

## Contributions of Dr RS Paroda to the Field of Genetic Resource Management

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Dr RS Paroda has been a champion for the cause of genetic resources (GR) management for over five decades. His passion for the subject has led to massive reforms in infrastructure, capacity building and projects/programs in the arena of agrobiodiversity management and use, which has a direct bearing in increasing agricultural productivity leading to food and nutritional security. The Indian Society for Plant Genetic Resources (ISPGR) established in 1987, was his brainchild and as the Founder (1987-88) as well as current (2022-24) President of the society, he has immensely contributed in its overall growth and visibility. This paper gives a brief overview on the contributions of Dr RS Paroda in the area of GR management.

**Key Words: Genebank, ISPGR, National Bureau, Regional and Global Networks**

### Introduction

Genetic resources are the building blocks for global food, nutrition and environmental security. Accordingly, their efficient management such as exploration, evaluation, exchange and conservation through use is fundamental for the survival of humanity and for posterity. Recognising this and being an ardent supporter, Dr Rajendra Singh Paroda has made extra-ordinary contributions in the field of genetic resource (GR) management at the national, regional and global level, as elaborated below.

### GR Contributions at National Level

As Director, National Bureau of Plant Genetic Resources (NBPGR) from 1985-1987, Dr Paroda took major initiative to build one of the most modern Indian Genebank at New Delhi, seeking then the funding support of US \$ 25 million from the United States Agency for International Development (USAID). The Genebank was inaugurated by the then Hon'ble Vice-President of India, during the II Crop Science Congress organised by Dr Paroda in 1996. This Genebank, the second largest in the world, currently houses more than 460, 000 valuable accessions of different crops.

Considering the importance of capacity building in the field of genetic resources, he not only got all 100 scientists of NBPGR trained in the USA, but was also instrumental in initiating MSc (PGR) course in 1997 and PhD (PGR) from 2004 onwards at the Post-Graduate School of Indian Agricultural Research Institute (IARI), New Delhi.

For promotion of PGR science and realising the importance of publishing scientific literature, Dr Paroda established the Indian Society of Plant Genetic Resources (ISPGR) in 1986 which got registered in 1987 and has made significant contributions, including holding of a few national and international conferences. These include: i) National Symposium on Plant Genetic Resources held in New Delhi in 1987; ii) National Symposium on Conservation of Agrobiodiversity held in 1997; iii) Role of Science and Society towards Plant Genetic Resources Management – Emerging Issues, held in 2005, New Delhi; iv) National Symposium on Recent Global Developments in the Management of Plant Genetic Resources held at New Delhi, 2009 v) Brainstorming Meeting on Strategies for Implementation of Delhi Declaration for Agrobiodiversity Management in New Delhi in 2017; vi) National Webinar on Implementation of Access to Plant Genetic Resources and Benefit Sharing (ABS) in 2020. The proceedings of these events have served effectively the purpose of knowledge dissemination among PGR scientists.

Convinced of the importance of genetic resources, Dr Paroda as Director General, Indian Council of Agricultural Research (from 1994-2001) created four new National Bureaux on: (i) Animals, (ii) Fish, (iii) Micro-organisms, and (iv) Insects. He also launched a National Action Plan on PGR management in 1999, which spurred collections (almost doubled in five years) and evaluation of genetic resources through inter-institutional collaboration at the national level.

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Dr RS Paroda, President, ISPGR (2022-24) along with dignitaries, invitees, awardees and ISPGR members at Award Function held on August 20, 2022

Under his visionary leadership, two important national laws relating to genetic resources were drafted, which were enacted by the Parliament in record time. These are: i) Protection of Plant Varieties and Farmers' Rights Act (2001), and ii) Biological Diversity Act (2002). He also served from 2011-2014 as the Chairman, National Advisory Board on Management of Genetic Resources and ensured effective coordination and collective action by all the Bureaux.

Recognising his significant contributions in the field of genetic resource management and agricultural development, Dr Paroda was awarded the most prestigious national civil honour 'Padma Bhushan' by the Hon'ble President of India in 1998. He also received the famous 'Dr Norman Borlaug Award' from President of India in 2006 and 'Dr MS Swaminathan Award' in 2020. Recognising his enormous support for genetic resource programs, ICRISAT honoured him by naming its Genebank as 'Rajendra S. Paroda Genebank' in 2005.

### GR Contributions at Regional Level

At the regional level, while working as Regional Plant Production and Protection Officer, FAO, Bangkok (1992-1994), and as Executive Secretary, Asia Pacific Association of Agricultural Research Institutions (APAARI) for more than 22 years, Dr Paroda could

initiate a number of regional PGR networks for evaluation and use of genetic resources in different countries. These were on:

- i. Tropical Asian Maize Network (TAMNET) involving International Maize and Wheat Improvement Center (CIMMYT), Mexico;
- ii. Cereals and Legumes Asia Network (CLAN) involving the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India, International Centre for Agricultural Research in the Dry Areas (ICARDA), Syria and World Vegetable Center (AVRDC), Taiwan.
- iii. Council for Partnership on Rice Research in Asia (CORRA) involving International Rice Research Institute (IRRI), Philippines;
- iv. Inter-regional Network on Cotton in Asia and North Africa (INCANA) involving Association of Agricultural Research Institutions in the Near East & North Africa (AARINENA), APAARI, Central Asia and the Caucasus Association of Agricultural Research Institutions (CACAARI), Agricultural Research, Education and Extension Organization (AREO) Iran and ICARDA.
- v. Inter-Regional Network on Cotton in Asia and North Africa (INCANA) involving Association of



Agricultural Research Institutions in the Near East and North Africa (AARINENA), APAARI and CACAARI;

- vi. Asia-Pacific Group of Fisheries and Aquatic Research (GoFAR) involving World Fish Center, Malaysia.
- vii. Three regional PGR networks for South Asia, Southeast Asia and the Pacific region facilitated by Bioversity International.

These networks helped in joint evaluation and exchange of useful genetic resources by concerned NARS in each sub-region.

As Head of CGIAR Consortium for Sustainable Agriculture in Central Asia and the Caucasus (CAC) region, Dr Paroda catalysed the process of strengthening the Genebanks in Azerbaijan and Uzbekistan and created new Genebanks in Armenia, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan. The one established at Krasnyvadopad in Kazakhstan has been named as 'Raj Paroda Genebank'. For these extra-ordinary efforts, the CAC team under the leadership of Dr Paroda had won the prestigious "King Baudouin Award" of CGIAR.

To promote regional cooperation and scientific networks, Dr Paroda took major initiative to organise a number of Regional Expert Consultations as follows:

- i. Regional Roundtable Meeting on Implementation of the International Treaty for Plant Genetic Resources for Food and Agriculture in 2005 in Bangkok;
- ii. Expert Consultation on Progress of Research Networks at ICRISAT in 2007;
- iii. International Symposium on Agrobiodiversity in Suwon in 2010 which led to adoption of The Suwon Agro-Biodiversity Framework
- iv. Regional Workshop for Implementation of Suwon Agrobiodiversity Framework in 2011 in Kuala Lumpur;
- v. Regional Consultation on Genetic Resources in the Pacific held at Fiji (2012);
- vi. Regional Consultation on Medicinal Plants in 2013 in Bangkok.



A highly decorated scientist, Dr RS Paroda is recipient of many awards. Seen here with three Presidents of India in various award ceremonies, including Padma Bhushan (1998) (center)



Inaugural session of the '1st International Agrobiodiversity Congress (IAC2016)' in the presence of Hon'ble Prime Minister of India

### GR Contributions at Global Level

At the global level, Dr Paroda served as the Chairman of the Working Group on Farmers' Rights of FAO Commission on Plant Genetic Resources (1995-97) when he could get the Farmers' Right defined and agreed by the Commission. He also served as member of the International Committee constituted for Plant Genetic Resources by the Board on Agriculture, National Academy of Sciences, Washington for the period 1990-94 and recommended renovation and strengthening of the Genebank.

As founder chairman, Global Forum on Agricultural Research (GFAR), FAO, Rome, Dr Paroda had organised a Global Conference in 2000, in collaboration with Bioversity International in which "Dresden Declaration on Plant Genetic Resources for Food and Agriculture" was adopted, which defined a road map for strengthening PGR activities at the global level. Dr Paroda as Chair of GFAR also worked passionately and closely with Dr Ismail Serageldin, Chairman, CGIAR and Dr Geoff Hawtin, Director General, IBPGR to convince donors to support the cause of conserving global genetic resources. These efforts eventually led to the establishment of Global Crop Diversity Trust (GCDT) in 2004.

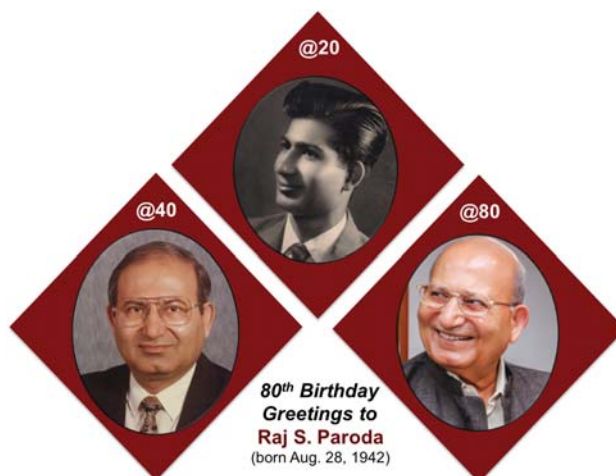
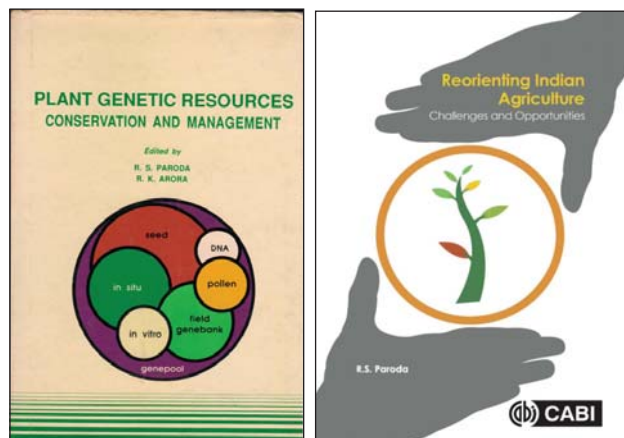
As Chairman, TAAS, Dr Paroda organised a 'Global Consultation on Use and Management of Agrobiodiversity for Sustainable Food Security' in 2013 at New Delhi. As President, ISPGR (2016-18),

he further visualised and organised very successfully the '1st International Agrobiodiversity Congress (IAC)' with 1,000 participants from 60 countries during 6-9 November, 2016 at New Delhi, which was inaugurated by the Hon'ble Prime Minister Mr Narendra Modi. Besides its proceedings, the conference also adopted "Delhi Declaration on Agrobiodiversity Management". The IAC has now become a regular event as 2<sup>nd</sup> Conference was held in November, 2021 in Rome organised by the Government of Italy in collaboration with Bioversity International and ISPGR. The third one is expected to be held in China in 2025.

### Publications on GR

Dr Paroda brought out several important publications including books, strategy papers and reports for creating awareness on conservation and use of agrobiodiversity. Significant ones include:

- i. Life Support Plant Species – Diversity and Conservation. National Bureau of Plant Genetic Resources, New Delhi. Eds. Paroda RS, Kapoor Promila, Arora RK and Bhag Mal. 1987. 190p;
- ii. Plant Genetic Resources-Indian Perspective, Eds. – Arora RK, Chandel KPS and Paroda RS, National Bureau of Plant Genetic Resources, New Delhi 1988. 545p;
- iii. Plant Genetic Resources – Conservation and Management Concepts and Approaches. Eds - Paroda



RS and Arora RK, International Board for Plant Genetic Resources, 1991, 392 p.

- iv. Agro-Biodiversity, Conservation, Management and Use. Eds.-Paroda RS, Rai M. and Gautam PL, 1998.
- v. Status of Plant Genetic Resources Conservation and Utilization in the Asia-Pacific Region: Regional Synthesis Report. Eds. – Paroda RS and Chandel KPS, 2000;
- vi. Strategy Paper on Implementing the International Treaty to Address Current Concerns about Managing our Plant Genetic Resources by Dr. RS Paroda, January, 2012;
- vii. “Reorienting Indian Agriculture” by Dr RS Paroda published by CABI, London, 2018. 296p, which has a Section on Managing Plant Genetic Resources encompassing three chapters (a) The International Treaty–Current Concerns; (b) Agrobiodiversity: Dynamic Change Management, and (c) Managing Agrobiodiversity Through Use: Changing Paradigms.

### Conclusion

Dr RS Paroda has been a champion for the cause of genetic resources management for over five decades. Rightly nicknamed as “Genebank Guru”, his passion for the subject has led to massive reforms in infrastructure, capacity building and projects/programs in the arena of agrobiodiversity management and use, which has a direct bearing in increasing agricultural productivity leading to food and nutritional security. The ISPGR established in 1987, was his brainchild and as the Founder (1987-88) as well as current (2022-24) President of the society, he has immensely contributed in its overall growth and visibility. Indian agriculture is fortunate to have a globally recognized visionary like him. On the occasion of his 80<sup>th</sup> birthday on August 28, 2022, the genetic resources fraternity wishes this octagerian and living legend many more years of healthy life and happiness, and he continues to remain a torch-bearer for generations ahead.