



Regional Workshop on Youth and Agriculture: Challenges and Opportunities

Islamabad, Pakistan

23-24 October, 2013



Proceedings and Recommendations

Organizers

**Asia-Pacific Association of Agricultural Research Institutions (APAARI)
Pakistan Agricultural Research Council (PARC)**

Co-Sponsors





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Editors

Raj Paroda, Iftikhar Ahmad, Bhag Mal,
YS Saharawat and ML Jat

Organizers

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For copies and further information, please write to:

The Executive Secretary

Asia-Pacific Association of Agricultural Research Institutions (APAARI)

C/o Food and Agriculture Organization of the United Nations

Regional Office for Asia & the Pacific

4th Floor, FAO RAP Annex Building

201/1 Larn Luang Road, Klong Mahanak Sub-District

Pomprab Sattrupai District, Bangkok 10100, Thailand

Tel : (+662) 282 2918

Fax : (+662) 282 2919

E-mail: apaari@apaari.org

Website : www.apaari.org

The Organizers

APAARI (Asia-Pacific Association of Agricultural Research Institutions) is a regional association that aims to promote the development of NARS in the Asia-Pacific region through inter-regional and inter-institutional cooperation. The overall objectives of the Association are to foster development of agricultural research in the Asia-Pacific region so as to promote exchange of scientific and technical information, encourage collaborative research, promote human resource development, build up organizational and management capabilities of member institutions and strengthen cross-linkages and networking among diverse stakeholders. To meet these needs, the Association: i) convenes General Assembly once in two years, holds regular Executive meetings yearly and organizes consultations, workshops, trainings, etc. ii) collects, collates and disseminates research findings, iii) maintains links with other fora in the region and outside through meetings/participation and information exchange, and iv) promotes need based collaboration in research projects among member institutions, analyzing priorities and focusing on regional agricultural development. For details, please visit: www.apaari.org

PARC (Pakistan Agricultural Research Council) is an autonomous organization under the Ministry of National Food Security and Research, Government of Pakistan. It was formerly known as Food and Agriculture Committee of Pakistan (FACP), which was established in 1951 and renamed in 1964 as Agricultural Research Council (ARC). The ARC was reorganized as Pakistan Agricultural Research Council (PARC) in 1978. The Pakistan Agricultural Research Council Ordinance was promulgated in 1981 and the Council was established on 29 December, 1981 with its headquarters at Islamabad. The Council is the apex agricultural research organization at the national level with main objective to strengthen Pakistan's agricultural research system, comprising the federal and provincial components. PARC conducts research of national importance that is generally basic and long-term in nature. The Council hosts a large pool of qualified multi-disciplinary manpower and extensive multi-dimensional infrastructure located all over the country and especially in the fragile and marginal ecosystems. PARC has research establishments spread all over the country in different ecologies. As custodians of the national agricultural research system with long-standing links to the international agricultural research community, PARC provides the bridge to the frontiers of science and its translation into implementable, replicable, and scalable solutions. For details, please visit: www.parc.gov.pk

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Foreword

Youth and agriculture are the twin pillars of sustainable growth in the Asia-Pacific region. The region is home of two-third of the world's hungry people and supports around 70 per cent of world's youth population. Globally, most young people (around 85%) live in the developing countries, where agriculture provides the main source of income and, therefore, it is vital that young people are brought to the mainstream of agriculture. But, in the recent past, retaining youth in agriculture has been identified as one of the major problems. Today's agriculture reflects a poor social image and hence, rural youth is moving towards urban sector for alternative and better opportunities. The future challenges are complex in nature and magnitude especially due to shrinking natural resources, declining profitability and adversaries of climate change. Obviously, these challenges are not only posing a threat to agriculture and food and nutrition security but also creating wider socioeconomic gaps within the society. Overall, the current agricultural policies do not provide attractive and sufficient avenues for engaging youth in agriculture.

Youth has the capability and capacity to make significant changes in agriculture but needs right policies and proper grooming. Many of them around the world are already making significant contributions to the Millennium Development Goals (MDGs), but their work needs to be acknowledged, recognized and strengthened. In the Asia-Pacific Region, the past glory of "Green Revolution" was achieved due to policy support, and infrastructure as well as human resource development of youth. There is an urgent need to involve youth in decision-making processes at all levels to reorient agricultural research for development. Each country needs to develop long-term, consensus-based, and integrated youth policy, for which there is a great need to share experiences at national, regional and global level. There is a high potential for cooperation among agri-stakeholders, particularly through networking of youth at different levels.

The future of agriculture warrants impact oriented efforts at scale by involving youth to play a catalytic role in establishing 'Plough to Plate' chain. This depends on greater involvement of youth through effective networking for knowledge sharing and outscaling of innovations. It is through their active involvement that we can move forward to make agriculture an agri-business oriented profession which is very crucial for the prosperity of our farming communities.

In order to address the above concerns, the Asia-Pacific Association of Agricultural Research Institutions (APAARI) and Pakistan Agricultural Research Council (PARC), Islamabad, Pakistan jointly organized a Regional Workshop on "Youth and Agriculture: Challenges and Opportunities" in collaboration with GFAR, CIMMYT, ICARDA, ICRISAT, IFPRI, and Bioversity International at Islamabad, Pakistan on 23-24 October, 2013. Organizing this regional workshop was indeed very timely to have in-depth discussions and streamline national and regional priorities and strategies for attracting quality youth in agriculture through creating enabling policy environment.

This publication summarizes the proceedings of the Regional Workshop on “Youth and Agriculture: Challenges and Opportunities”. I believe that the key recommendations embodied in this publication will immensely help the policy makers, youth organizations, researchers, farmers, private sector and other stakeholders in building conducive policy environment to attract and retain quality youth as human capital in agriculture for sustained production and improved livelihood in the Asia-Pacific region.



Raj Paroda
Executive Secretary
APAARI

Acronyms and Abbreviations

ADB	Asian Development Bank
AERS	Agricultural Economics and Rural Sociology
AFA	Asian Farmers Association
APAARI	Asia-Pacific Association of Agricultural Research Institutions
AR4D	Agricultural Research for Development
AR4R	Agricultural Research for Result
ARC	Agricultural Research Council
ASEAN	Association of South East Asian Nations
ASLP	Agriculture Sector Linkage Program
BARC	Bangladesh Agricultural Research Council
BISA	Borlaug Institute for South Asia
BKS	Bharat Krishak Samaj
CAPSA	Centre for Alleviation of Poverty through Sustainable Agriculture
CARP	Council for Agricultural Research Policy
CAU	Central Agricultural University
CGIAR	Consultative Group on International Agricultural Research
CIMMYT	International Maize and Wheat Improvement Center
CSO	Civil Society Organization
DARE	Department of Agricultural Research and Education
DG	Director General
FACP	Food and Agriculture Committee of Pakistan
FAO	Food and Agriculture Organization of the United Nations
FO	Farmer Organization
GCARD	Global Conference on Agricultural Research for Development
GDP	Gross Domestic Product
GFAR	Global Forum on Agricultural Research
GM	Genetically Modified
GMO	Genetically Modified Organism

ICAR	Indian Council of Agricultural Research
ICARDA	International Center for Agricultural Research in the Dry Areas
ICM	Information Communication Management
ICRISAT	International Center for Research in the Semi-Arid Tropics
ICT	Information and Communication Technology
IT	Information Technology
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IMOD	Inclusive Market Oriented Development
MAFFM	Ministry of Agriculture, Forests, Fisheries and Meteorology
MARDI	Malaysian Agricultural Research and Development Institute
MNFS&R	Ministry of National Food Security and Research
MoA	Ministry of Agriculture
MPDR	Ministry of Planning, Development and Reforms
NAEAC	National Agricultural Education Accreditation Council
NARC	National Agricultural Research Centre
NARC	Nepal Agricultural Research Council
NARES	National Agricultural Research and Extension System
NARS	National Agricultural Research System
NASC	National Agricultural Science Center
NDRI	National Dairy Research Institute
NGO	Non-Governmental Organization
PARC	Pakistan Agricultural Research Council
PNG	Papua New Guinea
R&D	Research and Development
SACAN	South Asia Conservation Agriculture Network
SARC	South Asian Association for Regional Cooperation
SCNRERY	Society for Conservation of Natural Resources and Empowering Rural Youth
TAAS	Trust for Advancement of Agricultural Sciences
UoT	University of Technology
WB	World Bank
YPARD	Young Professionals in Agricultural Research for Development

Regional Workshop on Youth and Agriculture: Challenges and Opportunities

Introduction

The Asia-Pacific region supports 55 and 70 per cent of world's total and agricultural population respectively on less than one-fifth of global land, and agriculture is one of the key components of economic growth and rural livelihood. The region is the home of 60 per cent of the world's young population, 750 million youth below 25 and almost 50 per cent farmers with more than 50 years of average age. The lackadaisical attitude of rural youth towards farming is evident in the region and is mainly attributed to the lack of basic amenities, professional knowledge and inspirational pathways for their professional opportunities. The farming community has become poorer over the years due to small land holdings, comprising over 80 per cent of the total farming households in the region. Multiple risks associated with agriculture intensified the challenges due to overexploitation of natural resources interlinked with rapidly increasing globalization, soaring fuel and food prices, volatile markets and growing climatic extremes. Youth provides tremendous opportunity and is a great resource to be gainfully used for agricultural development in the region. Therefore, both farming and youth in the region are at cross-roads and need major transformation through advancement in innovation, capacity development, partnership and participatory approach for enhanced skills and attitude.

It is very well appreciated and evident through the successful business models of leading public and private sector organizations as well as multi-national companies (e.g. IT sector) that youth is more innovative, productive as well receptive and curious to engage in and contribute to new technologies and advancements. On the contrary, in agriculture sector, there has been a wide gap in energy (youth) and experience (elderly people), which is leading to ageing farming, slow pace of adoption of innovations and new technologies, huge losses in technology dissemination process, delinking science with society and hence making farming non-remunerative, non-resilient and unattractive for the youth. Under such scenario, the business as usual in agriculture is neither a remunerative and respectable profession particularly for youth nor a sustainable pathway to meet food, nutrition, and livelihood security in the Asia-Pacific region.

The challenges of retaining quality youth in agriculture have been recognized globally since it first figured prominently in 2006 during the global conference organized by the Global Forum on Agricultural Research (GFAR) in New Delhi, India. The deliberations during the conference resulted in an agreement to form a youth-led International Forum, which led to the formation of Young Professionals in Agricultural Research for Development (YPARD). The importance of youth in agriculture was further emphasized and structurally debated during the Second Global Conference on Agricultural Research for Development (GCARD 2) organized by the Global Forum on Agricultural Research (GFAR) at Punta del Este, Uruguay during 2012. The GCARD 2 had put-forth "Youth (including young women) and Agriculture" as one of the topics for focal discussions. The Chair of GCARD 2 Organizing Committee, emphasized that globally agriculture is an ageing and undervalued profession and youth needs special encouragement in all aspects of agricultural research for development (AR4D).

In the Asia-Pacific region, there has been a growing realization for emerging phenomenon of over-urbanization and growing unemployment of youth which is leading to social disparity on one hand and global food insecurity on the other. Prioritizing investments in youth and agriculture is, therefore, very crucial for attracting youth in agriculture. Greater and active involvement of youth in farm advisory, empowering them with knowledge to serve the society through creating technology-led business models and provide value added services and create employment opportunities is the way forward for enhancing agricultural productivity for a food secure society. This needs a paradigm shift in our approach and policy focused on youth to transform youth from 'Job Seekers' to 'Job Providers'. Capacity development of youth through informal and vocational training and creating awareness on new opportunities in agriculture including secondary and specialty agriculture will attract youth in agriculture, yet bridging the gaps between rural and urban divides and boosting rural economies in the Asia-Pacific region.

The local institutional, national and regional leaderships in the Asia-Pacific region, therefore, need to take initiatives for greater involvement of youth in policy planning and prioritizing investment for shaping their future in farming and prepare them as agricultural professional leaders of tomorrow's agriculture to sustainably feed the projected global population of 9.2 billion by 2050. The way forward, therefore, warrants providing unblemished and tangible pathways for engaging youth in agriculture through developing and implementing the farm youth and gender friendly agricultural technologies, practices and policies.

As a first stepping stone to GCARD 2 follow-up, a national initiative on young professionals in agriculture was taken in India and a National Workshop on "Foresight and Future Pathways of Agricultural Research through Youth in India" was organized jointly by the Indian Council of Agricultural Research (ICAR), Asia-Pacific Association of Agricultural Research Institutions (APAARI) and Trust for Advancement of Agricultural Sciences (TAAS), at National Agricultural Science Center (NASC) Complex, Pusa, New Delhi on 1-2 March, 2013. The deliberations in the workshop led to the development of a road map to define and delineate the pathways for developing and nurturing a new generation of young agricultural professionals and entrepreneurs with greater emphasis on technical capacity development, institutional arrangements, innovative networking and appropriate investments to harness the full potential of youth and bring qualitative change in their lives. In the Asia-Pacific region, the challenges and opportunities for youth in agricultural profession do not differ much. But, different countries are approaching differently for tapping agri-professionals for greater involvement in the farm sector. There are several youth-led successful models in different countries for transforming agriculture. However, these models lack appropriate mechanism for regional and cross boarder learning from each other's experiences. Keeping these challenges and opportunities in view, Regional Workshop on "Youth and Agriculture: Challenges and Opportunities" was jointly organized by the Asia-Pacific Association of Agricultural Research Institutions (APAARI) and Pakistan Agricultural Research Council (PARC) at Islamabad, Pakistan on 23-24 October, 2013 in collaboration with Global Forum on Agricultural Research (GFAR), International Maize and Wheat Center (CIMMYT), International Center for Agricultural Research in the Dry Areas (ICARDA), International Center for Research in the Semi-Arid Tropics (ICRISAT), International Food Policy Research Institute (IFPRI) and Bioversity International.

The regional workshop was focused on: (i) assessing national and regional constraints, opportunities and priorities for attracting youth (including young women) in agriculture to ensure food, nutritional and environmental security, (ii) exploring mechanisms for empowering farm youth

through their involvement in decision making process at local, national, regional and global level, (iii) understanding pathways to ensure effective participation of youth in agriculture through enabling policy environment, (iv) developing suitable mechanisms for greater involvement of youth through various initiatives and collaborations, and (v) creating synergies and networks for capacity development, access to new knowledge and linking science to society through youth.

The deliberations in the regional workshop were structured in five Technical Sessions: (i) AR4D Foresights for Youth: Global and Regional Dimensions, (ii) AR4D Foresights: Stakeholders Perspective for Youth, (iii) Youth Led Innovations, (iv) AR4D Reorientation: Perspective of Young Professionals, and (v) Break-out Group Sessions: Group I - Agricultural Research and Education for Youth; Group II - Policy Reorientation and Capacity Development; and Group III - Technology Dissemination for Enhancing Productivity and Farm Income to Attract Youth. The deliberations during the workshop highlighted that the future of agriculture warrants result orientated focus through agricultural research for result (AR4R). The future of Asia-Pacific agriculture depends on the quality and passion of youth, and therefore, there is a need to upbringing the youth cautiously. It would need the globalization of knowledge through innovative sharing mechanism and innovations for progress and prosperity of agriculture and youth in the region. It prominently emerged that youth is the future of agriculture and a pathway for sustainable food security in the Asia-Pacific region. Therefore, agricultural research for development (AR4D) priorities, policies and implementation strategy in the region need revamping to transform agriculture into agri-business, yet attracting the quality and passion of youth. In all, 114 participants including researchers and change agents from national agricultural research and extension system (NARES) of Asia-Pacific region, CGIAR institutes, policy planners, private sector representatives, NGOs, farmer organizations and students participated in the deliberations during the workshop. Out of these, more than 50 per cent participants were young agricultural professionals from NARES, CGIAR and private sector. All presentations were followed by in-depth discussions. This report provides the outcomes of deliberations and key recommendations for implementation by the AR4D community and policy planners for greater involvement of young professionals in agriculture in the Asia-Pacific region.

Inaugural Session

Dr. Iftikhar Ahmad, Chairman PARC, welcomed the Chief Guest, distinguished invitees and the participants. He emphasized that knowledge and innovations are the basis of agricultural and economic development of the world. The Asia-Pacific region has widespread poverty on one side and almost 50 per cent population below 20 years of age, a strong part on the other. Therefore, the immediate need is to empower youth through creating entrepreneurship and linking youth with regional and global knowledge and innovations. In his remarks, Dr. Ahmad stressed that youth is the social capital in the Asia-Pacific region and they have the capacity and capability to bring a new Green Revolution. He exhorted that Pakistan has traditional economy and agriculture is the base for its sustenance. Therefore, agriculture needs a transformation and be converted into industry and youth has the power to accomplish that. He further highlighted that youth is the strength for agriculture and economic development in Pakistan but they cannot be attracted to agriculture profession in isolation. Hence, there is a need to connect the youth with regional knowledge and learning platforms. Youth also needs proper guidance and that can be achieved through enhanced partnerships and networking. In this direction, this regional workshop is very critical and timely, he added.

Dr. Raj Paroda, Executive Secretary, APAARI, in his remarks, outlined the importance, genesis and necessity of organizing the Regional Workshop on “Youth and Agriculture: Challenges and Opportunities”. He highlighted that the Asia-Pacific region is agriculturally very vibrant with history of revolutions, for example, Green Revolution which could be realized through strong partnerships, infrastructure development with enabling policy support and human resource development. The region further needs several such revolutions and has the capacity to do so but business as usual will take us nowhere, he further added. Achieving the millennium development goals (MDGs), the Asia-Pacific region needs to revitalize the approach of AR4D with greater participation of its strong social capital, ‘the Youth’. He further highlighted that youth, gender and socially differentiated sections of the society are the major concerns of the global community for agricultural and economic development. Therefore, National Agricultural Research Systems (NARS) in the Asia-Pacific region have to re-think and concentrate their efforts to retain youth in agriculture through their wider involvement in foresight for research and partnership. This process needs skill enhancement and capacity development of youth in an organized manner. In the present era, capacity development can not be done in isolation and would essentially need strong partnership. The partnership provides wider opportunities in the region not only for youth but for agriculture as a whole. He exhorted that attention of international donors is required more towards Asia-Pacific region as it has been and will continue to be the food bowl of the world. In addition, South Asia has far more poverty and malnutrition than even Africa.

He highlighted the recent national and international events organized by APAARI on youth and women. He further stressed that recruiting youth on new positions is not going to solve the problem, but there is a need to train and groom them to face the upcoming challenges. The current education system also needs to be revisited and revamped keeping in view the emerging challenges and increasing demand of the private sector. The private sector is the least interested towards the agricultural youth in the region. Youth needs to be trained for agri-innovations and agri-business. including secondary agriculture, value chains, crop diversification, protected cultivation, sustainable intensification, mechanization, service windows and use of information communication technology (ICT) in agriculture. He further emphasized on the need to train and empower youth in a way that they become ‘Job Creators’ rather than ‘Job Seekers’. This is possible only through vocational education system which needs to be in place. Dr. Paroda further highlighted the global efforts for youth in agriculture by organizations like Young Professionals in Agricultural Research for Development (YPARD). He emphasized that we must be happy with our past accomplishments and it is like a dream come true through policy support, institutional and inter-institutional partnership and capacity development. However, to accomplish success in the future, we need highly competent young human resource and need to work on the principle of “*Think Globally and Act Locally*”. He asked the youth to keep the farmers first and emphasized on the need for research on innovations. These changes would require policy support and changing the mindset of policy makers and leaders. He reiterated that NARS in South Asia need to learn from China, which spends more than 25 per cent of the total agricultural budget on human resource development. He further stressed that APAARI had been and will continue to play the role of a catalyst and facilitator in its future endeavours.

Dr. Simon Hearn, Chairman, APAARI, in his address elaborated that in today’s world, regional partnership needs much attention due the common problems of changing climate and agricultural production system constraints. He stressed that we have both challenges and opportunities in farming in the region. These challenges and opportunities are similar to those in developed

and developing world. He mentioned that this workshop will provide a platform to discuss and understand the crux of the problems and suggest suitable strategies to solve these problems. He stressed that the major emphasis should be on taking these key messages to the policy makers so that we just do not talk but act. He exhorted the youth to bring a new Green Revolution and evolve it to suit the needs of diversifying economies. He emphasized that young rural people are thirsty for education but they leave farm in search of better and new opportunities. But, nowadays agriculture is getting increasing importance and agriculture based industries are on the rise, but this necessitates that agriculture education needs to be mainstreamed at school level. Today, agriculture is a sunrise industry and not sunset industry, but it has to compete with other sectors and can not stand alone. Therefore, there is a need to focus more on value addition at different levels in agriculture from 'Paddock to Plate'. He highlighted that APAARI is going to play a wider and important role in the region. He also stressed that role of funding agency is going to be very important at the national and regional level so that right work can be initiated at right time especially in agricultural research for youth. He further shared that APAARI as a neutral common platform can provide evidence based advocacy in the region. He also emphasized that the role of CGIAR is very important and it has immensely contributed in the past. But, the future is changing for both agriculture and CGIAR, and therefore, these changes should be taken note of and be addressed appropriately at all the levels.

Mr. Seerat Asghar, Federal Secretary, Ministry of National Food Security and Research (MNFS&R), Government of Pakistan in his inaugural address emphasized that 27 per cent population of Pakistan is youth and to nurture them well would need better policies and actions. Youth is both an opportunity and also a problem, but we need to tutor them and convert into assets through setting our priorities right. Therefore, there is a need to invest more and create better opportunities for youth. The Asia-Pacific region has the highest food insecure population (57%). He shared that youth is not much attracted towards agriculture due to social image problem. But, today's agriculture is changing from muscle to brain. The future in agriculture would need a balance between science, technology and innovation to attract more youth, he further added.

Dr. Shahid Masood, Member, Plant Sciences, PARC proposed the vote of thanks. He profusely thanked the Chief Guest, dignitaries on the dais, distinguished invitees and all the participants representing different stakeholder constituencies. He stressed on the significance of this regional workshop especially on youth and agriculture and highlighted the need for organizing such workshops at the national level by different countries in order to address the emerging challenges in agriculture.

Technical Sessions

Technical Session I: AR4D Foresights for Youth: Global and Regional Dimensions

Co-Chairs : *Iftikhar Ahmad, PARC*
: *Mahmoud Solh, ICARDA*

Facilitator : *Bhag Mal, APAARI*

The Technical Session I "AR4D Foresights for Youth: Global and Regional Dimensions" was co-chaired by Dr. Iftikhar Ahmad, Chairman, PARC and Dr. Mahmoud Solh, Director General, ICARDA. Dr. Bhag Mal, Consultant, APAARI who was the Facilitator, briefly introduced the

Co-Chairs. The session started with welcome and brief remarks by Dr. Iftikhar Ahmad, Chairman PARC. He shared that Asia-Pacific region has widespread poverty and almost 50 per cent population is below 20 years of age and to attract youth in agriculture, there is a need to create entrepreneurship. He also showed confidence that youth has the capability and capacity to make significant changes but needs right policies to groom them.

Dr. Thomas Lumpkin, Director General, CIMMYT presented the CGIAR perspective for AR4D foresight for youth. He highlighted that 85 per cent of the total youth live in the developing world and CGIAR institutes must be aware and conscious of this fact and need to engage them appropriately. He further said that agriculture is a “*Museum of Poverty*” and that is why youth is not attracted towards farming. This process is leading to graying age of farmers and farming. He emphasized that future farming warrants more focus on ownership for decision making by youth. Youth has the capability and capacity to use modern ICT tools in agriculture like smart phones, etc. He cited examples of a project on youth in the International Institute on Tropical Agriculture (IITA), Nigeria and Young Scientist Program of ICARDA and emphasized on the need to initiate similar programs on youth in other CG Centers. He emphasized on the need for high value agriculture, horticultural crops, value addition, value chains and market linkage, and trust worthy credit schemes to attract youth in agriculture. To inspire and involve youth at wider scale, there is need for their capacity development and innovative technology developments for which adequate funds are required.

Dr. N Nagraj, Principal Scientist (Economics, Markets, Institutions and Policies), ICRISAT mentioned that motivating and retaining youth in agriculture is a challenging task. He briefed on the demographic shifts globally and regionally. Through some case studies, he showcased the youth-led entrepreneurship models, and highlighted that youth is still moving away from agriculture. More young population in developing countries is a boon and need to be properly utilized. He mentioned that in service and industry sector, there is 3-6 times more income than agriculture and hence, young people are reluctant to adopt agriculture as a profession. He shared that inclusive market oriented development (IMOD) model of ICRISAT has been successful to attract youth towards agriculture and stressed that it is extremely important to make smallholder agriculture more remunerative and economically viable.

Dr. Simon Hearn, Chairman, APAARI presented the Australian perspective on AR4D foresight for youth and shared a case study from Australia on youth and agriculture. Through this study, he emphasized that this is the time for urgent action rather than allowing the situation to worsen to a level of crisis. The reasons for entry and exist of young people from agriculture need to be better understood. But, for better visibility and attracting youth, agriculture needs to be integrated with other sectors like health. This would need better ICT tool integration with agriculture, where youth can play a pivotal role.

Dr. AK Srivastava, Director, National Dairy Research Institute (NDRI), Karnal, India presented the Indian perspective and highlighted the outcomes of a National Workshop on “Foresight and Future Pathways of Agricultural Research through Youth in India” jointly organized by APAARI, ICAR and TAAS in New Delhi on 1-2 March, 2013. He mentioned that this workshop was a follow-up action of GCARD 2. He shared the major recommendations of the workshop on research and policy aspects which included: (i) reorienting agricultural research towards farming system mode by ensuring inter-institutional and inter-disciplinary collaboration and creating state-of-art research facilities, (ii) taking research to end users for which greater emphasis is

needed on joint research in collaboration with the private sector through creation of state-of-art research infrastructure, (iii) putting greater emphasis on collaborative research with advanced national/international research institutions, (iv) encouraging young scientists for grant of patents and innovations, (v) creating ICT facilities to discourage the repetitive research as well as for timely accounting of work of the scientists, (vi) organizing short to long-term trainings for young scientists at advanced research institutions at both national and international level, (vii) greater involvement of young scientists as members in decision making bodies at institute level, (viii) greater emphasis on human resource development through enhanced allocation of funds at institute level with more freedom and accountability, and (ix) provision of incentives and rewards for innovation and outscaling for impacts.

Dr. Abdul Halim, Professor & Head, University of Technology, Papua New Guinea, while presenting the Pacific Islands perspective on AR4D foresights for youth mentioned that the Pacific Islands have more challenges and problems which need to be addressed. The youth in the Pacific region needs much more efforts on capacity development and exposure of youth for advanced trainings in order to have a sustainable agricultural production system in the region. He suggested the adoption of model village concept and for educational approach based on PNG UNITECH model.

Dr. Bi Jieying, Country Coordinator, YPARD, Chinese Academy of Agricultural Sciences (CAAS), presented the China perspective of AR4D foresight for youth. She shared the examples of agri-business development and industrialization from China and stressed that today's agriculture needs more emphasis on mechanization and linking it to different sectors like agro-tourism, and health. Agriculture in China has adopted innovations with greater emphasis on food processing industries, hydroponics, protected cultivation and urban agriculture. Youth is playing a vital role in creation and adoption of these innovations. She also emphasized on the need for transforming the mode of agricultural development and the future strategies to engage youth in agriculture through YPARD strategy. She further stressed on creation of youth associations which can speak for youth and on behalf of youth. This would need multi-disciplinary training, financial support and management training. She also emphasized on foresight strategy and advocacy mechanism to involve more youth in agriculture.

During the discussion session, Dr. Mahmoud Solh, DG, ICARDA emphasized that we should find out how can we make agriculture intellectually more interactive and rewarding. He mentioned that the hindrance by the bureaucracy in all developing countries needs to be appropriately addressed at the national level. He also stressed on the need for gap analysis and including agriculture in school programs. Also, utmost attention needs to be given to skill enhancement and capacity development of youth. Dr. Solh stressed that there is an urgent need for a strong political will and higher investment by both public and private sector for retaining youth in agriculture. Dr. Mustaq Gill, Chairman, South Asia Conservation Agriculture Network (SACAN) highlighted that now agriculture needs new partnerships for extension of agri-technologies to farmers, where youth will be playing a pivotal role and hence, the capacity development of youth needs to be given high priority. He also emphasized on greater role of private sector in this endeavour. Dr. Iftikhar Ahmad, Chairman, PARC mentioned that earlier agriculture was included as a subject in the curriculum of school children, which needs to be brought back. Also, there is a need to understand what type of youth research needs to be promoted and thus has to be country specific. Dr. SM Khalilur Rahman, Member Director (AERS), BARC emphasized that the information on agriculture in the curriculum at school level needs to be

published and disseminated. Dr. Abdul Majid, ICARDA Country Manager, Pakistan, advocated for degree courses in agriculture in every state university in each country. He also mentioned about the need for credit and reward system for implementing youth relating programs at the grass root level. Dr. Ropate Lagiri, Permanent Secretary for Agriculture, MoA, Fiji emphasized on the need to develop and implement the youth oriented programs for sustainable development of agriculture. Dr. Courtney Paisley, Director, YPARD stressed the need for greater involvement of youth in policy decisions. The discussions also emphasized on agriculture education from school level and linking it to environment and health. The house also emphasized to have more reliable data on youth in the region and document the relevant success stories. Dr. YS Saharawat, Senior Scientist, ICAR highlighted that one model can not fit everywhere and hence, there is a need to develop location and problem specific youth based models. The session ended with brief remarks by the Co-Chairs. Dr. Bhag Mal, Consultant, APAARI extended vote of thanks to the Co-Chairs, speakers and participants for their valuable inputs.

Technical Session II: AR4D Foresights: Stakeholders Perspective for Youth

Co-Chairs : ME Tusneem, NAEAC
: Tomohide Sugino, JIRCAS

Facilitator : ML Jat, CIMMYT

Technical Session II “AR4D Foresight: Stakeholders Perspective for Youth”, was co-chaired by Dr. ME Tasneem, NAEACR and Mr. Tomohide Sugino, JIRCAS. At the outset, Dr. ML Jat, Cropping System Agronomist, CIMMYT who was the Facilitator welcomed the Co-Chairs, Dr. ME Tusneem and Mr. Tomohide Sugino.

Dr. Courtney Paisley, Director, YPARD presented the YPARD perspective for AR4D foresight. She shared the major activities of YPARD and highlighted that voicing for youth has increased in the recent past and is strongly emerging as an important agenda at all levels. However, concrete actions are still not being taken to the required level. She emphasized that inputs of youth can be significantly enhanced by involving youth in the policy making bodies at the national, regional and global level. There is a need for proper documentation on the youth champions, youth based innovative technologies and business models. Youth also needs to be updated with funding and job opportunities.

Mr. Ajay Vir Jakhar, a young agri-entrepreneur and Chairman, Bharat Krishak Samaj (Indian Farmers Forum) emphasized that policy makers want cheaper food and farmers want higher profitability. He also highlighted that agriculture is not seen as a better option for their kids even by farmers and thus it also has a social image problem. He further mentioned that agriculture is the largest private sector activity which is not profitable at present in the Asia-Pacific region. He stressed that retaining youth in agriculture is not a problem, but retaining quality youth in agriculture is a big problem. This whole distressing scenario is due to poor condition of farmers, fragmented and small land holdings, migration of youth from rural sector and unorganized markets. He said that farming sector has become a jigsaw puzzle for youth, where many pieces do not fit. He exhorted the policy makers to crack this complex problem by involving young farmers in the decision making process.

Dr. Partha Dasgupta, Principal Advisor, Syngenta Foundation, elaborated the role of youth through successful examples from the private sector. He highlighted on how the large multi-national companies were once initiated by the young innovative farmers.

Dr. Sandra H Mustafa, Project Manager, Australia-Pakistan Agriculture Sector Linkage Program (ASLP), Australia, highlighted on the importance of social research on youth and women in developing countries. She stressed on meaningful partnerships for youth and women in the developing countries and advocated for the need to create youth based community centres, home based business and contract services for upliftment of youth and agriculture.

Ms. Shahla Salahuddin, Executive, Agricultural Research and Development, Pakistan shared that change is a way to learn, think, and succeed. Youth can play an effective role as agent for this change. She also emphasized on establishing small scale rural entrepreneurships and training the farmers through farmer schools. She focused on the ethics and values of agri-entrepreneurship and mentioned that in today's agriculture, the essential pre-requisites are change, innovation and creativity and youth is well equipped with these. Hence, their wider involvement in farming will definitely lead to positive changes.

The key points that emerged during the session were related to the insufficient participation of youth in development agenda. One of the key emerging issues was to develop a National Youth Policy in order to; (i) counter the emerging challenges, (ii) transform agriculture from traditional to new science and enhance application of advanced tools with real time access, where youth is better adapted, (iii) prioritize the engagement of youth where they can make the difference / impact, (iv) transpire better image of agriculture among youth, (v) attract best youth in agriculture, (vi) wider involvement of youth in policy decisions, (vii) attracting media attention on the issue of youth and agriculture, and (viii) making youth as an ambassador of change. Overall, the session ended with conclusion that this is the time to act now without any further lapse of time.

During the discussion session, major emphasis was put on rural entrepreneurship development, bridging the gaps between research, extension and other stakeholders, catering the demand of private sector through better capacity development of the youth. There is a need to adopt, see, feel and change the approach as it has played in the past through creation of global seed sector and industries. The major initiatives required to include these in the national policy are: (i) rural education, (ii) capacity development of youth not only for technology adaptation and adoption but also for decision making, (iii) providing support for training and empowering youth (iv) newer mechanisms for transforming agriculture to agri-business through outscaling technologies and generating employment and income for the youth, (v) value chain analysis through **Five 'Ps'**: Participate, Prioritize, Plan, Promote, Profits, and (vi) creating infrastructure and policies to empower youth on new science and innovations like biotechnology. Youth needs to come forward to create awareness for genetically modified organisms (GMOs) for their use to ensure food security. They should in fact be the ambassadors of change in perception, and mind sets.

Technical Session III: Youth Led Innovations

Co-Chairs : *Katinka Weinberger, CAPSA*
: *AK Srivastava, ICAR*

Facilitator : *Courtney Paisley, YPARD*

The Technical Session III "Youth Led Innovations" was co-chaired by Ms. Katinka Weinberger, CAPSA and Dr. AK Srivastava, ICAR and facilitated by Dr. Courtney Paisley, YPARD. The session started with a brief introduction of the Co-Chairs and Facilitator.

Ms. Esther Penunia, Secretary General, Asian Farmers Association shared the experiences of young farmer-led innovations from different Asia-Pacific countries. She highlighted that youth can be attracted towards farming only through a market oriented approach. She stressed on the need for adoption of cluster based models for youth and women in agriculture that has shown successful results in Southeast Asia. She mentioned that AFA currently has 13 member organizations representing 10 countries and 11 million farmers in the region and highlighted that AFA is working on networking of youth leaders in the region through establishing linkages with different public and private sector organizations. Based on their studies, she highlighted that unemployment is the major reason for migration of youth from rural sector. To overcome these problems, AFA has taken important initiatives like training of youth on agri-finance and agri-business management, catalyzing new Government policies for youth especially on introduction of agri-research for two years instead of compulsory military and other services and ensuring soft loans for young agri-entrepreneurs. She stressed on the need for more consultations and documentations on youth-led initiatives in agriculture and their wider representation for policy advocacy.

Mr. Vikas Chaudhary, a young farmer from Haryana, India shared his experiences on creating young farmers' society known as Society for Conservation of Natural Resources and Empowering Rural Youth (SCNRERY). He elaborated how the young farmers of his region formed the society that led to the establishment of linkages with various organizations/stakeholders such as NARES, CGIAR Centres like CIMMYT, private sector and policy bodies like Haryana Farmers Commission in order to harness the benefits of knowledge and new technologies. He also highlighted that creation of young farmers society has benefitted them a lot not only in monetary terms but also bridged their knowledge gaps. He shared that now this society of young farmers is functioning as a single window system and provides advisory services to the farmers in the region and now acting more like entrepreneurs.

Mr. Mirza Haider Ali, from Jockey Radio, Pakistan shared his views on the importance of informal education system in agriculture. He highlighted that efficient informal education system can attract the youth in agriculture as it is easily affordable, covers a broader range of activities and, touches the fundamentals of life and culture. This has two way information system and lays the stone of anxiety and learning for the informal education system, he added. The informal education system is a participatory approach which also helps in capacity development of youth as well as faster delivery of technology to the end users.

Dr. Ajit Maru, Senior Knowledge Officer, GFAR, Rome, Italy, shared his views on skype on future of agriculture and young people in agriculture. He highlighted that the new agriculture is market driven and it has been well recognized by public and private sector. But, the current policies are not able to absorb 1.5 billion youth in agriculture globally, which is leading to a situation of distress among farmers and youth resulting to migration to other sectors. The agriculture in future is going to be knowledge intensive, yet provide new opportunities like agri-industries, agri-business, and entrepreneurship. He highlighted that it opens new doors for youth, but the whole process needs a foresight to learn from the past and build the future through better knowledge and capacity development of youth. He emphasized on market-driven agriculture and participatory foresight mechanism through supporting institutional, structural and curricular changes in agricultural education and research. He also emphasized on strengthening the networks and pathways that support youth to contribute to capacity development, access to new knowledge and linking science to society.

Ms. Chanerin Maneechansook, Program Assistant, APAARI briefed about the APAARI led information communication technology (ICT) initiatives for a sustainable production system in the region. She mentioned about APAARI's mission, and strategic thrusts and exhorted that ICT is going to be a vital tool for improving the governance of agricultural information system and enabling greater sharing of data and knowledge across the stakeholders. She highlighted that APAARI has been actively involved in policy advocacy on enhancing the investments in ICT information communication management (ICM) in agriculture, convergence of ICM with agricultural innovations and also in capacity development of youth at different levels.

This session mainly emphasized on the examples of innovations that support youth in the agricultural sector in the Asia-Pacific region. The presenters shared that there is an increasing trend of youth going for farming instead of military service, for example, in Taiwan and South Korea. This is primarily due to innovative and enabling farming environment. The importance and need of innovations in capacity building was highlighted almost in all the sessions during the day. It was emphasized that there could be formal or informal ways to enhance capacity development of youth for innovations. Dr. Simon Hearn highlighted that the young farmers can get access to land through inheritance i.e. family farming. He stressed that family farming will still continue in most of the countries in the region and hence, needs to be paid focused attention. Ms. Katinka Weinberger stressed on the need for technology, social and funding innovations and creating conducive policy environment for empowering the youth. It was also stressed that it is important to provide skills that go beyond mere technological/professional expertise such as communication, facilitation, team work (enable people to look beyond the boundaries of their own profession) to empower youth. These examples reinforced that the development of the agricultural sector does not hinge upon technological innovations only.

Technical Session IV: AR4D Reorientation: Perspective of Young Professionals

Co-Chairs : *Ropate Ligairi, MoA*
: *Prabath Wimal Kumara, CARP*

Facilitator : *YS Saharawat, ICAR*

The Technical Session IV “AR4D Reorientation: Perspectives of Young Professionals” was co-chaired by Dr. Ropate Ligairi, Permanent Secretary for Agriculture, MoA, Fiji and the Dr. P Vimal Kumara, Executive Director, CARP, Sri Lanka, and Dr. YS Saharawat was the Facilitator. There were four presentations made by young professionals on reorientation of agricultural research for youth development. The topics covered agricultural research and education, gender and social equity, and agricultural extension.

Dr. ML Jat, Cropping System Agronomist, CIMMYT presented researchers' views on youth and agriculture. He mentioned that the region is blessed with youth and visionary rich experience. The agriculture needs a cocktail of both to counter the future challenges and making agriculture a sustainable profession. Hence, there is a need to invest in the youth to infuse new thinking, new technologies and new approaches. He also stressed on the need for concerted efforts at the national, regional and international level to reorient agriculture into Agricultural Research for Result (AR4R) by promoting agri-innovation, agri-business and entrepreneurship through involvement of youth.

Ms. Sarah Malik, Monitoring and Evaluation Officer, a young professional from MOJAZ Foundation, Pakistan in her presentation shared her views on the gender and agriculture and

highlighted the limitations, boundaries and social responsibilities of women in South Asia. She exhorted that there is an urgent need to stop stereotype approach in addressing the problems of women and develop appropriate policies and measures for empowering them in the region.

Dr. RB Paneru, Senior Scientist, NARC, Nepal highlighted the young professional's constraints in developing countries for adopting agriculture like low incentives, poor teaching and research facilities, low social status, ineffective self employment, inadequate capacity development mechanism, and low investments. He stressed that agriculture must compete with other sectors of economy and this can be achieved by greater involvement of youth. Youth needs to be empowered to address the emerging challenges and to achieve second Green Revolution.

Dr. Yashpal Singh Saharawat, Senior Scientist, ICAR in his presentation emphasized on making agriculture intellectually interactive and rewarding for youth, with special emphasis on secondary agriculture, crop diversification and intensification, protected cultivation, service providers, and use of ICT in agriculture. He also emphasized on involving youth in decision making processes both for research and development programs and also invest in motivating young professionals to adopt agriculture as a profession, create more job opportunities in agriculture, and develop agriculture on lines of industry so that youth in future become 'Job Creators' and not 'Job Seekers'.

During the deliberations, it was highlighted that youth is the '*Trustee of Prosperity*' but we need to trust, groom and empower them. Asia-Pacific region is fortunate to have youth as the energy, and the experience as aspiration and strength. It was also highlighted that agricultural challenges are complex and the current education system is not able to cater to the needs of each sector of agriculture. Therefore, there is an urgent need to re-visit the current curricula in agriculture education. The current system is just creating graduates and post-graduates to join in public and private sector as researchers or extension workers. But, the modern agriculture needs to cater to the market needs and create entrepreneurs rather than graduate degree holders. This whole process would need an out of box thinking and a more holistic and collaborative approach. It is extremely important to learn from IT and business sectors where youth has shown their metal for speedy progress for development. The outcome of deliberations was to make agriculture a creator of white collar job professionals. This warrants structured mentorship program and continuous education system. The agricultural research, education and extension, therefore, need a new system and strategy in place to cater to the needs for enhancing agricultural production in the Asia-Pacific region.

Technical Session V: Break-out Groups

Group I: Agricultural Research and Education for Youth

Co-Chairs : SN Puri, CAU
: Aziz Abd Rashid, MARDI

Facilitator : Munir Ahmed, PARC

In his introductory remarks, Dr. SN Puri, Vice Chancellor, Central Agricultural University (CAU), Imphal, India and Co-Chair of Group I emphasized on the need for development of an action

plan for agricultural research and education keeping in view the current constraints and needs. He further mentioned that such an action plan will not only help to understand the current constraints but empower the youth through their better capacity development.

There was an in-depth open discussion in the group on agricultural research and education for youth. It was strongly felt that there is need to design an alternative and early age agriculture education curriculum to attract youth. The current education system needs to be changed to a continuing education system. It is extremely essential to transform the mindset of the people from “*research for sake of research*” and “*education just to get good job*” to designing research on innovations and transform current education system so as to create agri-business practitioners and entrepreneurs. Hence, the revised education system needs to be adopted to cater to the needs of private sector and rural entrepreneurship.

The deliberations during the Group Session clearly indicated that there is a window of opportunities for revising agricultural education systems and re-visiting agricultural research system to cater to the needs of diverse stakeholders.

Key actions points

Based on in-depth discussions, the following key action points were suggested by the group:

- Include agriculture as a subject in school curricula which should also embrace examples of success stories of agriculture
- Initiate education programs on a continuing basis for farmers through mass media, short courses, visits and exchange programs among APAARI member countries
- Establish vocational training institutes in agriculture, covering important topics such as value chain, dairy farming, poultry farming, farm mechanization, and alternative use of energy, etc.
- Assess the university curricula vis-a-vis the needs of stakeholders and update the curriculum in agriculture (and food systems related topics) accordingly in an integrated manner
- Focus on research and development (R&D) in an integrated manner to remove the drudgery in agriculture and provide better living conditions and essential amenities in villages in order to retain the youth in agriculture

Group II: Policy Reorientation and Capacity Development

Co-Chairs : *Kamel Shideed, ICARDA*
: *Shahid Masood, PARC*

Facilitator : *Nadeem Amjad, PARC*

The group discussed on various dimensions of policy orientation and capacity development for the youth especially on sensitizing the regional and national policy planners for empowering the youth through need based capacity development. Greater emphasis needs to be placed on role of youth at local and national level for knowledge sharing through modern tools for agricultural development. The local agricultural authorities, non-governmental organizations (NGOs) and civil society organizations (CSOs) need to be sensitized in collaboration with YPARD to formulate youth friendly agricultural policies. There is a need to change the agricultural

education curriculum at the national and regional level and introduce the concept of school gardens and agricultural clubs. Also, there is need for alternate education system through vocational trainings like training for service providers. Appropriate strategies need to be in place for developing suitable policies for promoting youth related activities in agriculture.

Key actions points

The following major action points were suggested by the group:

- Establish rural youth forum for overall agricultural and rural development in an integrated manner
- Provide incentives for attracting youth to agriculture and retaining them through new grants, affordable interest free credits, targeted agri-business training and scholarships
- Facilitate improved access to land through allotment of state lands on a rental / lease basis with preference to agriculture graduates, cooperatives and youth organizations
- Enhance the role of youth as agents of change for technology dissemination and service delivery systems through targeted capacity development programs (local / national / regional / international), use of ICTs, promote cellphone, agriculture social media through youth fora
- Document the best agricultural practices and share these with youth to disseminate them further for the benefit of young farmers (including women)
- Ensure access to high value agriculture, create one stop shop / single window service system for agri-advisory, reduce bureaucracy, enhance media campaigns and market support systems
- Promote integrated rural development by providing safety nets to youth, improved access to health and education, involving youth in decision making process, ensuring youth forum representation in local councils and youth as stakeholders in state-run projects

Group III: Technology Dissemination for Enhancing Productivity and Farm Income to Attract Youth

Co-Chairs : Dil Bahadur Gurung, NARC
: Etienne Duvieller, CIMMYT

Facilitator : Ajay Vir Jakhar, BKS

After a briefing by Dr. DB Gurung, Executive Director, NARC, Nepal and Co-Chair of Group III, there was an in-depth discussion on technology dissemination. The participants raised the concerns on current ineffective technology dissemination systems with very low representation of youth in agricultural extension system, and lack of awareness among youth on innovative technology dissemination tools. An urgent need was felt for integrating ICT tools for knowledge sharing and better technology delivery systems. A need was also felt for strengthening youth at grass root level to bridge demand-supply gap through better delivery mechanism. New concepts of agri-entrepreneurship, model village, agri-based ICT hubs, single window service and capacity development at all levels, were considered important for enhancing farm productivity and income.

Key actions points

In-depth deliberations resulted in the following key action points:

- Enhance communication skills of the stakeholders especially youth through use of modern ICT tools for dissemination of information and new technologies
- Make provision of credit facilities for wider adoption of new technologies by the farmers specially youth (including women)
- Create appropriate mechanism and infrastructural facilities continuous training/learning for agri-stakeholders as per their need, education and socioeconomic conditions
- Establish appropriate mechanism and enabling policies for certification for dealers and shop keepers
- Promote 'model farm' concept in rural sector through small scale agri-entrepreneurship
- Recognize high achievers/young farmers and encourage them through appropriate mechanisms of awards/rewards
- Create awareness for documentation of farm operations and input-output balance sheet
- Promote value chains and linking farmers to market

Plenary Session

Co-Chairs : *Simon Hearn, APAARI*
: *Iftikhar Ahmad, PARC*

Chief Guest : *Sikandar Hayat Khan Bosan, Federal Minister, MNFS&R, Govt. of Pakistan*

The key highlights of different Technical Sessions and Group Discussions were presented by the Facilitators. The reflections and remarks by the Chairs/Co-Chairs and the key highlights and recommendations relating to research, development and policy emerged are given below:

Dr. Simon Hearn, Chairman, APAARI in his welcome remarks applauded the wide representation of stakeholders and fruitful discussions during the two day workshop. He emphasized that youth are the agent of change, and better acquainted with modern tools including ICT and can greatly help in knowledge sharing and promoting agricultural technologies to the end users in a faster and easy way. He also emphasized on integrating the high value agriculture and agri-entrepreneurship to attract quality youth in agriculture. He applauded the practical research being pursued at NARC, Islamabad through the commitment of youth.

Dr. Amir Muhammed, Former Chairman, PARC highlighted that this workshop was a rare event to rebuild the collaboration of PARC with CG Centers and NARS in the region and that too with a focus on youth. He emphasized that we need the best brains in agriculture for development and sustainability and, therefore, policy planners need to ensure retaining youth in agriculture in rural areas.

Dr. Mahmoud Solh, Director General, ICARDA envisioned that the future of agriculture depends on the investment in youth. He cautioned that unemployment is at the highest rate in the developed as well as developing countries but still attracting youth in agriculture is a big challenge. Therefore, there is an urgent need to invest more in youth since investing in youth is

investing in future of agriculture for ensuring food and nutrition security and the welfare of the society. He exhorted the policy planners to revisit current policies and work towards devising appropriate youth attractive policies and programs for contributing towards food and nutrition security at the national and global level.

Dr. Thomas Lumpkin, Director General, CIMMYT, emphasized that youth cannot be retained at the farm until the required changes are in place for better living conditions (including health and education), promoting innovations, and good work environment on a sustainable basis. Also, there is a great need for enhanced use of ICT tools, avoiding the risk of farmers through insurance, making agriculture productive and profitable, and enhanced funding for internship and higher education.

Dr. ME Tusneem, Former Chairman, PARC exhorted that the Regional Workshop on Youth and Agriculture has changed the image of PARC as well as Pakistan and this has been possible due to the change in leadership at the national and regional level. He applauded the organizers for rightly prioritizing the workshop themes and topics as well as involvement of diverse stakeholders from different regions and CG Centres. He stressed that partnership is the most important for harnessing mutual benefits and expressed great satisfaction on the overall deliberations and the outcomes of the workshop for the betterment of agriculture in the region in future.

Dr. Iftikhar Ahmad, Chairman, PARC in his remarks appreciated the role of APAARI in organizing the workshop at Islamabad and mentioned that it has generated a lot of interest and enthusiasm amongst the researchers and other stakeholders. He also briefed the delegates about the 5 year business plan of PARC that has been launched by the Federal Ministry of Agriculture, Government of Pakistan.

Mr. Sikandar Hayat Khan Bosan, Federal Minister, Ministry of National Food Security and Research (MNFS&R), Govt. of Pakistan and the Chief Guest of the Plenary Session in his address thanked the organizers for holding this important workshop in Pakistan and also to the local and international participants for attending this event. He emphasized that now agricultural research should be outcome oriented and hence, there is an urgent need to develop new technologies for impact at scale. He stressed that youth has to play a pivotal role for better future of agriculture as resources are diminishing and demand of food in the region is increasing. He also emphasized that agriculture needs value addition, change in education system and market oriented research. He appreciated the initiative of APAARI for organizing this important workshop at Islamabad and assured for speedy implementation of the recommendations in Pakistan.

Dr. Raj Paroda, Executive Secretary, APAARI in his remarks briefed about the journey of APAARI in the last 20 years as a common neutral platform for policy advocacy in the Asia-Pacific region. He applauded the positive remarks and the commitment of Mr. Sikandar Hayat Khan Bosan, the Federal Minister, MNFS&R to implement the workshop recommendations in Pakistan. He stressed that youth and agriculture are like two bodies and one soul and cannot be separated but right policies have to play a major role for mainstreaming of both youth and agriculture. He further stressed on the importance of partnership for a sustainable agricultural production and emphasized that youth is going to play a pivotal role for bringing second Green Revolution in the region. He highlighted the need to create better public awareness of agriculture among stakeholders through involving farmers especially youth including women. He also felt the need for a positive role of media for creating awareness amongst the youth. He exhorted the

policy planners to show strong political will and create enabling policy environment for greater engagement of youth in AR4D initiatives. For this, there is need to focus more on foresight, research partnership and capacity development. He also opined that for future agricultural and economic development, there is a need to create a regional network for sharing the knowledge, innovations, and expertise in similar target environments and socioeconomic settings. Finally, he profusely thanked the Federal Minister, MNFS&R, Federal Secretary, MNFS&R, Chairman, APAARI, Chairman, PARC, Director Generals of ICARDA and CIMMYT, NARS leaders, representatives of GFAR and CG Centres, Civil Society Organizations (CSOs), private sector, Co-Sponsors, Chairs/Co-Chairs/Facilitators and all the participants for making this workshop a great success.

Key Recommendations

As a result of in-depth discussions, during different Technical Sessions and Group Discussions, the major recommendations emerged relating to research, education, development and policy are enumerated below:

Research and Education

- Concerted efforts are needed at the national, regional and international level to reorient agriculture into agricultural research for result (AR4R) by promoting agri-innovation, agri-business and entrepreneurship through involvement of youth.
- The future challenges would require linking agriculture with health, environment, nutrition and other basic science disciplines so as to address effectively the challenges by young professionals.
- Focused attention on capacity development of youth, through vocational trainings, inclusion of agricultural education in school curriculum and farmers participatory approach for technology generation, transfer and adoption is currently needed to ensure faster growth in agriculture.
- In order to attract youth in agriculture, we urgently need innovative approaches in developing and transferring technologies, efficient funding mechanisms, openness in knowledge sharing and much required marketing reforms.
- Partnership with agricultural universities in the region also needs to be built further to cater to the requirements of both research and education in specialized areas.
- There is also an urgent need for training the farmers, especially the youth, to adopt innovative approaches in different sectors of agriculture, besides crop production such as horticulture, livestock, fishery, agroforestry, etc.
- South Asian youth (including women) needs specialized training and education to cater to the emerging needs in agriculture. In this regard, talents of young professionals be recognized and fully exploited.

Development

- To make agriculture intellectually interactive and rewarding for youth, special emphasis will be needed henceforth on secondary agriculture, diversification, protected cultivation, crop intensification, service providers and use of ICT in agriculture.

- It is extremely important to involve both women and youth in agriculture. Their empowerment and participation in AR4D related activities, especially for secondary/speciality agriculture, extension services, processing/value addition and marketing will go a long way in ensuring future growth of agriculture in the region. Also, they need to be encouraged to become entrepreneurs. It will also address the emerging concerns of ageing population in agriculture.
- There is also an urgent need for creating awareness amongst the youth, through the help of media, regarding emerging opportunities in agriculture.

Policy

- Agriculture must compete with other sectors of economy. Hence, there is an urgent need for greater involvement of youth in agriculture to address the emerging challenges and to achieve second Green Revolution this time for household nutrition security.
- Greater thrust is required to create synergies and regional networks for capacity development, access to new knowledge and linking science to society with human face through involvement of youth.
- Higher investments are needed to motivate young professionals to adopt agriculture as a profession, create more job opportunities in agriculture, and develop agriculture on lines of industry so that youth in future become 'Job Creators' and not 'Job Seekers'.
- It is high time that we involve youth in decision making processes both for research and development programs at the national, regional and global levels.
- Emphasis should now be on policy support for inter-institutional partnership as well as public-private partnership for attracting youth in agriculture
- In South Asian countries, existing administrative structure, lack of prioritization of research and development agenda, fragmentation along disciplinary lines, poor coordination, and volatile public funding are some real impediments, which need to be overcome soon through proper policy advocacy and public awareness mechanisms.
- There is an urgent need for strong political will and enabling policy environment for greater involvement of youth in AR4D initiatives. For this, there is a need to focus more on foresight, research partnership and capacity development.
- A regional network is urgently needed in the overall interest of future agricultural growth for sharing the knowledge, innovations, and expertise in similar target environments and socioeconomic settings. For this, international organizations like FAO, IFAD, WB, ADB, CG Centers and regional organizations like APARI, ASEAN, SARC need to devise appropriate mechanisms involving NARS of the region.

Chief Guest's Address: Inaugural Session

Seerat Asghar

Federal Secretary, Ministry of National Food Security and Research, Govt. of Pakistan,
Islamabad, Pakistan

Dr. Simon Hearn, Dr. Raj Paroda, Dr. Iftikhar Ahmad, Dr. M Azeen Khan, Heads of NARS and CGIAR Centers, NGOs, FOs, representatives of private sector, distinguished guests, ladies and gentlemen!

It gives me immense pleasure to address the esteemed forum of eminent scientists, policy makers representatives, non-governmental organizations (NGOs), private sector and other stakeholders gathered to participate in the Regional Workshop on 'Youth and Agriculture: Challenges and Opportunities' being jointly organized by the Asia-Pacific Association of Agricultural Research Institutions (APAARI) and the Pakistan Agricultural Research Council (PARC). The workshop has very rightly sensitized by choosing the title as *Youth and Agriculture*. Youth is an imperative section of society, which plays a pivotal role in the economy for sustainable growth and overall progress of the country. The current youth population in Pakistan is 27 per cent of the total population.

With an expected population of 9.0 billion by 2050 and declining interest of youth worldwide to remain in rural areas and take up agriculture, is a great challenge. Policy makers are worried about who will feed this growing population? Youth makes up about one fifth of the population of developing and emerging economies and face global unemployment levels from 10-28 per cent. The number of young people of working age is increasing while this group continues to shy away from building careers in agriculture. Agriculture has a social image problem, and there is a decreasing interest among youth in entering agricultural related fields due to the persistent perception of agriculture as an outdated field with minimal financial returns.

The economy of Pakistan is the 27th largest economy in the world in terms of purchasing power, and agriculture is the driving force of the national economy. The rural population, which is 67 per cent of the total population in Pakistan, directly or indirectly depends on agriculture for sustenance. Agriculture contributes 20 per cent to gross domestic product (GDP), absorbs 44 per cent of the labour force and meets food requirements of the growing population. It earns about 60 per cent of foreign exchange through export of raw, semi-processed and processed products. Agriculture sector has, therefore, significant importance for Pakistan's economy.

The threat to agriculture and food security in the region is now evident with much severity due to multiple challenges of higher population growth, natural resource degradation and economic competitive opportunities in farming sectors. The Asia-Pacific region, the home of 750 million young people (48% of the world's youth), is the most vibrant in terms of agricultural and

economic development. The rural youth in the region, however, is moving away from agriculture due to lack of basic amenities, professional knowledge and inspirational pathways for their employment security.

To keep the youth of the country on board, the Hon'ble Prime Minister of Islamic Republic of Pakistan, Mr. Nawaz Sharif has announced a development package worth Rs. 20.0 billion, entirely for the programs and activities relating to youth in Pakistan. There are six projects under this youth development package. These six projects include: i) Micro Interest Free Loans Scheme, ii) Small Business Loans Scheme, iii) Youth Training Scheme, iv) Youth Skill Development Scheme, v) Fee Assistance Scheme, and vi) PM's Scheme for Laptops Provision.

The Government of Pakistan has accorded a high priority to agriculture sector and believes that youth, the future of country, will play significant role in the overall development of the country. I take this opportunity to thank the organizers for organizing this important workshop at Islamabad. I strongly believe that the objectives of the workshop will be achieved and good recommendations for retaining youth in agriculture will emerge. I wish the workshop a great success.

Thank You

Chief Guest's Address: Plenary Session

Sikandar Hayat Khan Bosan

Federal Minister, Ministry of National Food Security and Research, Govt. of Pakistan,
Islamabad, Pakistan

Dr. Simon Hearn, Chairman APAARI, Dr. Iftikhar Ahmad, Chairman PARC, excellencies, experts from NARS and CGIAR Centers, young and professional participants, NGOs, FOs, representatives of private sector, ladies and gentlemen!

It is my honour that I am among the experts of international repute who have composed the purposeful and actionable recommendations during the two day Regional Workshop on “Youth and Agriculture: Challenges and Opportunities” organized by APAARI and PARC. Also, it is my utmost honour to present humble remarks and share my views with you in the Plenary Session. I have been continuously informed about the proceedings of the workshop and I can say that it was highly successful professional event for the participants particularly the youth from various participating countries. The thought provoking vistas agreed in the workshop pertaining to challenges and opportunities for youth in a wide range of agricultural activities would be an asset for developing appropriate policies and plans for involvement of youth in agriculture.

The presented overview of the challenges and opportunities for youth in agriculture will result in increased participation in agricultural activities by young people between the age group of 15 - 30 within the Asia-Pacific region in general and in Pakistan in particular. It will also provide the background information and resolve the critical issues necessary to stimulate the interest and encourage the participation of 21.7 per cent youth in agriculture in Pakistan which is necessary to ensure the sustainability of agricultural production and realize the goal of food and nutrition security. But, it will only be possible if we reaffirm today our commitment to provide financial and other support measures for agriculture.

Within the construct of our national economy, agriculture is identified as one of the prime economic pillars. Its importance as a priority area on the national as well as regional development agenda is, therefore, unquestionable. The nexus between agricultural development and the national ability to achieve its food and nutrition security goals are inextricably linked. In the light of this, it is vital to attract the attention of our young people as the nation seeks to alleviate the challenges and convert them in to opportunities.

Ladies and Gentlemen!

I want to draw your attention towards a compelling evidence of an ageing farmer population in the Asia-Pacific region as well as Pakistan which must be addressed to facilitate sustainability in agricultural production and by extending food availability from domestic production. At present, the average age of farmers is 55 years and life expectancy is 65 years on an average.

Consequently, if young farmers do not replace the ageing producers, the production of food within the region will be seriously affected in the next 10-15 years. Therefore, youth population is strategic to the success of all our efforts to boost regional food production.

Also, we have to consider the threats to youth involvement in agriculture, which are alarming to note and hence, we need to devise strategy to eliminate them on top priority. These threats are deviant behavior (crime and violence, drugs abuse), better opportunities outside of the agricultural sector, negative social impacts, sexual abuse, lack of motivation and the feelings of despair, poverty, unemployment, lack of education, and negative image of agricultural pursuits.

The startling situation demands for following immediate measures to include in our tactical plans and implement them on war-footing: i) youth capacity development programs leading towards improved training at the primary and secondary school level, linking school agricultural operations with general curriculum, more opportunities for on-farm training, and enterprise development training particularly in value added activities such as food processing and packaging, ii) increased access (but on minimum or no cost) to resources such as land, capital, technology, and information, iii) facilitating the access to technology so as to encourage its use by developing a database of willing and volunteer agencies to provide access to youth on information in agriculture, iv) facilitating market opportunities by providing targeted markets for primary and value-added agricultural products developed by young entrepreneurs via special arrangements with schools, hotels, etc., v) providing motivation and improving the image of agriculture by updated policies and incentives, vi) facilitating the networking among youth by providing incentives to encourage collaboration and group activity for youth, and vii) planning and executing the “Youth Awards” for excellence in agriculture on innovations linked with primary production (crops and livestock), value addition, and biotechnological developments.

In a way, the sitting government has responded to these demands and needed plans by announcing and launching the six welfare schemes for youth in Pakistan having initial allocation of Rs. 20.0 billion with an aim to enable the youth of the country to stand on their feet besides helping to strengthen the economy.

Ladies and Gentlemen!

It is my firm opinion that the planners and policy makers should compare the urban and rural youth along with their socioeconomic characteristics to reach the appropriate interventions to ensure their success. We have to consider migration from labour-surplus rural areas to labour deficit- urban areas based on economic opportunities available in the rural and urban fronts and their expected gains. Whatever the multi-factors are involved but economic push factors (such as lack of rural credit, unemployment, and rural poverty), and economic pull factors (such as perception of high wages from urban employment) are extremely important to analyze and take right decisions at right time.

As a whole, it is well understood that urban youth is mostly performing non-agricultural functions and it should have been understood on the same lines that rural youth is performing agricultural functions. But, it attains the reverse trend when we find reasons for rural youth involvement in non-farm activities and migrating to urban areas. It is all by dint of economic pull and push scenario prevailing in our country and we have to tackle it as a great challenge to meet.

Ladies and Gentlemen!

By availing this opportunity, it is to be appreciated a lot that outcomes of Technical Sessions and Working Groups, as presented in this Plenary Session, are really pragmatic, interactive and proactive in nature. I will urge that all departments under the Ministry of National Food Security and Research (MNFS&R) to transform the recommendations in to reality and keep me informed about the strategies and progress made in this regard. I will provide all my support for the purpose. Last but not the least, I am thankful to the organizers to hold such an esteemed conference in Islamabad. I am also obliged by the international experts of CGIAR system including APPARI, who travelled long and made this event a glorious success through their active participation.

Thank You

Technical Program

Day 1: 23 October, 2013 (Wednesday)

08:30 – 09:00 : Registration

Inaugural Session

09:00 - 09:05	Recitation from Holy Quran	
09:05 - 09:10	Welcome Address	Iftikhar Ahmad, PARC
09:10 - 09:20	Introduction of Participants	All
09:20 - 09:35	About the Workshop	Raj Paroda, APAARI
09:35 - 09:50	Chairman's Address	Simon Hearn, APAARI
09:50 - 10:10	Chief Guest's Address	Seerat Asghar, Federal Secretary, MNFS&R, Govt. of Pakistan
10:10 - 10:15	Vote of Thanks	Shahid Masood, NARC
10:15 - 10:45	<i>Tea/Coffee Break and Group Photograph</i>	

Technical Session I: AR4D Foresights for Youth: Global and Regional Dimensions

	<i>Co-Chairs</i> :	Iftikhar Ahmad, PARC Mahmoud Solh, ICARDA
	<i>Facilitator</i> :	Bhag Mal, APAARI
10:45 - 11:00	CGIAR Perspective	Thomas Lumpkin, CIMMYT
11:00 - 11:15	CGIAR-IARC's Perspective	N Nagraj, ICRISAT
11:15 - 11:30	Australian Perspective	Simon Hearn, ACIAR
11:30 - 11:45	Indian Perspective - Outcome of a National Workshop	AK Srivastava, ICAR
11:45 - 12:00	Pacific Islands Perspective	Abdul Halim, UoT
12:00 - 12:15	China Perspective	Bi Jieying, CAAS
12:15 - 13:00	General Discussion	
13:00 - 14:00	<i>Lunch</i>	

Technical Session II: AR4D Foresights: Stakeholders Perspective for Youth

	<i>Co-Chairs</i> :	ME Tusneem, NAEAC Tomohide Sugino, JIRCAS
	<i>Facilitator</i> :	ML Jat, CIMMYT
14:00 - 14:20	YPARD Perspective	Courtney Paisley, YPARD
14:20 - 14:40	Farmer's Perspective	Ajay Vir Jakhar, BKS

14:40 - 15:00	Private Sector Perspective	Partha Dasgupta, Syngenta Foundation
15:00 - 15:20	ASLP Perspective	Sandra Heaney Mustafa, ASLP
15:20 - 15:40	Agricultural Entrepreneurship	Shahla Salahuddin, AR&D
15:40 - 16:10	General Discussion	
16:10 - 16:30	<i>Tea/Coffee Break</i>	

Technical Session III: Youth Led Innovations

Co-Chairs : Katinka Weinberger, CAPSA
 : AK Srivastava, ICAR
Facilitator : Courtney Paisley, YPARD

16:30 - 16:45	Farmer Led Innovations	Esther Penunia, AFA
16:45 - 17:00	Young Farmers Association	Vikas Chaudhary, SCNRERY
17:00 - 17:15	Informal Education	Mirza Haider Ali, Radio Pakistan
17:15 - 17:30	Future of Agriculture and Young People	Ajit Maru (on skype), GFAR
17:30 - 17:45	APAARI Led ICT Initiatives	Chanerin Maneechansook, APAARI
17:45 - 18:15	General Discussion	
19:30	<i>Dinner hosted by APAARI at Best Western Hotel</i>	

Day 2: 24 October, 2013 (Thursday)

Technical Session IV: AR4D Reorientation: Perspective of Young Professionals

Co-Chairs : Ropate Ligairi, MoA
 : P Wimal Kumara, CARP
Facilitator : YS Saharawat, ICAR

09:00 - 09:15	Agricultural Researcher	ML Jat, CIMMYT
09:15 - 09:30	Gender and Social Equity Professional	Sarah Malik, MOJAZ Foundation
09:30 - 09:45	Agricultural Education Professional	Ram Babu Paneru, NARC
09:45 - 10:00	Agricultural Extension Professional	YS Saharawat, ICAR
10:00 - 10:30	General Discussion	
10:30 - 11:00	<i>Tea/Coffee Break</i>	

Technical Session V: Break-out Groups

Group I: Agricultural Research and Education for Youth

Co-Chairs : SN Puri, CAU
 : Aziz Abd Rashid, MARDI
Facilitator : Munir Ahmed, PARC

Group II: Policy Reorientation and Capacity Development

Co-Chairs : Kamel Shideed, ICARDA
: Shahid Masood, PARC
Facilitator : Nadeem Amjad, PARC

Group III: Technology dissemination for enhancing productivity and farm income to attract youth

Co-Chairs : Dil Bahadur Gurung, NARC
: Etienne Duvieller, CIMMYT
Facilitator : Ajay Vir Jakhra, BKS

13:30 - 14:30 *Lunch*

Plenary Session

14:30 -14:40	Welcome Remarks	Simon Hearn, APAARI
14:40 -15:00	Special Remarks	Amir Muhammed, PARC Mahmoud Solh, ICARDA Thomas Lumpkin, CIMMYT ME Tusneem, PARC
15:00 -15:50	Outcomes of Technical Sessions & Working Groups	Session Chair/Co-chair/Facilitator
15:50-16:10	Chief Guest's Address	Sikandar Hayat Khan Bosan, Federal Minister MNFS&R, Govt. of Pakistan
16:10-16:25	Remarks by Co-Chairs	Simon Hearn, APAARI Iftikhar Ahmad, PARC
16:25-16:30	Vote of Thanks	Raj Paroda, APAARI

List of Participants

AUSTRALIA

Les Baxter

ASLP Coordinator and ACIAR Research Program
Manager, Horticulture
Australian Centre for International Agricultural
Research
GPO Box 1571, Canberra ACT 2601
Australia

Sandra Heany Mustafa

Project Manager, ASLP
University of Canberra
ACT 2601, Canberra
Australia
sandra.heany_mustafa@canberra.edu.au

Simon Hearn

Chairman, APAARI & Principal Adviser
Australian Centre for International Agricultural
Research
GPO Box 1571, Canberra ACT 2601
Australia
simon.hearn@aciarc.gov.au

BANGLADESH

Muhammad Abdul Mazid

Associate Director (Agriculture)
BRAC International
BRAC Centre, 75 Mohakhali
Dhaka – 1212
Bangladesh
ma.mazid@brac.net

Nasrin Akter

Senior Program Specialist (Horticulture)
SAARC Agriculture Centre
Farmgate - Dhaka
Bangladesh
nakter67@yahoo.com

SM Khalilur Rahman

Member Director (AERS)
Bangladesh Agricultural Research Council (BARC)
Farm Gate – Dhaka
Bangladesh
mkhalilur@hotmail.com

BHUTAN

Tshewang Tashi

Focal Officer for School Agriculture Programme
Department of Livestock, Government of Bhutan
Thimpu
Bhutan
tshewangtashi@gmail.com

ETHIOPIA

William Bill Payne

Director
CGIAR Dryland Systems Program
ICARDA-Ethiopia
P.O. Box 5698, Addis Ababa
Ethiopia
w.payne@cgiar.org

FIJI

Ropate Ligairi

Permanent Secretary for Agriculture
Department of Agriculture
Ministry of Primary Industries
Robinson Complex
Raiwaqa
Fiji
ropate.ligairi@agriculture.gov.fj

INDIA

AK Srivastava

Vice President
Indian Agricultural Universities Association (IAUA)
IG – 2, CGIAR Block, NASC Complex, DPS
Marg
New Delhi 110012
India
dir.ndri@gmail.com

Ajay Vir Jakhar

Chairman
Bharat Krishak Samaj
A-1, Nizamuddin West
New Delhi-110013
India
ajayvir@hotmail.com

Ashutosh Sarker

Coordinator
 South Asia and China Regional Program (ICARDA)
 CGIAR Block, NASC Complex, DPS Marg, Pusa
 Campus
 New Delhi-110012
 India
 a.sarker@cgiar.org

Bhag Mal

Consultant
 Asia-Pacific Association of Agricultural Research
 Institutions (APAARI)
 TAAS Office, IARI Pusa Campus
 New Delhi 110012
 India
 b.mal@apaari.org

Etienne Duveiller

Director Research, BISA
 International Maize and Wheat Improvement
 Center (CIMMYT)
 CG Block, National Agricultural Science Center
 (NASC) Complex, DPS Marg,
 New Delhi - 110012
 India
 e.duveiller@cgiar.org

ML Jat

Cropping System Agronomist
 International Maize and Wheat Improvement
 Center (CIMMYT)
 National Agricultural Science Center (NASC),
 DPS Marg, Pusa Campus
 New Delhi - 110012
 India
 m.jat@cgiar.org

Partha Dasgupta

Principal Advisor
 Syngenta Foundation
 Amarparagigam, Sr No. 110/11/3, Banner Road,
 Banner, Near Sadanand Hotel, Pune - 411045,
 Maharashtra
 India
 partha.dasgupta@syngenta.com

Raj Paroda

Executive Secretary
 Asia-Pacific Association of Agricultural Research
 Institutions (APAARI)
 TAAS Office, IARI Campus, Pusa Campus
 New Delhi - 110012
 India
 raj.paroda@gmail.com

SN Puri

Vice Chancellor
 Central Agricultural University
 Imphal
 Arunachal Pradesh
 India
 snpuri04@yahoo.co.in

Sridhar Gutam

Country Representative
 YPARD India
 CISH ICAR, Rehmankhhera, Kakori Post
 Lucknow 226101
 Uttar Pradesh
 India
 gutam2000@gmail.com

Stefania Grando

Research Program Director
 Research Program - Dryland Cereals
 ICRISAT, Patancheru
 Andhra Pradesh
 India
 s.grando@cgiar.org

N Nagaraj

Principal Scientist (Economics, Markets, Institution
 and Policies)
 ICRISAT, Patancheru
 Andhra Pradesh
 India
 n.nagaraj@cgiar.org

Vikas Chaudhary

Society for Conservation of Natural Resources
 and Empowering Rural Youth
 Taraori, Karnal
 Haryana
 India
 me_vikaschaudhary@rediffmail.com

Yashpal Singh Saharawat

Senior Scientist
 Indian Agricultural Research Institute (IARI)
 Pusa Campus
 New Delhi - 110012
 India
 yssaharawat@gmail.com

INDONESIA

Katinka Weinberger

Director
 Centre for Alleviation of Poverty through
 Sustainable Agriculture (CAPSA)
 Jalan Merdeka 145, Bogor 16111
 Indonesia
 k.weinberger@uncapsa.org

ITALY

Ajit Maru

Senior Knowledge Agricultural Research Officer
C/o Food and Agriculture Organization of the
United Nations
Viale delle Terme di Caracalla
00153 Rome
Italy
Ajit.Maru@fao.org

Courtney Paisley

Director
Young Professionals Platform for Agricultural
Research for Development (YPARD)
C/o Food and Agriculture Organization of the
United Nations
Viale delle Terme di Caracalla
00153 Rome
Italy
courtney.paisley@fao.org

JORDAN

Kemal Shideed

Assistant Director General (International
Cooperation and Communication)
International Center for Agricultural Research in
the Dry Areas (ICARDA)
Post Box No. 950764
Amman
Jordan
k.shideed@cgiar.org

LEBANON

Mahmoud Solh

Director General
International Center for Agricultural Research in
the Dry Areas (ICARDA)
P.O. Box 114/5055, Beirut
Lebanon
m.solh@cgiar.org

MALAYSIA

Aden Aw-Hassan

Director
SEPRP
International Center for Agricultural Research in
the Dry Areas (ICARDA)
P.O. Box No. 12301
Kuala Lumpur
Malaysia
a.aw-hassan@cgiar.org

Azizan Abd Rashid

Director
Malaysian Agricultural Research and Development
Institute (MARDI)
P.O. Box No. 12301, Kuala Lumpur 50774
Malaysia
azizan1955@gmail.com

NEPAL

Arun Kumar Joshi

Scientist
International Maize and Wheat Improvement
Center (CIMMYT)
Kathmandu
Nepal
a.k.joshi@cgiar.org

Dil Bahadur Gurung

Executive Director
Nepal Agricultural Research Council (NARC)
Singha durbar Plaza, P.O. Box 5459
Kathmandu
Nepal
ednarc@ntc.net.np

Ram Babu Paneru

Senior Scientist
Nepal Agricultural Research Council (NARC)
Kathmandu
Nepal
rbpaneru@yahoo.com

PAKISTAN

Abdul Majid

Country Manager
ICARDA Pakistan
National Agricultural Research Centre (NARC)
Park Road, Islamabad
Pakistan
a.majid@cgiar.org

Abullah Soomro

Assistant Director (IC)
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
abdullah.soomro@ymail.com

Adnan Mirza

Working Member
Youth Parliament of Pakistan
CG - 972/3, Munawar Street, Zeshan Colony
Near Zeshan Mosque, Dhok Choudrian
Rawalpindi
Pakistan

Afshan Sajid

Research Officer
Ray of Hope
H #720 D, St. 179, Sector G-11/1
Islamabad
Pakistan

Ahmad Bakhsh Mahar

Director General
Planning & Development Division
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
maharbr97@gmail.com

Akbar Shah Mohmand

CSO/Sr. Director
CSI, National Agricultural Research Centre
(NARC)
Islamabad
Pakistan
asmohmand@hotmail.com

Allauddin Ahmad

Section Officer (IC-I)
M/o National Food Security & Research
B-Block, Pak Sectt.
Islamabad
Pakistan
sectionofficeric@gmail.com

Altaf Sher

Director (IC)
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
icparc@yahoo.com

Amanullah

Deputy Director/Incharge MIS
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
aman.swati@gmail.com

Amir Muhammed

Former Chairman
Pakistan Agricultural Research Council (PARC)
Rector, FAST-National University of Computer
and Emerging Sciences
G-9
Islamabad
Pakistan
amir.muhammed@nu.edu.pk

Aqsa Satti

Student
Fatima Jinnah Women University
Rawalpindi
Pakistan

Babar Bajwa

Regional Director
Central and West Asia, CABI
Opposite 1-A, Data Gunj Baksh Road, Satellite
Town
Rawalpindi
Pakistan
b.bajwa@cabi.org

Faheem Ahmad Ashraf

Assistant Private Secretary
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
sfa2_par@yahoo.com

Fateh Ullah

Director (Small Ruminants)
ASI, National Agricultural Research Centre
(NARC)
Islamabad
Pakistan
drmfatahullah@yahoo.com

Fawad Warriach

Producer
PTV
Islamabad

Ghulam Muhammad Ali

Project Director
NIGAB, National Agricultural Research Centre
(NARC)
Park Road
Islamabad
Pakistan
drgmali@yahoo.ca

Ghulam Rasool

Director PSDP
Planning & Development Division
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
psdp204@hotmail.com

Hassan Sajjad

Assistant Technical Officer/Multimedia
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
hasan_avc@yahoo.com

Iftikhar Ahmad

Chairman
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
iftahmad@gmail.com

Imtiaz Ahmad

Assistant Private Secretary
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
imtiazahmedcmp@gmail.com

Javed Iqbal

Director (Technical)
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
linkjaved@gmail.com

Khalid Naeem

DDG, ASI
National Agricultural Research Centre (NARC)
Islamabad
Pakistan
naeem22@comsats.net.pk

Khurram Jamshaid

Deputy Director (IC)
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
Khurram_jam@yahoo.com

M Kamal Sheikh

PSO/Director
Planning & Development Division
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
dmkamal@yahoo.com

Malik Zahoor Ahmad

Director General
National Animal & Plant Health Inspection
Services (NAPHIS)
M/o National Food Security & Research, B-Block,
Pak Sectt.
Islamabad
Pakistan
naphis.pk@live.com

Mansab Ali

Country Representative
AVRDC Pakistan
NARC Premises, Park Road, Chak Shahzad
Islamabad
Pakistan
mansab90@gmail.com

ME Tusneem

Former Chairman
Pakistan Agricultural Research Council (PARC)
House No.15, 9th Avenue, F-8/1
Islamabad
Pakistan

Mirza Haider Ali

Producer/RJ
Radio Pakistan, H # 226, Khadim Hussain Road
Lalkurti, Rawalpindi
Pakistan

Muhammad Afzal

Project Director
FAO Livestock Project
C/o FAO Office, NARC
Islamabad
Pakistan
muhammadimam.afzal@fao.org

Muhammad Aslam Gill

Commissioner (Food Security-I)
M/o National Food Security & Research
B-Block, Pak Sectt.
Islamabad
Pakistan
aslamgill@hotmail.com

Muhammad Azeem Khan

Director General
National Agricultural Research Centre (NARC)
Islamabad
Pakistan
azparc@yahoo.com

Muhammad Fiaz Joyia

Director/TSO to DG
National Agricultural Research Centre (NARC)
Islamabad
Pakistan
mfjoyia@yahoo.com

Muhammad Imtiaz

Country Director
CIMMYT Pakistan
NARC Premises, Park Road, Chak Shahzad
Islamabad
Pakistan
m.imtiaz@cgiar.org

Muhammad Islam

Director
Rangeland Research Institute
National Agricultural Research Centre (NARC)
Park Road, Chak Shahzad
Islamabad
Pakistan
azrcquetta@yahoo.com

Muhammad Riaz Khan

Member (Coordination & Monitoring)
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
razkhn@yahoo.com

Muhammad Shahid Masood

Member (Plant Sciences)
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
shahid.masood617@gmail.com

Muhammad Shakeel

Assistant Director (IC)
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
tomshakeel@yahoo.com

Muhammad Younas

Programmer
MIS, National Agricultural Research Centre
(NARC)
Islamabad
Pakistan
m_as2@yahoo.com

Mukhtar Ahmad

Assistant Professor
Department of Agronomy
PMAS University of Arid Agriculture
Rawalpindi
Pakistan
ahmadmukhtar@uaar.edu.pk

Munir Ahmad

CS-II/Secretary
Pakistan Agricultural Research Council (PRAC)
Islamabad
Pakistan
secyparc@gmail.com

Munnawar Raza Kazmi

ASLP Coordinator
Australian High Commission
Diplomatic Enclave
Islamabad
Pakistan
munawar.kazmi@dfat.gov.au

Nadeem Amjad

Member (Natural Resources)
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
parc.nadeem@gmail.com

Noor Muhammad Khan

Director CG & MOU
Planning & Development Division
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
noorm2202@yahoo.com

Patrick Evans

FAO Representative
NARC Premises, Chak Shahzad
Islamabad
Pakistan
Patric.evans@fao.org

RH Usmani

Commissioner (Livestock)
M/o National Food Security & Research
B-Block, Pak Sectt.
Islamabad
Pakistan
usmani.r.h@gmail.com

Rao Iftikhar Ahmad

Additional Secretary
M/o National Food Security & Research
B-Block, Pak Sectt.
Islamabad
Pakistan
secretarynfsr@yahoo.com

Sahar Faheem

Student
Fatima Jinnah Women University
Rawalpindi
Pakistan

Saleem Sadiq

Joint Secretary
M/o National Food Security & Research
B-Block, Pak Sectt.
Islamabad
Pakistan
saleemsadiq20@yahoo.com

Sami Baig

Student
Bahria University, Pak US Alumni Network
Islamabad
Pakistan

Sarah Malik

Monitoring & Evaluation Officer
MOJAZ Foundation
467, St. #8, G - 11/1
Islamabad
Pakistan

Sarah Zubair

Fellow
Teach for Pakistan
Karachi
Pakistan
Sarah.zubair@khi.iba.edu.pk

Sardar Ghulam Mustafa

Director (PR&P)
Pakistan Agricultural Research Council (PRAC)
Islamabad
Pakistan
dirprparc@gmail.com

Sardar Zadi Komal

Student
Govt. Girls Degree College
Jacobabad
Pakistan

Seerat Asghar

Secretary
M/o National Food Security & Research
B-Block, Pak Sectt.
Islamabad
Pakistan
secretarynfsr@yahoo.com

Shabbir Ahmad

Assistant Protocol Officer
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
gsmirza@gmail.com

Shahid Rafique

Member (Animal Sciences)
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
asd_par@yahoo.com

Shahla Salahuddin

Executive
Agriculture Research & Development
Karachi
Pakistan
Shahla80kk@gmail.com

Shakeel Ahmad

Commissioner (Food Security-II)
M/o National Food Security & Research
B-Block, Pak Sectt.
Islamabad
Pakistan
kshakeel93@yahoo.com

Shamim Gul

Assistant Professor
University of Balochistan
Quetta
Pakistan

Sher Muhammad

CSO/Director
National Institute of Organic Agriculture
National Agricultural Research Centre (NARC)
Park Road
Islamabad
Pakistan
shermuhammadnioa@yahoo.com

Syed Ghazanfar Abbas

Chief Scientific Officer/TSO to Chairman
Pakistan Agricultural Research Council (PARC)
Islamabad
Pakistan
guzniabbas@gmail.com

Syed Muhammad Nasir Ali

Director General
Federal Seed Certification and Registration
Department
Mauve Area, G-9
Islamabad
Pakistan
dg.fscrd@yahoo.com

Syed Ijaz Shah

Programmer
MIS, Pakistan Agricultural Research Council
(PARC)
Islamabad
Pakistan

Syed Waseem ul Hassan

Deputy Food Security Commissioner
M/o National Food Security & Research
B-Block, Pak Sectt.
Islamabad
Pakistan

Tariq Hassan

Registrar
PIASA, National Agricultural Research Centre
(NARC)
Islamabad
Pakistan
tharal@hotmail.com

Umar Farooq

Director General
SSRI, SSD, Pakistan Agricultural Research
Council (PARC)
Islamabad
Pakistan

PAPUA NEW GUINEA

Abdul Halim

Professor and Head
Department of Agriculture/Dean of Post Graduate
Studies
PNG University of Technology, Lae 411, Morobe
Province
Papua New Guinea
halimunitech@gmail.com

PEOPLES REPUBLIC OF CHINA

Jieying Bi

Country Representative
YPARD China
Chinese Academy of Agricultural Sciences
(CAAS)
12 Zhongguancun S St, Haidian
Beijing
Peoples Republic of China
bijieying@caas.cn

PHILIPPINES

Ma Estrella A Penunia (Esther)

Secretary General
Asian Farmers' Association for Sustainable Rural
Development (AFA)
Manila
Philippines
estherpenunia@yahoo.com

SRI LANKA

DDSS Dissanayake

Research Officer
Sri Lanka Council for Agricultural Research
Policy (CARP)
114/9, Wijerama Mawatha
Colombo 07
Sri Lanka
sameeraslcarp@gmail.com

Prabath Wimal Kumara

Executive Director
Sri Lanka Council for Agricultural Research
Policy (CARP)
114/9, Wijerama Mawatha
Colombo 07
Sri Lanka
prabathwk@gmail.com; carp@slcarp.lk

THAILAND

Chanerin Maneechansook

Program Assistant
Asia-Pacific Association of Agricultural Research
Institutions (APAARI)
4th Floor, FAO Annex Building, 202/1 Lam
Laung Road
Klong Mahanak Sub-District
Pomprab Sattrupai District
Bangkok 10100
Thailand
chanerin@apaari.org

Sutat Suravanit

Agricultural Science Expert
Office of Agricultural and Development Region
4Ubon Ratchathani
Thailand
inter@doa.in.th

Tomohide Sugino

Representative
Southeast Asia Liaison Office, JIRCAS
50 Phaholyothin Rd., Ladyao
Chatuchak Bangkok 10900
Thailand
tosugino@jircas.affrc.go.jp

Urairat Rujirek

Administrative Associate
Asia-Pacific Association of Agricultural Research
Institutions (APAARI)
4th Floor, FAO Annex Building, 202/1 Larn
Laung Road
Klong Mahanak Sub-District
Pomprab Sattrupai District
Bangkok 10100
Thailand
urairat@apaari.org

MEXICO

Thomas A Lumpkin

Director General
International Maize and Wheat Improvement
Center (CIMMYT)
Km. 45, Carretera
Texcoco, Edo. De Mexico
Mexico
t.lumpkin@cgiar.org

USA

David J Spielman

Senior Research Fellow
IFPRI
Environment and Production Technology Division
IFPRI, Washington, DC
USA
d.spielman@cgiar.org

UZBEKISTAN

Asad Jannat ogly Musayev

Chairman
Central Asia and the Caucasus Association of
Agricultural Research Institutions (CACAARI)
P.O. Box 4564
Tashkent 100000
Uzbekistan
yagubguliyev@yahoo.com

Yagub Guliyev

Central Asia and the Caucasus Association of
Agricultural Research Institutions (CACAARI)
P.O. Box 4564
Tashkent 100000
Uzbekistan
yagubguliyev@yahoo.com

VIETNAM

Nguyen Hong Son

Director General
Institute for Agricultural Environment
Hanoi
Vietnam
nguyenhongson@1966@gmail.com





