

## 8. Conclusions and Recommendations

As a member of the WTO and as a signatory to the TRIPS agreement, Sri Lanka is required to implement rules and regulations to protect new plant varieties and farmers' traditional knowledge. However, the TRIPS

agreement did not impose any restrictions on selecting the protection method. The governments have absolute discretion in selecting the most suitable method for their economies and their agricultural

patterns. Therefore, the countries have the opportunity to formulate their own systems depending on their current situation and future priorities. Hence, Sri Lanka had the flexibility in deciding the most suitable method and

implementing it prior to the year 2006.

Sri Lanka implemented the Intellectual Property Act No. 36 in 2003 to comply with the TRIPS agreement. However, this Act has excluded patent protection for animals and plants. The Intellectual Property Office together with the Ministry of Agriculture and other relevant officials drafted an Act on the protection of new plant varieties in the years 2011 and 2013. However, due to criticism from experts in the field, the said Act still remains at the Bill stage. Due to this delay in implementing laws to protect plant varieties and farmers' traditional knowledge, Sri Lanka is facing various difficulties in international trading and it is also in a perilous position in losing its new plant varieties and farmers' traditional knowledge.

As discussed above, intellectual property protection promotes investments and international trade flows. Simultaneously, it plays a significant role in encouraging innovation, product development, and technical changes in the development process. It was identified that there is a positive relationship between IPRs and the economic development of Sri Lanka. Economic development of the country with IPRs, happens through two channels namely; higher investments and international trade.

As a developing country, Sri Lanka should take advantage of

the arrangements provided by the TRIPS agreement and adopt a sui generis plant variety protection law that will support the development of the indigenous agriculture sector and subsistence farming communities.

On the analysis, there is an inter-link between issues that affect the implementation of rules and regulations to protect new plant varieties and farmers' traditional knowledge. Further, the sui generis system was identified to be the most appropriate method for Sri Lanka. Therefore, under the TRIPs agreement, Sri Lanka has the flexibility to decide the most suitable type of PBRs, taking into consideration its agricultural economy and future objectives. The study has identified that the available plant varieties and farmers' traditional knowledge are important in the development process of agriculture, mainly in the rice seed sector. Therefore, it is necessary to prepare laws and regulations in conformity with TRIPs to protect new plant varieties and farmers' traditional knowledge.

Furthermore, it is essential to increase general public awareness on this issue, and keep them updated as they are an entity that has a voice and the power to influence the government. As an example, in India it is the general public that demands the government to provide protection. Thus, it is

important to have a separate unit or an institute to monitor these issues and to provide patents if needed. This institute should comprise of legal professionals and agriculture economists.

Moreover, considering the traditional knowledge engaged with the rice sector, it is important to document the available knowledge. This means to conduct awareness programmes in farm organization levels, establish farmers' field schools, and establish farms which are producing different varieties and farms for farmers who are presently using traditional knowledge. Moreover, it is important to protect grass roots level traditional knowledge holders. They also should establish botanical gardens and research centres and attach them with schools and other educational institutes including universities. They should also protect traditional knowledge books available in any form. As some of the countries have already done, Sri Lanka too can conserve traditional knowledge in a digital system. However, to create such a system, Sri Lanka first needs to collect traditional knowledge with regard to the rice sector. Finally, it is of utmost importance to pass the new Act by the Parliament as early as possible.

## Bibliography

- Abeysekera, I. N. (1999)**, *Sri Lankan Copyright Law and the TRIPs Agreement*. Colombo: Mahapola Higher Education Trust Fund.
- Abeysekera, S.W. (2005)**, *Recent Developments in Hybrid Rice Research in Sri Lanka*. [www.goviya.lk/agrilearning/Paddy/Paddy\\_Research/Paddy\\_pdf/V9.pdf](http://www.goviya.lk/agrilearning/Paddy/Paddy_Research/Paddy_pdf/V9.pdf).
- Abeysirwardena, S. (2001)**, *Rice Varietal Improvements for Future Challenges*. 2001. [www.goviya.lk/agrilearning/Paddy/Paddy\\_Research/Paddy.../V3.pdf](http://www.goviya.lk/agrilearning/Paddy/Paddy_Research/Paddy.../V3.pdf).
- Adhikari, K. (2006)**, *Access, Benefit Sharing and Prior Informed Consent under CBD, ITPGRFA and TRIPs: Legal Mechanism to Protect Farmers' Rights in South Asia*. SAWTEE.
- Beronio, R. and J. Payumo (2002)**, "Enforcing TRIPs in Asia: The implications for agricultural trade and development, and an agenda for effective compliance." [www.searca.org/ajad/archives/v-04/01/ajad\\_v4\\_n1\\_beronio.pdf](http://www.searca.org/ajad/archives/v-04/01/ajad_v4_n1_beronio.pdf).
- Central Bank of Sri Lanka, Annual Report (2013)**, Central Bank of Sri Lanka.
- Correa, C. (2000)**, *Intellectual Property Rights, The WTO and Developing Countries, The TRIPs Agreement*. London: Zed Books Ltd.
- Creswell, J.W. (2003)**, *Research Design: Qualitative, Quantitative and Mixed Methods Approach*. Thousand Oaks, CA: SAGE.
- Department of Census and Statistics (2010)**, *Agriculture Census*. [www.statistics.gov.lk/.../Paddy%20St...](http://www.statistics.gov.lk/.../Paddy%20St...)
- Dixon, P, and Christine Greenhalgh (2002)**, *The Economic of Intellectual Property: A Review to Identity Themes for Future Research*. [www.law.northwestern.edu/journals/njtip/v5/n3/](http://www.law.northwestern.edu/journals/njtip/v5/n3/).
- Farmersrights.org**. *Protecting Farmers' Rights in the Global IPR Regime*. n.d. [www.farmersrights.org/resources/global\\_articles\\_16.html](http://www.farmersrights.org/resources/global_articles_16.html).
- Fink, C, and E. Maskus (2005)**, *Why We Study Intellectual Property Rights and What We Have Learned*. <http://www.iie.com/>.
- Grain. (2001)**, *Bio-piracy, TRIPs and the patenting of Asia's Rice*. n.d. <http://www.grain.org/briefings/?id=29>.
- . *Ultimate Control of Agricultural R&D in Asia*. <https://www.grain.org/article/entries/30-intellectual-property-rights-ultimate-control-of-agricultural-r-d-in-asia>.
- GRAIN, and Kalpavriksh (2002)**, *Traditional knowledge of biodiversity in Asia-Pacific: Problems of Piracy and Protection*. [www.grain.org/briefings\\_files/tk-asia-2002-en.pdf](http://www.grain.org/briefings_files/tk-asia-2002-en.pdf).
- Gunasekera, S. (2007)**, 'Issues Faced by Sri Lanka in Relation to Plant Genetic Resources and Rights of Farmers' *Farmers' Rights to Plant Genetic Resources in Sri Lanka*. Colombo: Law and Society Trust.
- Gunewardena, J. (2006)**, *An Uncertain Future: Traditional plant varieties and their crop wild relatives in Sri Lanka*. Colombo: Law and society Trust.
- Hirimuthugodage, D.**, "Agreement and the Agriculture in South Asia: A Sri Lankan Perspective." *South Asian Economic Journal*, 2011: 287-305.
- Law and Society Trust (2006)**, *An Uncertain Future : Traditional Plant Varieties and their Crop Wild Relatives in Sri Lanka*. Colombo: Law and Society Trust.
- Law and Society Trust (2007)**, "Issues faced by Sri Lanka in Relation to Plant Genetic Resources and Rights of Farmers." In *Farmers' Rights to Plant Genetic Resources in Sri Lanka*, by S. Gunasekera, 38-65. Colombo: Law and Society Trust.

- Maskus, K. (2000)**, *Intellectual Property Rights and Economic Development: Intellectual Property Rights in the Global Economy*. <http://www.iie.com/>.
- Mathur, A. (2003)**, "Who Owns Traditional Knowledge ?"; Indian Council for Research on International Economic Relations. <http://icrier.org/pdf/WP96.pdf>
- Ministry of Agriculture, Sri Lanka Agriculture, Information about Agriculture in Sri Lanka**. n.d. <http://www.nationsencyclopedia.com/economies/Asia-and-the-Pacific/Sri-Lanka-AGRICULTURE.htm>.
- Movement for National Land and Agricultural Reform (2000)**, *Plant Breeders' Rights Law in Sri Lanka*. [www.monlar.net](http://www.monlar.net) on.
- National Science Foundation (2008)**, *Research and Development Survey*. Colombo: National Science Foundation.
- Ozkan, B.C. (2004)**, *Using NVivo to Analyze Qualitative Classroom Data on Constructivist Learning Environments*. <http://www.nova.edu/ssss/QR/QR9-4/ozkan.pdf>.
- Panagariya, A. (1999)**, *TRIPs and the WTO: An uneasy marriage*. [www.columbia.edu/~ap2231/Policy\\_Papers/TRIPSWTO2](http://www.columbia.edu/~ap2231/Policy_Papers/TRIPSWTO2).
- Regine, A. (2007)**, "Protecting Farmers' Rights in the Global IPR Regime: Challenges and Options." *Trade Insights*, 30-32.
- Sahai, S.(2000)**, "GATT/ WTO and the TRIPs Agreement: South Asian Perspective." *South Asia Economic Journal*, 1 (2) pp 25-41.Sage Publications India Pvt Ltd. India: New Delhi.
- Samaratunga, P. (2011)**, "Multiple Facets of Food (In) Security in Sri Lanka : An input to Food Policy"; in Surabhi Mittal and Deepthi Sethi eds. *Policy Options to Achieve Food Security in South Asia*. Cambridge University Press India .
- Shankar,R.A. (1996)**, "Intellectual Property Right and Indian Agriculture : Some Issues"[http://www.ncap.res.in/upload\\_files/policy\\_brief/pb4/pb4.htm](http://www.ncap.res.in/upload_files/policy_brief/pb4/pb4.htm)
- The Peterson Institute for International Economics, Intellectual Property Rights and Economics**. n.d. <http://www.iie.com/>.
- Trade Insight (2007)**, "Intellectual Property Rights and Development." *Trade Insight*, 1-2.
- Van Wijk J. and Jaffe , W. (1995)**, " Intellectual Property Rights and Agriculture in Developing Countries?" University of Amsterdam : Amsterdam.
- Weerasena,S. L and W.P.Madawanaarachchi (2003)**, "Improving Quality Seed Supply in Rice" [agrilearning.goviya.lk/Paddy/Paddy\\_Research/Paddy\\_pdf/A11.pdf](http://agrilearning.goviya.lk/Paddy/Paddy_Research/Paddy_pdf/A11.pdf).
- Weerasinghe, A.(2004)**, " Farmers' Rights and the TRIPs Agreement: Biodiversity Under Threat." *Sunday Observer Magazine*.
- Weston,K. (2003)**, "The Impact of TRIPs on Agricultural Economies in the Developing World"; Murdoch University Electronic Journal of Law, Volume 10 (3). <http://www.austlii.edu.au/au/journals/MurUEJL/2003/24.html>
- World Trade Organization, TRIPs Agreement**. n.d. [https://www.wto.org/english/tratop\\_e/trips\\_e/t\\_agm0\\_e.htm](https://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm).

# Annexure

## Annexure I Perception Survey Questionnaire

### **Survey On “Intellectual Property Rights in Protecting New Plant Varieties and Farmers’ Traditional Knowledge – The Case of Rice in Sri Lanka”**

#### **Background**

*It is mandatory for Sri Lanka to follow WTO’s Trade Related Intellectual Property Rights (TRIPs) agreement; however, Sri Lanka is far behind in implementing and formulating Intellectual Property Rights (IPRs) on the agricultural sector due to several reasons. The agreement states that member countries have to grant patent protection to micro-organisms and non-biological and microbiological processes; and provide protection for plant varieties, either by patent, an effective sui generis system or a combination thereof. Countries which have strong IPRs are in a better position in international trade than countries which do not have a well formulated IPRs system. This survey attempts to discover the perceptions of main stakeholders regarding the IPRs on the Sri Lankan agricultural sector.*

You are kindly requested to make your free assessments of the available protection to plant varieties, plant genetic resources and farmers’ rights in Sri Lanka. Some of the aspects covered in the questionnaire are given below.

Please TICK or HIGHLIGHT the number that best represents the strength of the rules and regulations (or the statement) available in Sri Lanka to protect plant varieties and farmers’ rights. The lowest number represents Most Ineffective and the highest number represents the Most Effective. If you feel you do not have sufficient information about a particular question, you may choose to leave it blank.

Completing the Questionnaire should take less than 5 minutes of your time. Please email the completed questionnaire to dilani@ips.lk or nadeesha@ips.lk.

<b>Aspects</b>	<b>Description</b>
<b>Farmers' rights</b>	Farmers' Rights consist of the customary rights of farmers to save, use, exchange and sell farm-saved seed and propagating material, their rights to be recognized, rewarded and supported for their contribution to the global pool of genetic resources as well as to the development of commercial varieties of plants, and to participate in decision making on issues related to crop genetic resources.
<b>Plant genetic resources</b>	Plant genetic diversity is probably more important for farming than any other environmental factor, simply because it is the factor that enables adaptation to changing environmental conditions. As farmers are custodians and developers of crop genetic resources, their rights in this regard are crucial for enabling them to maintain this vital role for local and global food security, and they are a central means in the fight against poverty.
<b>TRIPs agreement</b>	A WTO agreement, which came into effect on 1 January 1995, is to date the most comprehensive multilateral agreement on intellectual property rights.
<b>Other agreements relating to plant resources and farmers' rights</b>	Convention on Biological Diversity (CBD), Convention of the Union for the Protection of New Varieties of Plants (UPOV).
<b>The Plant Protection Act No. 35 of 1999</b>	It makes provisions against the introduction and spread of any organism harmful to or leading to destruction of plants and for the sanitation of plants in Sri Lanka.
<b>* Intellectual Property Act No: 36 of 2003</b>	This is in line with the WTO requirements. It has recognized that plants, animals and other micro-organisms could not be patentable.
<b>* Sui-generis system</b>	Special protection system adapted to a particular subject matter, as opposed to protection provided by one of the main systems of intellectual property protection, e.g., the patent or copyrights system.
<b>* Benefit Sharing Scheme</b>	It is a compensation scheme, designed to bring equitable sharing of compensation to countries of origin for genetic resources that are subsequently commercialized.

1. What are the issues faced by Sri Lanka in protecting new plant genetic resources and rights of farmers?

- Lack of laws and policies or the deficiencies contained therein

Low High  
0—1—2—3—4—5

- Improper enforcement of laws

Low High  
0—1—2—3—4—5

- Lack of a proper institutional framework

Low High  
0—1—2—3—4—5

- Lack of awareness and knowledge

Low High  
0—1—2—3—4—5

- Malpractices at grass root levels

Low High  
0—1—2—3—4—5

- Any other factors?

.....  
.....

2. Does Intellectual Property Rights Act No: 36 of 2003 provide sufficient legal protection for plant varieties and farmer's rights?

Low High  
0—1—2—3—4—5

3. Does Act No: 36 of 2003 enhance the research and development activities in the plant breeding sector?

Low High  
0—1—2—3—4—5

4. How important are the available plant varieties in improving agricultural sector in a country?

Low High  
0—1—2—3—4—5

5. How important is farmers' traditional knowledge in improving plant varieties?

Low High  
0—1—2—3—4—5

6. Does Sri Lanka have sufficient technology to improve plant varieties and genetic resources?

- Rice

Low High  
0—1—2—3—4—5

7. Who are the main stakeholders in improving plant varieties?

- Farmers

Low High  
0—1—2—3—4—5

- Department of Agriculture

Low High  
0—1—2—3—4—5

8. Will sufficient IPRs stimulate investments in agricultural sector?

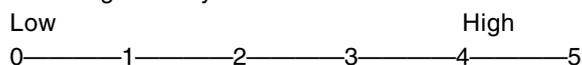
Low High  
0—1—2—3—4—5

9. What is the most suitable method for Sri Lanka to protect plant varieties and farmers' traditional knowledge?

- Patents



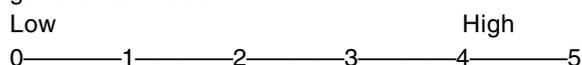
- Sui generis system



10. Will Sri Lanka be better-off without implementing rules and regulations in-line with TRIPs agreement?



11. Will Sri Lanka be better –off without Plant breeder's rights that would have enhanced the free exchange of genetic resources?



12. Elaborate your answer for question number 13

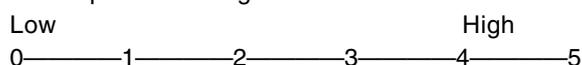
.....

13. Does the draft plant breeder's law provide sufficient safety to the traditional crop varieties?

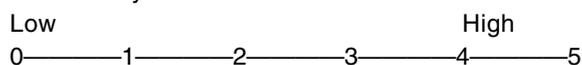


14. What is the main institution responsible for making rules and regulations to protect plant varieties and farmers rights in Sri Lanka?

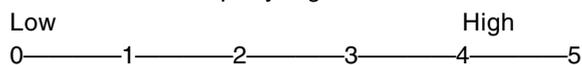
- Department of Agriculture



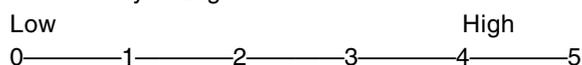
- Ministry of Environment and Natural Resources



- Intellectual Property Rights Office



- Ministry of Legal Affairs



- Civil society



15. Is it important for Sri Lanka (or any other agriculture based developing country) to have a strong IPR system in agricultural sector to face competition in international trade?



16. What are your suggestions to protect plant varieties and farmers' traditional knowledge?.....

## Annexure II Guidelines for Key Informant Interviews

### Research Study On "Intellectual Property Rights in Protecting New Plant Varieties and Farmers' Traditional Knowledge - The Case of Rice in Sri Lanka"

#### In-depth Interviews amongst Policy Makers

##### Respondent Information

**Name:**

**Designation:**

**Date & Time:**

1. What are the issues faced by Sri Lanka in protecting new plant varieties?
2. What are the issues faced by Sri Lanka in protecting farmers' traditional knowledge?
3. How important are the available plant varieties in improving agricultural sector in Sri Lanka?
4. How important is farmers' traditional knowledge in improving plant varieties? In Sri Lanka and internationally?
5. Does Sri Lanka have sufficient technology to improve plant varieties and genetic resources?
6. Who are the main stakeholders in improving plant varieties?
7. What are the existing laws in protecting new plant varieties, and farmers' traditional knowledge? As an example;
  - a. Act No. 36, 2003: IP Act.
  - b. Fauna and Flora Protection Ordinance as amended by Fauna and Flora Protection (Amendment) Act No. 49, 1993.
  - c. Plant Protection Act No. 35, 1999.
  - d. Seed Act No. 22, 2003.
8. International conventions/agreements ratified by Sri Lanka with regard to plant varieties and farmers' rights
  - a. TRIPs Agreement.
  - b. International Convention for the Protection of New Varieties of Plants.
  - c. International. Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)
  - d. United Nations Convention on Biological Diversity.
9. What are the available laws to protect seeds in Sri Lanka? with especial reference to rice seed?
10. Does Intellectual Property Rights Act No: 36 of 2003 provide sufficient legal protection for new plant varieties and farmer's rights?
11. Do we have sufficient laws to protect our own plant genetic resources?
12. How important is the draft Bill on Protection of New Plant Varieties and Breeder's Act?
13. What is the main institution responsible for making rules and regulations to protect plant varieties and farmers rights in Sri Lanka?
14. What are your suggestions to protect new plant varieties and farmers' traditional knowledge?

**Annexure III**  
**Farmer Focused Group Discussions Guidelines**

දිස්ත්‍රික්කය		විෂය	
ගම්		ස්ත්‍රී/පුරුෂ බාවය	
ගොවිජන කේන්ද්‍රය		පවුලේ සාමාජික සංඛ්‍යාව	
නම		අධ්‍යාපන මට්ටම	

1. වගා කරන ඉඩම් ප්‍රමාණය .....
2. ඔබ වී ගොවිතැන හා සම්බන්ධ වී කොපමණ කලකද? .....
3. ඔබ වී ගොවිතැන සම්බන්ධ දැනුම ලබාගත්තේ කෙසේද? .....
4. ඔබ වගා කරන්නේ,
  - a. සම්ප්‍රදායික වී වර්ග
  - b. නව වී වර්ග
5. ඔබ නව වී වර්ග පිළිබඳව දැනගත්තේ කෙසේද? .....
6. සම්ප්‍රදායික වී වර්ග වලට වඩා නව ප්‍රභේදවල ඇති වාසි මොනවාද? .....
7. ඔබට කන්නයකට අවශ්‍ය බිත්තර වී ප්‍රමාණය කොපමණද? .....
8. ඔබ එම බීජ සපයා ගන්නේ කෙසේද?
  - a. තමන් විසින් පසුගිය කන්නවල අස්වැන්නෙන් සැකස ගැනීම
  - b. අසල්වැසි ගොවීන් සමඟ හුවමාරු කරගැනීම
  - c. කෘෂිකර්ම දෙපාර්තමේන්තුවෙන් මිලදී ගැනීම
9. ඔබ ගොවිතැන් කටයුතු වලදී ඔබ සතු පාරම්පරික දැනුම භාවිතයට ගන්නේද?
 

ඔව්  නැත
10. ඔබට බිත්තර වී ලබා ගැනීමේ අපහසුතා තිබේද?
 

ඔව්  නැත
11. ඔබ සතු පාරම්පරික දැනුම ආරක්ෂා විය යුතු යයි ඔබ සිතන්නේද?
 

ඔව්  නැත
12. ගොවි මහතෙකු අලුත් වී ප්‍රභේදයක් සොයාගතහොත් ඒ සඳහා අයිතිය ඔහුට ලබා දී ඒ වෙනුවෙන් දීමනාවක් ඔහුට ලබා දිය යුතු යයි ඔබ සිතන්නේද?
 

ඔව්  නැත
13. ඔබ ගොවිජන අයිතීන් පිළිබඳව දැනුවත්ද?
 

ඔව්  නැත
14. ඔබට හැඟෙන ආකාරයට ගොවිජන අයිතීන් මොනවාද?
 

.....
15. මෙම අයිතීන් තිබී මාර්ගයෙන් සුරැකිය යුතු යැයි ඔබ සිතන්නේද?
 

.....
16. ඒ සම්බන්ධයෙන් වගකිව යුතු ආයතන මොනවාද?
  - a. රජය
  - b. පෞද්ගලික ආයතන
  - c. රාජ්‍ය නොවන සංවිධාන
  - d. වෙනත් .....

**Annexure IV**  
**List of Participants at the Expert Consultation Workshop**

Name	Institution
Mrs. G.R.Ranawaka	Intellectual Property Office
Dr. W.L.D. Samarasinghe	Rice Research Development Institute
Ms.Kanchana Abesekare	Industrial Technology Institute
Mr. T.M.K.P.K. Hemarathna	Ministry of Agriculture
Mr. P. Gurusinghe	Farmer Organization
Mr. Manjula Wijesinghe	Agriculture Instructor - Ankumbura
Dr. D.M.N.Dissanayake	Ministry of Agriculture
Dr. Lalith Perera	Coconut Research Institute
Mr.Athula Liyanage	PGRC - Department of Agriculture
Dr. R.M.Herath	Department of Agriculture
Ms. N. Kamardeen	Faculty of Law
Mr. W.K.Sugathadasa	Farmer Organization
Dr. S.L Weerasena	Department of Agriculture
Mrs. Renuka Jayathilaka	Industrial Technology Institute
Dr. K Hettiarachchi	PGRC – Department of Agriculture
Dr.Kumudini Gunasekera	Coordinating Secretariat for Science, Technology and Innovation (COSTI)
Dr. (Mrs) Padmini C. Girihagama	Sri Lanka Council for Agricultural Research Policy (SLCARP)
Dr. Sumith Abeywardhana	CIC Agri Business
Mr.T.G. Wijepala	Farmer Organization
Mr.Aruna Weerakoon	Private Sector
Dr. Radika Samarasekara	Industrial Technology Institute
Ms. Diana De Alwis	University of Peradeniya

**Annexure IV.1**  
**Some Photographs of the Expert Consultation**



**Annexure V**  
**Photographs of Selected Focus Group Discussions**





## Institute of Policy Studies of Sri Lanka

100/20, Independence Avenue, Colombo 7, Sri Lanka

Tel: +94 11 2143100 Fax: +94 11 2665065

Email: [ips@ips.lk](mailto:ips@ips.lk); Website: [www.ips.lk](http://www.ips.lk)

Blog: 'Talking Economics' - <http://ipslk.blogspot.com>

Twitter: [www.twitter.com/TalkEconomicsSL](http://www.twitter.com/TalkEconomicsSL)

ISBN 978-955-8708-94-1