



# Regional Conference on Motivating and Attracting Youth in Agriculture (MAYA)

A.P. Shinde Symposium Hall  
NASC Complex, Pusa Campus, New Delhi  
30-31 August, 2018

## Proceedings and Recommendations

### Organizers

Trust for Advancement of Agricultural Sciences (TAAS)  
Indian Council of Agricultural Research (ICAR)  
MS Swaminathan Research Foundation (MSSRF)  
Asia-Pacific Association of Agricultural Research Institutions (APAARI)  
Skill India, Agriculture Skill Council of India (ASCI)  
Young Professionals for Agricultural Development (YPARD)  
National Bank for Agriculture and Rural Development (NABARD)





## **Trust for Advancement of Agricultural Sciences (TAAS)**

### **VISION**

India becomes a prosperous agricultural country through a science-based crusade for elimination of poverty, hidden hunger and malnutrition.

### **GOAL**

Ensuring an accelerated movement for harnessing agricultural sciences for the welfare of people.

### **MISSION**

Promoting growth and advancement of agriculture through scientific interactions and partnerships.

### **OBJECTIVES**

- To act as a Think Tank to deliberate on key issues relating to agricultural research and innovation for development (ARI4D) and influence policy decisions
- To organize workshops, conferences, brainstorming sessions, policy dialogues, seminars and special lectures on emerging issues and new developments in agricultural sciences
- To disseminate knowledge among stakeholders through publication of proceedings, strategy papers and policy briefs
- To recognize and award the scientists of Indian and foreign origin for their outstanding contributions towards Indian agriculture
- To facilitate scientific interactions and partnership building of non-resident Indian agricultural scientists with Indian scientists

Chairman

Dr. R.S. Paroda

Secretary

Dr. N.N. Singh

Members

Dr. T. Mohapatra

Dr. K.L. Chadha

Dr. A.K. Srivastava

Dr. (Mrs.) Rita Sharma

Dr. A.K. Singh

Vice Chairman

Dr. Gurbachan Singh

Treasurer

Dr. Narendra Gupta

Mr. Raju Barwale

Dr. J.L. Karihaloo



# Regional Conference on Motivating and Attracting Youth in Agriculture (MAYA)

A.P. Shinde Symposium Hall  
NASC Complex, Pusa Campus, New Delhi  
30-31 August, 2018

## Proceedings & Recommendations

### *Organizers*

Trust for Advancement of Agricultural Sciences (TAAS)  
Indian Council of Agricultural Research (ICAR)  
MS Swaminathan Research Foundation (MSSRF)  
Asia-Pacific Association of Agricultural Research Institutions (APAARI)  
Skill India, Agriculture Skill Council of India (ASCI)  
Young Professionals for Agricultural Development (YPARD)  
National Bank for Agriculture and Rural Development (NABARD)

**Citation** : TAAS, 2018. *Regional Conference on Motivating and Attracting Youth in Agriculture (MAYA): Proceedings & Recommendations*. Trust for Advancement of Agricultural Sciences (TAAS), Avenue II, IARI Campus, New Delhi. 46 p.

**Published by** : **Secretary**  
Trust for Advancement of Agricultural Sciences (TAAS)  
New Delhi

*For copies and further information, please write to :*

**Secretary**  
Trust for Advancement of Agricultural Sciences (TAAS)  
Avenue II, Indian Agricultural Research Institute, New Delhi - 110012  
Ph.: +91-11-25843243, +91-8130111237  
E-mail: taasiari@gmail.com

**Printed** : December, 2018

# Contents

Foreword	v
Acronyms and Abbreviations	vii
Background	1
Inaugural Session	3
Technical Session I: Current Initiatives on Youth Empowerment	6
Technical Session II: Initiatives on Youth Empowerment in South Asia	10
Technical Session III: Motivating Youth for Entrepreneurship	15
Technical Session IV(a): Scaling Innovation and Successful Business Models	18
Technical Session IV(b): Scaling Innovation and Successful Business Models	23
Technical Session V: Panel Discussion: Enabling Policies on MAYA	26
Plenary Session	28
<b>Annexures</b>	
Annexure I : Technical Program	33
Annexure II : List of Participants	37



## **Foreword**

India presently has the largest population of youth (356 million between 10-24 years age group) in the world (UN Report, 2014), even more than that of China (269 million). This obviously is seen to reflect a bright future since almost half of this population (nearly 200 million) lives in the rural areas, which could be motivated and attracted professionally to agriculture and allied fields. Contrary to this, unfortunately only around five per cent of the rural youth is currently getting engaged in agriculture. This is simply because they do not find agriculture a creative, profitable and above all a respectable profession which can provide better living conditions. Thus, we do see an exodus of youth from rural to urban areas in search of alternative employment/option. Moreover, a clear strategy and enabling environment to motivate and attract youth in agriculture are lacking. Youth is disinterested mainly because of poor infrastructure, less education facilities, practically no skill development opportunities, lack of incentives and rewards, and problems of land ownership, credit facilities and availability, value chain and farmer market linkages. In addition, agriculture is currently faced with numerous daunting challenges.

In this context, urgent steps are needed to motivate and attract youth in agriculture, who are not only energetic and willing but also innovative. This can be achieved only when required knowledge and education, technical skills, sustained encouragement and the enabling policy environment are provided. In addition, the required policies, incentives and rewards need to be put in place to attract young talents to undertake innovative farming that is not only profitable and sustainable but also respectable. Thus, the new strategy should be to reorient present-day agriculture from crop based to farming system based with emphasis on 'plough-to-plate' approach which is more relevant, efficient, demand-driven, productive, competitive and profitable. It must also ensure food, nutrition and environmental security for all, being important to achieve SDGs.

With the above rationale, the Trust for Advancement of Agricultural Sciences (TAAS) organized a "Regional Conference on Motivating and Attracting Youth in Agriculture (MAYA)" jointly with Indian Council of Agricultural Research (ICAR), MS Swaminathan Research Foundation (MSSRF), Asia-Pacific Association of Agricultural Research Institutions (APAARI), Skill India-Agriculture Skill Council of India (ASCI), Young Professional for Agricultural Development (YPARD) and National Bank for Agriculture and Rural Development (NABARD) at NASC Complex, New Delhi on

30-31 August 2018. The conference was attended by 227 participants from diverse stakeholder groups from India and some South Asian countries (Afghanistan, Bhutan, Nepal and Sri Lanka). The main objectives of the conference were to: (i) assess the role of youth in accelerating overall agricultural growth, (ii) provide exposure to various successful entrepreneurship models, (iii) understand the role of youth in rural advisory services and for knowledge linking farmers to markets, (iv) suggest needed policy reorientation to motivate and attract youth in agriculture, and (v) explore the possibility to build a regional platform.

The conference was a great success and achieved the envisaged outcomes. **A Road Map on Motivating and Attracting Youth in Agriculture was adopted.** Suitable mechanism needs to be devised for its effective and speedy implementation, especially to accelerate growth in agriculture in South Asian countries.

I profusely thank Dr Raj Paroda for taking this timely initiative, all the co-organizers for their immense help and support, and all those associated with successful organization of this important conference.

I am sure, this publication will immensely be useful to the researchers, policy planners, development agencies, entrepreneurs, farmers, students and other stakeholders.



**M.S. Swaminathan**

Fonder Chairman, M.S. Swaminathan Research Foundation  
Ex-Member of Parliament (Rajya Sabha)

## **Acronyms and Abbreviations**

ABI	Agri-Business Innovation
AIASA	All India Agricultural Students Association
a-IDEA	Association for Innovation Development of Entrepreneurship in Agriculture
AIS	Agriculture Innovation System
APAARI	Asia-Pacific Association of Agricultural Research Institutions
APMC	Agricultural Produce Marketing Committee
AR4R	Agricultural Research for Result
ARPAN	Advancing Research for Promotion of Agriculture and Nutrition
ARYA	Attaining and Retaining Youth in Agriculture
ASCI	Agriculture Skill Council of India
ASRB	Agricultural Scientists Recruitment Board
ATARI	Agricultural Technology Application Research Institute
ATIC	Agriculture Technology Information Center
BAU	Birsa Agricultural University
BIRAC	Biotechnology Industry Research Assistance Council
CAU	Central Agricultural University
CCSHAU	Chaudhary Charan Singh Haryana Agricultural University
CD	Capacity Development
CDAIS	Capacity Development for Agricultural Innovation Systems
CGIAR	Consultative Group on International Agricultural Research
CGTF	Credit Guarantee Trust Fund
CIMMYT	International Maize and Wheat Improvement Center
CPRO	Chief Public Relation Officer
CRPs	CGIAR Research Programs
CSO	Civil Society Organization
CSR	Corporate Social Responsibility

DARE	Department of Agricultural Research and Education
DOA	Department of Agriculture
DST	Department of Science and Technology
FAO	Food and Agriculture Organization of the United Nations
FICCI	Federation of Indian Chambers of Commerce and Industry
FLO	FICCI Ladies Organization
FO	Farmer Organization
FPO	Farmer Producer Organization
FSPD	Farm Sector Policy Department
GCARD	Global Conference on Agricultural Research for Development
GCHERA	Global Consortium of Higher Education and Research for Agriculture
GFAR	Global Forum on Agricultural Research
GST	Goods and Services Tax
HAU	Haryana Agricultural University
HF	Holstein Friesian
IAS	Indian Agriculture Services
ICAR	Indian Council of Agricultural Research
ICARDA	International Center for Agricultural Research for Dry Areas
ICS	Indian Civil Services
ICT4Ag	Information Communication Technology for Agriculture
IFPRI	International Food Policy Research Institute
IIM	Indian Institute of Management
INM	Integrated Nutrient Management
IPM	Integrated Pest Management
IT	Information Technology
KVK	Krishi Vigyan Kendra
MAYA	Motivating and Attracting Youth in Agriculture
MOOC	Massive Open Online Course
MSDE	Ministry of Skill Development and Entrepreneurship
MSME	Ministry of Micro, Small and Medium Enterprises

MSSRF	M.S. Swaminathan Research Foundation
NAARM	National Academy of Agricultural Research Management
NABARD	National Bank for Agriculture and Rural Development
NARC	National Agricultural Research Council
NARS	National Agricultural Research System
NASC	National Agricultural Science Centre
NASS	National Agricultural Service Scheme
NGO	Non-Government Organization
NIF	National Innovation Foundation
NSS	National Service Scheme
NSSO	National Sample Survey Office
PARC	Pakistan Agricultural Research Council
PAU	Punjab Agricultural University
PGD	Postgraduate Diploma
PPP	Public-Private Partnership
QPM	Quality Protein Maize
RAWE	Rural Agricultural Work Experience
SAARC	South Asian Association for Regional Cooperation
SABC	South Asia Biotechnology Centre
SAUs	State Agricultural Universities
SDGs	Sustainable Development Goals
SHG	Self-Help Group
SLCARP	Sri Lanka Council for Agricultural Research and Policy
SPC	South-Pacific Commission
TAAS	Trust for Advancement of Agricultural Sciences
UN	United Nations
UNDP	United Nations Development Program
YAP	Youth Agri-Preneur
YPARD	Young Professionals for Agricultural Development



# **Regional Workshop on Motivating and Attracting Youth in Agriculture**

## **BACKGROUND**

The global population is expected to be around 8.0 billion by 2025. The ageing rural population, better opportunities outside agriculture, and declining natural resources are posing some serious concerns today as to who will feed the world tomorrow? Under such circumstances, concerns are also raised as to how will we meet the targets of sustainable development goals (SDGs)? In this context, the role of youth (both male and female) in accelerating agricultural growth cannot be underestimated. In fact, those nations have progressed much faster where youth has been motivated to get involved mainly in creative, secondary and specialty agriculture - supported well by an enabling policy environment.

India presently has the largest population of youth (356 million between 10-24 years age group) in the world (UN Report, 2014), even more than that of China (269 million). This obviously be seen to reflect a bright future since almost half of this population (nearly 200 million) live in the rural areas, which could be motivated and attracted professionally to agriculture and allied fields. Contrary to this, unfortunately only around five per cent of the rural youth is currently getting engaged in agriculture. This is simply because they do not find agriculture a creative, profitable and above all a respectable profession which can provide better living conditions. Thus, we do see an exodus of youth from rural to urban areas in search of alternative employment/option. Moreover, a clear strategy and enabling environment to motivate and attract youth in agriculture are lacking. Youth is disinterested in agriculture mainly because of poor infrastructure, less education facilities, practically no skill development opportunities, lack of incentives and rewards, and problems of land ownership, credit facilities and availability, value chain and farmer-market linkages. In addition, agriculture is currently faced with numerous daunting challenges such as overexploitation of natural resources (land, water and agrobiodiversity), a decline in factor productivity, costly inputs, low income and production uncertainties due to adverse effects of climate change.

Under such a scenario, the involvement of youth in agriculture is a challenge since they are energetic, innovative, and more receptive to new ideas/adoption of advanced technologies rather than traditional agriculture. In addition, they do have the courage to take the risks, so critical for any new enterprise. Moreover, the present-day agriculture requires intelligence and hard work, besides the will and commitment. Hence, the future strategy should motivate the youth to become job providers and agents of change rather than to remain as job seekers.

In this context, urgent steps are needed to motivate and attract youth in agriculture, who are not only energetic and willing but also innovative. This can be achieved only when required knowledge and education, technical skills, sustained encouragement and the enabling policy environment are provided. In addition, the required policies, incentives and rewards need to be put in place to attract young talents to undertake innovative farming that is not only profitable and sustainable but also respectable. Thus, the new strategy should be to reorient present-day agriculture from crop based to farming system based with emphasis on 'plough-to-plate' approach which is more relevant, efficient, demand-driven, productive, competitive and profitable. It must also ensure food, nutrition and environmental security for all, being important to achieve sustainable development goals (SDGs). Hence, there is an urgent need to develop a clear Road Map for motivating and attracting youth in agriculture. Also, there is a need to devise a suitable mechanism for its effective and speedy implementation, especially to accelerate growth in agriculture in South Asian countries.

With the above rationale, 227 participants from India and some South Asian countries (Afghanistan, Bhutan, Nepal and Sri Lanka) representing the national agricultural research systems (NARS), private sector, civil society organizations (CSOs) (non-government organizations (NGOs) and farmer organizations (FOs), progressive farmers, entrepreneurs, policy planners, Consultative Group on International Agricultural Research (CGIAR) Centers, and development departments deliberated on this important subject in the Regional Conference on Motivating and Attracting Youth in Agriculture (MAYA) held at National Agricultural Science Centre (NASC) Complex, New Delhi on 30-31 August 2018. The conference was organized by the Trust for Advancement of Agricultural Sciences (TAAS) jointly with Indian Council of Agricultural Research (ICAR), M.S. Swaminathan Research Foundation (MSSRF), Asia-Pacific Association of Agricultural Research Institutions (APAARI), Young Professionals for Agricultural Development (YPARD), Skill India, Agriculture Skill Council of India (ASCI), and National Bank for Agriculture and Rural Development (NABARD). The main objectives of the conference were to: (i) assess the role of youth in accelerating overall agricultural growth, (ii) provide exposure to various successful entrepreneurship models, (iii) understand the role of youth in rural advisory services and for knowledge linking farmers to

markets, (iv) suggest needed policy reorientation to motivate and attract youth in agriculture, and (v) explore the possibility to build a regional platform for collaboration and partnership. The Technical Program and the List of Participants are given in Annexure I and II, respectively.

## **INAUGURAL SESSION**

**Dr. A.K. Singh**, Deputy Director General (Extension), Indian Council of Agricultural Research (ICAR), welcomed the Chief Guest, distinguished guests, invitees and participants. He highlighted that India has the maximum youth population, but only 5 to 7 per cent of rural youth is involved in agriculture sector. Government of India is taking initiatives on doubling the farmers' income. Such initiatives would need transformative changes, engaging more youths in agriculture and may be an optimistic step in this direction. Youth is innovative and can play a vital role in technology dissemination through privatization of extension services. He also gave an overview of the various programs and schemes, being implemented by the ICAR on attaining and retaining youth in agriculture. He exhorted that the change must begin at home and at least 15 to 20 per cent youth may be involved in agriculture sector.

**Dr. Ravi Khetarpal**, Executive Secretary, Asia-Pacific Association of Agricultural Research Institutions (APAARI), in his remarks outlined that Asia-Pacific region is the home of 60 per cent youth but still South Asia region has the maximum poverty and hunger. He shared that several initiatives have been launched globally to address the problem of youth in agriculture, for example, youth policy by Food and Agriculture organization (FAO)/United Nations (UN), United Nations Development Program (UNDP) strategy on youth, Young Professionals for Agricultural Development (YPARD), world bank project on youth in agriculture, etc. He also shared the gist of regional conference on "Youth and Agriculture: Challenges and Opportunities" organized by APAARI in Pakistan in 2013. Further, he exhorted that to attract youth in agriculture, there is a need to enhance their functional skill. He highlighted that there is a mismatch between agricultural education system and employment sector. Therefore, there is a need to change the policies as well as to intensively work on behavioural and social science aspects to attract and motivate youth in agriculture.

**Dr. M.S. Swaminathan**, Founder Chairman, M.S. Swaminathan Research Foundation (MSSRF), through a video message shared his views that if agriculture is abandoned then food production will suffer seriously. He provided the recent example of floods in Kerala. He further emphasized that youth getting away from agriculture is a global phenomenon, and therefore several international organizations and institutions are working on developing policies to attract and retain youth in agriculture. He

also emphasized on the need for reorienting agricultural education and policies to motivate and attract youth in Agriculture.

**Dr. Raj Paroda**, Chairman Trust for Advancement of Agricultural Sciences (TAAS) and Former Secretary, Department of Agricultural Research and Education (DARE) and Director General, ICAR in his Chairman's remarks outlined the importance, genesis and the necessity for organizing the "Regional Conference on Motivating and Attracting Youth in Agriculture". He shared that the challenges of youth in agriculture were for the first time highlighted and deliberated during the Triennial Conference organized by the Global Forum on Agricultural Research (GFAR) at New Delhi in 2006. The deliberations led to the establishment of global platform for youth in agriculture, namely, Young Professionals for Agricultural Development (YPARD). More than 100 young researchers and agri-stakeholders participated in the second Global Conference on Agricultural Research for Development (GCARD-2) at Punta del Este, Uruguay during Oct-Nov. 2012 to raise the voice of youth for AR4D. The deliberations during the conference further highlighted that youths are moving out of agriculture and, therefore, there is an urgent need to attract and retain them in agriculture sector. A follow-up workshop on "Foresight and Future Pathways for Agricultural Research and Youth" was conducted by TAAS, ICAR and YPARD-India in New Delhi during March 2013. Subsequently, Attaining and Retaining Youth in Agriculture (ARYA) program was initiated by ICAR. An Asia-Pacific Workshop on "Youth and Agriculture: Challenges and Opportunities" was also organized by APAARI, TAAS, and Pakistan Agricultural Research Council (PARC) in Islamabad during 2013. Based on the outcomes of these conferences he highlighted that retaining of youth is not possible until they are motivated towards agriculture. For motivating youth in agriculture, it is important to impart/provide knowledge and education, enhance technical skills, sustained encouragement and the enabling environment. He further highlighted on the required policies, incentives and rewards system to attract young talents to adopt innovative ways of farming that are not only profitable and sustainable but also respectable. Thus, transformative and translational changes would be required for developing strategies that can reorient the present-day agriculture to be more relevant, efficient, demand-driven, productive, competitive and profitable, while ensuring food, nutrition and environmental security for all and hence contribute towards SDGs. He shared that agriculture outlook has to be changed towards agri-entrepreneurship that can provide options to youth from "job-seeker" to "job-provider" and also address the issues of second generation problems of natural resource management (NRM) and help in achieving Government of India targets for doubling farmers' income. He emphasized on the need for incentives and rewards to be given to farmers for innovative research through farmers' innovation fund. He further emphasized on the need to conduct the informal training programs. He exhorted that country needs a change from *krishi*

*pradhan to krasak pradhan*. He emphasized on proactive dissemination and scaling of innovative technologies like conservation agriculture for soil health and to stop residue burning, etc. Rural youth can play pivotal role through paid and ICT based extension services and custom-hire services, He also emphasized on developing super-speciality agri-clinics from where farmer can get all the information at one place. The agriculture technology information centers (ATIC) centres may be converted to agri-clinics at each *Krishi Vigyan Kendra* (KVK). He emphasized that agricultural education curricula at school level should be designed as well as the skill development programs like *Pradhan Mantri Kaushal Vikas Yojana*, etc. should be linked with agriculture. He also suggested the option of contract farming, etc. as a way to promote and attract youth in agriculture. He further emphasized that motivating youth in agriculture is a multi-dimensional task and therefore there is a need for a mission-mode approach for which “Mission for Youth in Agriculture” needs to be initiated on priority.

**Dr. T. Mohapatra**, Secretary, Department of Agricultural Research and Education (DARE) and Director General, ICAR in his remarks as Chief Guest highlighted on the salient achievements of Indian agriculture. He shared that projected food grain production in the country is around 284 million tons. Due to pulse mission programs, India has achieved self-sufficiency. He further highlighted the Government policies on food grain procurement, new concept of seed hubs and farmer producer organization (FPO), and buffer food stocks in India. He informed that GOI is now focusing on doubling the farmers’ income for which change is a must and change will come through engaging more youth in agriculture as they are more innovative as well as risk takers. He exhorted that half of India’s population is below 25 years age and they need gainful education and employment. He indicated that 35 per cent employees in national agricultural research system (NARS) are below 35 years and therefore, tremendous opportunities and options are available but we need to be proactive. Agriculture is the biggest employing sector especially in rural areas. But, today’s youth is not attracted towards agriculture as it is not considered as a respectable profession. Therefore, there is a need for better education, good networking between rural institutions and enabling policies to attract youth in agriculture. He highlighted on the need of agriculture education right at the school level. He informed about the current ICAR and Government programs such as Attracting and Retaining Youth in Agriculture (ARYA) and Farmers First, and announced a new program “ABHYAS” on agricultural education system to attract youth. He also stressed on the need for incentive and reward system for innovative youth in agriculture as well as young farmers through the innovation fund at ICAR.

**Dr. Yashpal S. Saharawat**, Principal Scientist International Center on Agricultural Research for Dry Areas (ICARDA) and Country Representative YPARD India 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 conference especially on motivating and attracting youth in agriculture and highlighted the need for organizing such workshops at the national level by different countries in South Asia region in order to address the emerging challenges in agriculture. He highlighted that youths are moving out of agriculture and it is aging. Therefore, there is an urgent need to motivate, attract and retain them in agriculture sectors particularly for secondary and diversified agriculture. He also emphasized on the need for establishing a Regional Platform on Youth in the Asia-Pacific region.

## **TECHNICAL SESSION I: CURRENT INITIATIVES ON YOUTH EMPOWERMENT**

**Co-Chairs** : Dr. Rita Sharma, Former Secretary, MoRD, New Delhi  
Dr. A.K. Srivastava, Chairman, ASRB, New Delhi

**Rapporteurs** : Dr. R. Burman, Principal Scientist, IARI, New Delhi  
Dr. C.M. Parihar, Scientist, IARI, New Delhi

The Technical Session I “Current Initiatives on Youth Empowerment” was co-chaired by Dr. Rita Sharma and Dr. A.K. Srivastava and Dr. Dr. R. Burman and Dr. C.M. Parihar acted as rapporteurs. The session started with welcome and brief remarks by Dr. Rita Sharma. She mentioned that youth is not enthusiastic towards agriculture. However, modern agriculture has many segments which contribute to farming and entrepreneurship. Youth is a heterogenous group and therefore, there is a need to target the right youth for motivating towards farming and agri-entrepreneurship. Dr. A.K. Srivastava informed that there are almost 120 million farm families in India. The problems and constraints of each farm family are different and therefore different approaches are needed to tackle the problems. One of the methods suggested by Niti Aayog is to identify the districts based on selected parameters. The rural youth can be engaged in identifying and demonstrating the technologies in the most under-privileged districts. He also emphasized that ARYA scheme of ICAR is empowering 200 to 300 youths in each district. He shared that farmer producer organizations (FPOs) are the way ahead to develop agri-entrepreneurship in rural areas and motivate youth towards agriculture.

In this technical session, three presentations were made by Dr. A.K. Singh, DDG (Extension), ICAR, Dr. Satendera Arya, CEO Agriculture Skill Council of India (ASCI); and Dr. Vipin Kumar, Director, National Innovation Foundation (NIF).

Dr. A.K. Singh, DDG (Extension), ICAR highlighted that farming population is aging as youth is moving out of farming. He shared that India will remain younger

longer than China and Indonesia, the two major countries other than India which determine the demographic features of Asia. He presented an overview of the various programs and schemes that are being implemented by the ICAR in the field of skill development. The ICAR is working on empowerment of youth through self-employment in agriculture and allied activities through skill-development and capacity building. The *Krishi Vigyan Kendras* (KVKs) are playing a major role in the implementation of these schemes, such as ARYA, VATICA, *Kisaan Sampada Yojana*, FPOs, Farmers First, NARI, 'Mera Gaon Mera Gaurav'. The ARYA program is working towards attracting and retaining the youth in rural areas by forming farm youth networks and providing entrepreneurial facilities and establishment of related micro-enterprise units for skill enhancement in 25 districts with 200 to 300 youths in each district. Overall, 4,280 youths have been oriented to these skill development trainings. He shared that average income of ARYA skilled youth has increased by 45 per cent. He stressed on the urgent need to building network and linkages with stakeholders, making agriculture more remunerative and satisfying, providing needed infrastructure and basic amenities in rural sector, technology foresighting, adaptation and outscaling, better integration of rural agricultural work experience (RAWEX), Student READY and ABHYAS - internship and private investment in youth and agriculture.

**Dr. Satendera Arya**, CEO ASCI pointed out that 47.8 per cent of India's population is currently below 29 years age and is expected to increase to 49.9 per cent by 2022. India would need more than 400 million skilled manpower by 2022. It is estimated that around 5 per cent of India's workforce has undergone formal skill training compared to 52 per cent in USA, 68 per cent in UK, 75 per cent in Germany, 80 per cent in Japan and 96 per cent in South Korea. Therefore, he emphasized on the need for skill development programs in India. He emphasized on developing the national skill qualification framework and the public-private partnership on skill development. He also shared that National Agriculture Skill Council of India is a "not-for-profit" organization under the Ministry of Skill Development and Entrepreneurship and is working towards farmers, wage workers, formal jobs in agriculture and self employed Ministry of Micro, Small and Medium Enterprises (MSME) and unorganized segment. Currently, 263 million (54.6%) people are engaged in agriculture sector in India and over 50 per cent are as agricultural labour only. He emphasized that by 2022 almost 33 per cent of the total agricultural workforce has to be reduced. He shared that there are serious skill gaps in agriculture sector and these gaps are widening with new emerging fields as dairy, fishery, mechanization, warehousing, digital agriculture, etc. He further mentioned that ASCI has conducted over 4 lakh training programs of youth that are both self and wage employment, and promoting agriculture in around

1,000 schools. He presented an overview of the various programs and schemes that are being implemented by the ASCI in the field of skill development. He highlighted the success stories of ASCI programs. He stressed on the introduction of compulsory agriculture education in schools, and designing multi-skill vocational courses in rural sector and also on benchmarking Indian standards with UK, Canada and New Zealand to create transatlantic standards for employment and immigration opportunities.

**Dr. Vipin Kumar**, Director, National Innovation Foundation (NIF) shared that while most of the countries face risk of an ageing workforce, India stands to benefit from its favourable demographic profile. The working population of India, is expected to increase to 592 million by 2020, next only to China (776 million), pointing to the fact that youth will make a significant contribution to the economic development of the country. He emphasized that India needs to invest on youth in education, skill development, entrepreneurship, health, sports, and social values. The NIF is putting emphasis on fostering more “job creators” than “job seekers”. He presented an overview of various programs and schemes that are being implemented by NIF. He highlighted that the success stories should be promoted at a wider scale so as to motivate youth to consider agriculture as an attractive option. This will help to a great extent in removing the social stigma on agriculture as a low-profile job as well as change the mind-set of people engaged in rural sector. Effective utilization of information communication technology (ICT) and telecom technology to rapidly disseminate success-stories was also deliberated and highlighted as an important action point. The presenter stressed that short video clips of success-stories be put on You-Tube as these can become viral in a short-time.

During the deliberations, it was highlighted that to attract youth there is need to move away from traditional agriculture to high-value agriculture, for example ‘black aromatic rice’ fetches a high premium, and processing of pineapple, ginger, etc. are more remunerative in the northeast region. It was highlighted that improving skills is an important input into motivating and attracting youth in agriculture. However, it cannot bring about the desired result by itself unless there is an enabling environment which fosters higher investment in the sector - both public and private. There is a need to provide incentives to private sector to invest in agriculture. Again, integrating agriculture into school education, develop technologies and mind-set of generating more value from less land, improving financial services and providing information on markets was stressed by the participants from different sectors of agriculture. The participants felt the need for an institutional framework where various aspects of a start-up enterprise can be resolved at a single platform, e.g. “Centre for Entrepreneurs”. The participants strongly emphasized on the need for addressing the reduction of wastage. The

Vice-Chancellors from different State Agricultural Universities highlighted the importance of more internship opportunities and soft skills during the four-year B.Sc. Ag. degree program. The participants from different states shared that skill empowerment and requirement for youth in agriculture are different in different states, and therefore, state-wise differential requirement and diversity needs to be factored in while developing skill-development programs for youth. There was consensus among participants that agriculture needs to be made remunerative, agri-infrastructure needs to be improved, and public and private sector investment must be increased.

The elder and lesser-educated farmers are less likely to introduce transformative, innovative, knowledge-intensive production techniques to address the sustainable climate-smart food production challenge. Contrary to this, young people are innovators and risk-takers. But, they migrate to cities due to various pull factors as better economic opportunities, quality of life, TV & Internet facilities, changing aspirations of youth, modern amenities and improved quality of life in cities - power, sanitation, entertainment - compared to rural sector as well as better opportunities for education, and medical facilities for family. The various push factors are high risk and low income in agriculture, drudgery, back-breaking occupation, generally negative perceptions, no pride and dignity in farming, low self-esteem, and considered employment of last resort. It was shared that 40 per cent farmers want to get out of farming, and do not want their children to remain in this profession. But, many do not find gainful employment - live in slums, squalor, often take to criminal activities.

But with current population explosion, by 2030 India will need to produce almost 30 per cent more food, and therefore, a critical mass of youth must remain in agriculture to ensure food security. Youth need agriculture as much as agriculture needs youth. Therefore, motivating and attracting youth in agriculture is a multi-dimensional task and demands for an efficient mechanism that can bring about better coordination between its various elements, institutions, departments and ministries- A mission mode approach may provide such a mechanism.

### **Highlights and Recommendations**

- There is need to change the mind-set of young people regarding agriculture as an occupation. It needs to be presented through its success stories so that the youth can find it attractive. Also, youth would be interested to learn better from success stories in areas of their specific interest.
- Information communication technology (ICT) and telecom technology be effectively utilized to rapidly disseminate knowledge in the form of short video clips, whatsapp, You Tube, etc.

- Since attracting youth in agriculture is a multi-dimensional task, there is need for a mechanism that can bring about better coordination between its various elements - A mission mode approach may provide such a mechanism.
- There is need to make agriculture remunerative, improve agriculture infrastructure and enhance public and private contributions for capital investments.
- To attract youth, there is need to move away from traditional to high-value agriculture, for example, 'black aromatic rice' fetches a high premium. Similarly, processing of pineapple, ginger, etc. in the northeast region could prove to be more remunerative.
- Improving skills is an important input for motivating and attracting youth in agriculture. However, it cannot bring about the desired result by itself unless there is an enabling environment which fosters higher investment in the sector - both public and private.
- There is an urgent need to have an institutional framework for a start-up enterprise through single window platform, e.g., Centre for Entrepreneurs.
- More internship opportunities and soft skills development are to be factored in the four year B.Sc. Ag. degree program.
- The state-wise varying requirements and diversity needs are to be factored in while developing skill-development programs for youth.

## **TECHNICAL SESSION II: INITIATIVES ON YOUTH EMPOWERMENT IN SOUTH ASIA**

**Co-Chairs** : Dr. Dileepkumar Guntuku, Global Program Leader, ISU, USA  
Dr. Hemantha Wijewardena, Secretary, SLCARP, Sri Lanka

**Rapporteurs** : Dr. Fai Collins, Knowledge Management Coordinator, APAARI, Bangkok

The Technical Session II "Initiatives on Youth Empowerment in South Asia" was co-chaired by Dr. Dileepkumar Guntuku and Dr. Hemantha Wijewardena, and Dr. Fai Collins acted as the rapporteur. The session started with welcome and brief remarks by Dr. Guntuku. In this session, six presentations were made on global, regional and country perspectives for initiatives taken on youth empowerment.

Dr. Dileepkumar Guntuku, Global Program Leader, ISU, USA made a presentation on Global Initiatives on Youth Empowerment. He highlighted that India is losing more than 2,000 farmers every day since 1991, the overall number has dropped by 15 million. In 2015, the first Massive Open Online Course (MOOC) was launched by Dr. M.S. Swaminathan to address the issue. He also shared that there are very few online agricultural courses and mentioned about some of the Iowa State University examples from Ghana and other African countries. Iowa State University is now

developing MOOCs on sustainable seeds and promoting information communication technology for agriculture (ICT4Ag) models such as linking farmers with markets. He emphasized that India has a lot of potential for youth in agriculture and stressed that agriculture and rural development organizations must take advantage of contemporary ICT tools and platforms as digital technologies that provide potential opportunities especially Massive Open Online Courses (MOOC) aimed at large scale participation.

**Dr. J. Kennelly**, President, Global Consortium of Higher Education and Research for Agriculture (GCHERA) made a presentation through Skype. He talked on developing soft skills and ethical leadership to prepare graduates to become catalysts of change. He shared that Global Confederation of Higher Education Associations for Agricultural and Life Sciences represents over 900 agriculture and life science universities/faculties across six continents. Its mission is to: (i) encourage mutual understanding and global cooperation among higher education associations and their constituent member universities; (ii) provide leadership in education, research innovation and outreach in agricultural and life sciences; (iii) be a catalyst for sharing and adoption of the best practices across its membership. He shared about the launching of a pilot project in Haiti and Mexico next week on developing ethical foundation of graduates, knowledge, and functional skills - especially leadership, entrepreneurship and creativity - to succeed in their future careers as agents of positive change in addressing global challenges in agriculture and life sciences. The project is an EARTH University Model that has become international in preparing graduates to be ethical leaders in tackling global challenges like poverty reduction, food and nutritional security and environmental sustainability. He emphasized on scaling-up the pilot project in the Asia-Pacific region in collaboration with APAARI. He also stressed on developing a joint project with APAARI on curricula reform and under the broad umbrella of functional capacities

**Dr. Ravi Khetarpal**, Executive Secretary, and Ms. Martina Spisiakova, Project Development Consultant, APAARI jointly made a presentation on “Regional Perspective on Facilitating Capacity Development for Agricultural Innovation in Asia-Pacific”. Dr. Khetarpal informed that APAARI is addressing the issues of youth throughout all its key programs - knowledge management (KM), capacity development, partnership and networking, and advocacy. Its work on agricultural education to empower and motivate youth for agriculture is in the context of the Tropical Agriculture Platform (TAP) hosted by FAO, through the EU-funded Capacity Development for Agricultural Innovation Systems (CDAIS) Project. The focus is on integration of TAP Common Framework in national agricultural research systems (NARS), and in the curricula of higher education, as well as the development of functional capacities “soft skills”.

**Ms. Martina Spisiakova** highlighted that the Framework provides concepts, principles, approaches and tools to better understand the agriculture innovation system (AIS) architecture; assess capacity development (CD) needs; and plan, implement, monitor and evaluate CD interventions. It works across three dimensions - individual, organizational, enabling environment promoting mind-set shift. She emphasized on integration of the TAP common framework, particularly the development of the “4 + 1 functional capacity” to: (i) navigate complexity; (ii) collaborate; (iii) reflect and learn; (iv) engage in strategic and political processes; and (v) adapt and respond in order to realize the potential of innovation. She stressed on the need to make use of APAARI-facilitated webinars for learning, knowledge sharing and collaboration in both thematic and functional areas related to agricultural education. She advocated for promoting ICT4Ag models such as linking farmers with markets and provide aspiring young innovators and entrepreneurs with a platform with a variety of other support services to help them develop, launch and scale-up their products and services. She also stressed on experiential/participatory learning, entrepreneurship, community engagement and ethical and value-based leadership and scope for funding to develop this project in the region.

**Dr. Tashi Wangdi**, Department of Agriculture (DOA), Bhutan presented the Bhutan’s Perspective. He mentioned that only 9 per cent of Bhutanese youth is engaged in agriculture and farming and 13 per cent of youth is unemployed. In Bhutan, youth unemployment, aging farming population and rural-urban migration are the key challenges. The Bhutan Government has taken several policy initiatives to motivate youth including the establishment of Youth Development Fund (1999), National Youth Policy (2010), National Employment Policy (2013), Strategy on Youth Employment in Agricultural Enterprises (2017), Priority Sector Lending Scheme, and Land Use Certificate for Youth. He emphasized that there is a need to change the mindsets of youth and the society towards agriculture. He stressed on the need to develop young farmers associations, network and fora for dialogues, and enforce the use of ICT in agriculture. He exhorted to scale-up land use certificate for youth, introduce vocational training for youth and strengthen collaboration with other stakeholders to motivate youth in agriculture.

**Dr. A.K. Vyas**, ADG (HRM), ICAR shared the Indian Government initiatives for youth empowerment in agriculture in India. He mentioned that the country is one of the youngest nations in the world with 54 per cent total population being less than 25 years old. He shared that about 20 per cent of all youth in developing world is ‘idle’ - without employment or education, which is an alarming situation leading to youth crisis. The major challenges are: insufficient access

to knowledge, information, education and business credit, limited access to land and markets, difficulties in accessing green jobs, as well as youth involvement in policy dialogue, and poor agricultural content in education. But, the future of agriculture depends on active involvement of youths to turn agriculture into agro-processing, agro-industries and agri-business for prosperity of youth in agriculture. He further stressed on developing long-term, consensus-based, and integrated youth policy. Farming has to be made and projected both intellectually satisfying and economically rewarding by technological and managerial upgradation of farm operations. There is a need to enhance competency of rural youth through imparting appropriate knowledge, skills with aptitude towards agriculture. He also emphasized on the need for creating well-established infrastructure for skill development and focus on professional skills and employment-oriented training to youth to enhance their employability as well as focusing on start-up training to graduates in agriculture or allied areas supported with special start-up loans. He advised the youth to tap on existing opportunities for commercial agriculture, processing, marketing and export.

**Dr. Baidya Nath Mahto**, Executive Director, National Agricultural Research Council (NARC), Nepal presented the country perspective for Nepal. He informed that the country has around 40 per cent youth population (16-40 years). The migration of youth is the key issue, though benefiting from being the 4<sup>th</sup> highest remittance recipients in the world. The migration of youth is causing delay in addressing the key challenges in agricultural development including: dependence of the farming systems on monsoon rainfall, high climate change vulnerability, soil fertility degradation, lesser use of inputs, dependence on organic farming, low adoption of available technology, high cost and feminization of agriculture due to youth migration, poor mechanization, low priority to agricultural research, and biotic stress. He shared that there are several policy interventions and frameworks within which Nepal is attracting youth to agriculture including the Youth Vision 2025, Ten Year Strategic Plan and Programs, Agricultural Development Strategy (ADS) 2015-2035, Agriculture Modernization Project, and Youth Self-Employment Program. He emphasized that Nepal needs to capitalize on the two giant markets of the world - China and India, growing interest of donors and the private sector, global linkages with CG Centers, rich biodiversity and diverse ecology. He also stressed that there is a need to improve access to land (land rights, land lease), credit (start-up capital, youth enterprise loan), enterprise development support, develop ICT-based agricultural solutions and involve youth in drafting agricultural policies and laws.

**Dr. Hemantha Wijewardena**, Director/Secretary, Sri Lanka Council for Agricultural Research and Policy (SLCARP), Colombo, Sri Lanka, presented the country perspective for Sri Lanka. He indicated that youth definition is varying

among the countries. The Sri Lanka National Youth Council defines youth between 13-29 years of age. The country statistics showed that employment rates in agriculture decreased by 27 per cent in 2016 and the unemployment is the highest in agriculture i.e. 4.1 per cent. He shared that in Sri Lanka a new policy is being drafted to provide a strategic framework for empowering and strengthening capacities of youth and women i.e. National Agricultural Policy Document 2018. Even the World Bank and the Government of Sri Lanka have started new agricultural sector modernization project to attract youth through modern farming technologies. He stressed on introducing loan, free training on new technologies and extension services, crop insurance and pension scheme for farmers to motivate and attract youth in agriculture.

**Mr. Hamid Helmandi**, Senior Advisor to the President of Afghanistan presented the country perspective on youth and agriculture. Mr. Helmandi put forward an eye-opening status of Afghanistan's agricultural resources and the impact of war on its livelihood and productivity. He shared that in Afghanistan there is no concrete investment in youth despite its 70 per cent population under 30 years. The war and climate change have very negatively impacted the local knowledge. He further indicated that major risk alert in Afghanistan includes: high unemployment of youth, increasing poverty, recruitment of youth by arm groups, and rise in drug use. He recommended to launch more awareness campaigns especially through social media for youth, link state universities across the country to the Ministry of Agriculture, bridge the gap between farmer/consumer, mechanize agriculture, encourage youth to offer bespoke solutions for farmers in return for profit (win-win solution), close production gap through solutions that do not compromise health and identify and produce successful entrepreneur models for youth to implement. He also emphasized to encourage youth to offer bespoke solutions for farmers in return for profit-sharing

### **Highlights and Recommendations**

- Understanding of the big picture concerning youth in agriculture is required - challenges, priorities and policies; target audience and market potential and also the strengths, weaknesses, opportunities and threats through strengths, weaknesses, opportunities threats (SWOT) analysis.
- There is need to adopt innovative ways across the value chain (R&D, access to inputs, production, marketing, wholesale distribution, retail and traceability), as well as supply chain management; communication, awareness and marketing; information management; finance and risk mitigation.
- Strong partnerships need to be developed between start-ups and existing financial and/or government institutions be developed.

- Promoting agri-preneurship through innovation fund is critical. Youth be made capable to become “job providers than job seekers”.
- Agriculture needs to be taught as a subject in Primary and Secondary scholars to generate special interest in this profession.
- Greater thrust needs to be given on strengthening the capability of youth so as to enable them to have access to knowledge, financial services, markets and planning progress. Concerted efforts to promote use of ICT tools in agriculture access to information concerning agriculture marketing, skill development, and financing mechanisms.
- Efforts need to be made to enlarge the scope for growth of agro-processing, agro-industries and agri-business through greater public-private partnership (PPP) in order to motivate and attract rural youth.
- Close collaboration with sub-regional organizations such as Association of Southeast Asian Nations (ASEAN), South Asian Association for Regional Cooperation (SAARC), and South-Pacific Commission (SPC) needs to be established for exchange of information and knowledge in agriculture.
- Policy dialogues need to be organized to address reforms in agricultural education, such as revision of curricula; shift from teaching to learning; partnership with private sector and role of youth in extension.
- Establishment of a regional platform for motivating and attracting youth in agriculture (MAYA), facilitated by TAAS/APAARI/ICAR would be desirable.

### **TECHNICAL SESSION III: MOTIVATING YOUTH FOR ENTREPRENEURSHIP**

**Co-Chairs** : Dr. V. Parveen Rao, VC, PJTSAU, Hyderabad  
Dr. U.S. Sharma, VC, MPUAT, Udaipur

**Rapporteurs** : Dr. Vikram Singh, Senior Scientist, Extension, IPTM, New Delhi  
Dr. M.S. Saharan, Principal Scientist, IARI, New Delhi

The Technical Session III “Motivating Youth for Entrepreneurship” was co-chaired by Dr. V. Praveen Rao and Dr. U.S. Sharma and Dr. Vikram Singh and Dr. M.S. Saharan were the rapporteurs. The session started with welcome and brief remarks by Dr. V. Parveen Rao. In this session, five presentations were made on different aspects relating motivation of youth for entrepreneurship.

Dr. Ch. Srinivas Rao, Director National Academy of Agricultural Research Management (NAARM), Hyderabad made a presentation on “Innovation Platforms for Entrepreneurship”. He mentioned that India is one of the 5 largest start-up destinations of the world with 70 per cent of the start-ups with founders less than

35 years' age. There has been a substantial rise in agri- and agri-product start-ups. The NAARM has initiated a new platform for agri-start-ups in collaboration with Department of Science and Technology (DST), Biotechnology Industry Research Assistance Council (BIRAC), Indian Institute of Management (IIM) Ahmedabad and other line departments, which works through its association for innovation development of entrepreneurship in agriculture (a-IDEA) concept. The a-IDEA aims to help entrepreneurs sensitize, ideate, incubate, accelerate their innovative early stage start-ups that are scalable to become competitive food and agri-business ventures through capacity building, mentoring, networking and advisory support. A-IDEA works on the concept of deep sector knowledge through experts and developing strong networks. He shared that institute has also established an agri-business-innovation centre, which is the part of ICAR's Agri-Business Innovation (ABI) Network, where different start-ups can initiate their business. He shared the detailed approach of NAARM towards entrepreneurship in agriculture, which starts from sensitization to seed funding. He exhorted that NAARM is dedicated to provide agri-business environment for new generation youths. The NAARM has started two specific postgraduate diplomas (PGD) in management in agriculture and PGD-technology management in agriculture, where 100 per cent placement is ensured. The institute is also working on acerbated programs e.g. Agri-Udan. He suggested that the way forward for motivating and attracting youth in agriculture should include the awareness programs about agri-entrepreneurship opportunities, continuity in incubation support, seed funding and addressing the sustainability issues.

**Dr. M.L. Jat**, Principal Scientist/System Agronomist, International Maize and Wheat Improvement Center (CIMMYT) shared that world population will not stabilize during the current century. The youth bulge will be there and Asia will remain the most populous youth continent. The urbanization will increase but still more than 50 per cent youth will stay in rural sector. The scenario demands to provide a more favourable context for agriculture and rural livelihoods as well as agriculture provides better opportunities to youth through job opportunities by modernization and ICT usage, counteracting the ageing farming, and contribution towards sustainability. He shared that CGIAR Research Programs (CRPs) are emphasizing on a sound youth engagement strategy and taking new initiatives to motivate and attract youth (men and women) in agricultural research activities. All CRPs are experimenting on youth entrepreneurs, rural service provider business models, mainstream into national social programs and social inclusion lens to access to extension and other services. The results have shown that youth express strong aspirations for education and non-farm livelihoods. Yet, across many communities youths display interest in modern agricultural opportunities that tap into their education and ambitions for what they deem successful livelihoods. He emphasized

on the need for a systematic research to address the youth-agriculture nexus for their greater involvement in agriculture.

**Dr. Randhir Singh**, ADG (Extension), ICAR made a presentation on “Role of Youth in Agricultural Extension”. He shared that as per National Sample Survey Office (NSSO) survey, 45 per cent Indian farmers want to quit agriculture and youth continues to migrate to urban sector. He emphasized that in addition to enabling policies, there is a need to allocate right resources to motivate and attract youth in agriculture. He insisted that motivating youth in rural areas is essentially required for retaining them in field activities. The economic benefits from agriculture is one of the major sources for motivation of youth in rural areas. ICAR, *Krishi Vigyan Kendras* (KVKs) and other line departments are supporting rural youths for their profitable business. The agricultural extension has now opened the door for rural youth by their involvement in transfer of technology to other farmers. He shared several success stories of KVK training programs to develop youth as agri-entrepreneurs. The success stories included diversified fields as organic farming, polyhouses, vermicomposting, beekeeping, biopesticide, conservation agriculture, crop protection, dairy farming, mushroom cultivation, veterinary and fisheries, etc.

**Dr. Yashpal S. Saharawat**, Principal Scientist-ICARDA and Country Representative, Young Professionals for Agricultural Development (YPARD) talked about YPARD initiatives and mentioned that YPARD is an online platform that serves its members in information and knowledge exchange through the website, newsletters, bulletins, face book page and face book groups, You Tube, Twitter, Google + and the LinkedIn page and group. YPARD is facilitating in exchange of information and knowledge among young professionals across disciplines, professions, age groups and regions. It helps in promoting agriculture among youth (men and women) and address critical development issues through youth. He emphasized on reorienting agriculture into agricultural research for result (AR4R)- agri-innovation, agri-business and entrepreneurship. He stressed on creating awareness amongst the youth, through the help of media, regarding emerging opportunities in agriculture. He appealed the policy makers to design enabling policies for involving youth in decision making processes at the national, regional and global levels and empower them to become ‘job creators’ and not ‘job seekers’.

**Mr. S.K. Dora**, General Manager, Farm Sector Policy Department (FSPD), National Bank for Agriculture and Rural Development (NABARD) shared his experiences on agri-clinics and advisory services. He emphasized on supplementing public extension system to create gainful self-employment opportunities. He shared that agri-clinics is the way forward to attract rural youth as it not only provides professional advice and services but also helps in enhancing productivity and income in different agril-

enterprises, viz., soil health and fertilizer application; cropping practices; plant protection; clinical services for animals, feed and fodder management, etc. The agri-clinics can be linked with agri-business centers as commercial agri-ventures, which further help in income generation and entrepreneurship development. He further shared that NABARD is making sincere efforts to cover all activities of the scheme under the Credit Guarantee Trust Fund (CGTF). He also stressed on the need for an effective reward and award system for the young agri-preneurs at state, national and global levels.

### **Highlights and Recommendations**

- There is need to reorient agriculture towards agricultural research for result (AR4R)- agri-innovation, agri-business and agri-entrepreneurship.
- Concerted efforts need to be made for creating awareness amongst the youth, through the help of media, regarding emerging opportunities in agriculture.
- Young men and women with good potential need to be recognized and suitable awards/rewards and to encourage and motivate them to take agriculture as a profession. Rather than constructing youth as a new and supposedly homogenous target group whose concerns can be addressed independently of the rest of society, the greater focus needs to be given on reorienting young people to re-socialize and help understand the importance of rural transformation.
- Efforts need to be made to agri-clinics as a single window system for providing knowledge, input and implements, besides training, technical backstopping and guidance on available incentives under different schemes and provision of credit, insurance and marketing.

### **TECHNICAL SESSION IV(A): SCALING INNOVATION AND SUCCESSFUL BUSINESS MODELS**

**Co-Chairs** : Dr. R.C. Srivastava, VC, RAU, Pusa  
Dr. S.A. Patil, Former Director, IARI, New Delhi

**Rapporteurs** : Dr. Rajbir Singh, Director, ATARI, Ludhiana  
Dr. Pardeep Kumar, Scientist, NBPGR, New Delhi

The Technical Session IVa “Scaling Innovation and Successful Business Model” was co-chaired by Dr. R.C. Srivastava, Vice-Chancellor, Dr. Rajendra Prasad Central Agricultural University, Pusa, Bihar, India and Dr. S.A. Patil, Ex-Director, Indian Agricultural Research Institute ICAR-IARI, New Delhi. Dr. Rajbir Singh, Director, ICAR Agricultural Technology Application Research Institute (ATARI), Zone 1, Ludhiana and Dr. Pardeep Kumar, Scientist, ICAR-NBPGR, New Delhi acted as the

rapproteurs. The session started with brief remarks by Dr. R.C. Srivastava and Dr. S.A. Patil. During the session, there were six presentations covering success stories from various agri-allied sectors like dairying, fishery, apiculture, linking farmers to markets, farm mechanization, and biofertilizers and biopesticides.

**Ms. Nikki Pilania Chaudhary**, a young agri-preneur from Pilibhit, Uttarakhand shared her experiences on dairy farming. She mentioned that world's agricultural sector is facing multiple challenges, including climate change to poor motivation among youth for agriculture. She narrated her agri-preneurship journey, which started with Global Forum on Agricultural Research (GFAR) and YPARD for "Youth Agri-preneur (YAP)" disruptive initiative. YAP was designed to provide the support required to enact projects identified as potential game changers. She shared that seed funding along with one year of training, coaching and mentoring by GFAR and YPARD, enabled her to turn dreams into reality. Her project was on enhancing dairy production in India. The dairy production in India is in a bad situation because of climate change and diseases. She shared about her idea to cross exotic Holstein Friesian (HF) and indigenous Gir cows in order to get cross-bred cows that not only have good milk yield, but also resilience to climate and diseases. She exhorted that seed funding from GFAR and YPARD removed the initial financial obstacles. She was provided the help of a relevant expert in the field as a mentor. She was also provided with facilities of rigorous social media, financial, communication and business coaching by GFAR and YPARD, which was immensely useful in different ways that changed her mindset, and helped to think like entrepreneurs. She shared that YAP mentoring really groomed her as an entrepreneur and she feels much more empowered as a result of the experience, and as a woman. Now that the groundwork has been completed and a good foundation is laid, a good progress is expected. During the past one year, she interacted with multiple organizations and individuals. At her farm, she has already started breeding Gir cattle and a few pure exotic Holsten Friesian, with the best available semen of Gir bulls in India. Within two to three years, she got progeny and clearer idea of the overall performance of these cross bred cows in terms of milk yield, quality of milk, cost of maintaining these cattle, as well as their climate and disease resilience.

**Mr. Sultan Singh**, a farmer from Karnal, Haryana made a presentation on fishery production. He is the first person in the state of Haryana and also in north India to establish fish breeding farm on scientific scales in 1984, and initiated the blue revolution in Haryana. Mr. Sultan Singh shared his journey of fish culture as a social taboo in the Haryana State to a highly successful entrepreneur now. He shared that Sultan Seed Farm is a gold award winner company for excellence and business prestige recognized by International Quality Summit New York in 2006. It has been fulfilling the nutrition requirements of the people for more

than past two decades. He has developed one of the most reputed fish farms of India. The farm is in the business of fresh water fish breeding and culture of Indian Major Carps (Rohu, Mrigala, Catla), Chinese Major Carps (Common Carp, Grass Carp, Silver Carp), fresh water prawns and catfishes since 1984. His work has been recognized by conferring awards by the State Government as well as Central Government. He shared about the domain of expertise in the field of fish breeding and fish culture. His farm spread in around 100 acres of land, contains hatcheries, nursery and culture ponds. He has developed and demonstrated the latest technology in aquaculture venture and is now in a position to supply any kind of quality and quantity of IMC and exotic carps.

**Mr. Jatinder Jeet Pal**, a progressive beekeeper from Ludhiana, Punjab initiated his basic training from KVK Samrala Ludhiana and subsequently developed a successful agri-entrepreneurship venture. He initiated beekeeping profession in 2001 with just only 50 beehive boxes since he did not have sufficient money and the only option was to depend upon his father. Presently, he is not only doing beekeeping but also manufacturing all types of beekeeping equipments and supplying to beekeepers in the local, national and international market. In addition to these, he is exporting bee products, beeswax, honey of different types, etc. at a large scale. He has supplied the bee keeping equipments to almost 7,500 young beekeepers, self-help groups (SHG's), farmer producers organizations (FPOs) and through 85 dealers in different states, namely, Jammu & Kashmir, Himachal Pradesh, Haryana, Rajasthan, Uttrakhand, Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh Madhya Pradesh, Maharashtra, Sikkim, and Andhra Pradesh. Overtime, he enhanced his skills with advanced technologies as bee-venom and royal jelly (Slovenia, Hungary & Italy), bee pollen, propolis, honey comb (China). He provided the detailed data on honeybee and honey in Punjab state as well as In India. In the end, he also stressed on empowering rural youth through target-oriented capacity development program to promote agri-entrepreneurship. He also advocated for a start-up fund for rural youth to initiate rural-preneurship and attract quality youth in rural areas.

**Ms. Jyotsna Kaur Habibullah**, a young agri-preneur from Lucknow, Uttar Pradesh is the founder of Federation of Indian Chambers of Commerce and Industry (FICCI) FICCI Ladies Organization (FLO) Lucknow-Kanpur, Awadh Grower's Association, UP Mango Festival and Lucknow Farmers Market. Through her ventures, she is trying to link smallholder farmers with markets to reduce the cost of inputs as well as improve the sales price. She shared her efforts on forming farmers association so that they can work together to bulk buy and market their goods. This helps to improve the economies at the scale. She initiated the UP-Mango Festival around six years back with 3 orchards only. She is connecting the farmers online, developed app for farmers as well as promoting eco-agro-tourism and agri-business and now

she has more than 100,000 visitors. She emphasized on the public-private and community partnership for agri-product market linkages. Her start-ups have won laurels as FICCI FLO UP Women's awards in 2017. She exhorted youth to link with community through volunteer services. This will help them to understand different aspects of farmer's issues, insights of agricultural economy and further link industry with community and farmers. She is engaged with more than 100 such volunteers. She also emphasized on the future agriculture i.e. aquaponics, which can help to produce large quantities in communities, as well as provide access to nutritious chemical free food, help in creating jobs and eliminating the huge carbon footprint associated with food production and transportation.

**Mr. Sarabjit Singh** from Ludhiana, Punjab shared his successful agricultural mechanization innovations and business model story. He explained that India is the largest manufacturer of tractors, harvesters, threshers, rotavators and now happy seeders in the world. The Indian market is dominated by 18,000 micro units, 3,500 small scale units, and 350 medium and large size companies. There are more than 15 foreign companies producing agri-implements in India for domestic and international market. The agriculture sector value chain includes all the steps involved from preparation of soil to harvesting and post-harvest processing. For every step in the production cycle, use of equipment enhances the efficiency of the unit involved. He shared that farm mechanization not just reduces labour time and post-harvest loss but also helps to cut down production cost in the long-term. He shared the happy turbo seeder development journey, which started in 2001 with active collaboration of Dasmesh Company with Punjab Agricultural University (PAU) and Australian counterparts under a public-private partnership model. He further elaborated that joint working in public-private partnership (PPP) model is a long process and the economic benefits start after a decade or so. He highlighted the policy related problems concerning agri-implements such as goods and services tax (GST), improper subsidies, lack of promotion of advanced machineries along with technology, and non-standard implements. He urged that farmers need to be provided with proper incentives to purchase the latest equipments as they lack resources, awareness and finances. He stressed on the need for skill enhancement and empowerment of rural youth to bring an agri-implement revolution in India in changing labour market and urbanization scenario. He also advocated for youth led smart and prosperous villages.

**Dr. Basavaraj Girenavar**, Chairman and Managing Director, Criyagen Agri & Biotech Pvt Ltd. shared that he started the company as a fresh Ph.D. agri-entrepreneur in 2007 in USA and in 2008 in India. The company is dedicated to provide solutions for sustainable agriculture through cost-effective and eco-friendly products and services to farming communities. As a start-up company, it is rapidly growing and plans to capitalize on the business opportunities in both

domestic and international markets. The company's focus is on integrated nutrient management (INM) and integrated pest management (IPM) concept-based products through enriched organic fertilizers, organic manures, biofertilizers, biopesticides, crop-special nutrients, micronutrients, and innovative products as capsules of biofertilizers and biopesticides. He also shared the innovative business model of Criyagen that includes the technology enabled retails, soil health services and crop advisory services along with the products. He showed result of several case studies through farm field demonstrations of different products. He shared that within a span of 8 years, the company has expanded significantly from 14 districts to 30 districts of Karnataka, as well as in the states of Maharashtra, Andhra Pradesh, Telangana and Tamil Nadu; from a few products to one dozen products as per FCO; from one manufacturing unit to five; and from one dozen marketing professionals to 10 dozen. The company is planning to expand its manufacturing unit base in Haryana too. The Criyagen has also started its franchisee retail store for all agricultural inputs and technology advisory and service units under one roof. The company plans to open and operate 100 stores in India in coming 3 years. Dr. Girennavar mentioned that he plans to connect farmers digitally with agricultural science, technology and commerce.

### **Highlights and Recommendations**

- Innovative farmers and entrepreneurs should be brought on a single platform for educating, learning from each other's experience, training and motivating youth in agriculture.
- A 'Farmer Innovation Fund' needs to be established to give direct and fairly simple access to small grants or loans for individual farmers and/or farmer groups so as to strengthen their capacity and capability to make agriculture more remunerative.
- The process needs to be streamlined for seamless and time bound subsidy provision and its distribution to the farmers so as to make best use of this opportunity to fulfill his needs for production, processing and marketing of the produce.
- Agricultural produce and products of progressive framers require convenient market to fetch a good price for which a suitable mechanism needs to be developed. For this, ICAR institutes, State Agricultural Universities (SAUs), and *Krishi Vigyan Kendras* (KVKs) may consider providing 'Farmer Sale Outlets, on the pattern of Agriculture Technology Information Centres (ATIC)'.
- Rural youth should be motivated to establish 'Custom Hiring Centres' for employment and income generation. Adequate training needs to be provided to young men and women in this respect.

- Innovative ways of farming using modern tools and technologies need to be devised and adopted for increasing farmers' income.
- A profitable policy framework needs to be developed for agri-business development, with special reference to motivating and attracting youth in agriculture.

## **TECHNICAL SESSION IV (B): SCALING INNOVATION AND SUCCESSFUL BUSINESS MODELS**

**Co-Chairs** : Dr. Premjit Singh, VC, CAU, Imphal  
Dr. P. Kaushal, VC, BAU, Ranchi

**Rapporteurs** : Dr. P. Adhiguru, Principal Scientist, ICAR, New Delhi  
Dr. Atul Kumar, Principal Scientist, IARI, New Delhi

The Technical Session IV (b) was co-chaired by Dr. Premjit Singh, Vice Chancellor, Central Agricultural University (CAU), Imphal and Dr. P. Kaushal, Vice Chancellor, Birsa Agricultural University (BAU), Ranchi, Bihar. Dr. P. Adhiguru, Principal Scientist, ICAR, and Dr. Atul Kumar, Principal Scientist, IARI were the rapporteurs. Five presentations were made in this session on disruptive innovations in seed sector, value chain in baby corn, roadside display/marketing, empowering agri-students and innovative ways of farming.

**Mr. Bhagirath Chaudhary**, the Founder Director of Advancing Research for Promotion of Agriculture and Nutrition (ARPAN) and South Asia Biotechnology Centre (SABC) made a presentation on "Disruptive Innovations in Seed Sector". He shared that world faces a grave human nutrition situation with more than 795 million people remaining hungry globally. India is the home of world's highest undernourished population (195 million people). He exhorted that biofortified food may be a way forward to eradicate malnutrition. He shared several examples of biofortified crops as quality protein maize (QPM), zero-erucic high oleic mustard, high oleic safflower, anthocyanin rich black carrot, iron and zinc enriched pearl millet, zinc rich rice, beans and wheat, and provitamin A rich cassava and maize. He further shared his science-based innovation of zero-erucic high-oleic mustard oil but the business has not picked up due to several problems. He voiced that for science based innovative business, India needs to develop and provide basic infrastructure such as laboratory for testing quality traits. Through his experience of zero erucic mustard oil business, he expressed that young entrepreneurs need a capital expenditure and working capital to identify their product's HiMarket, its production and traceability as well as to find market segmentation. He also articulated that the new products need training and awareness, experts and advisors as well as operational cost for advertising, marketing, and retail networking. The

young entrepreneurs should be trained on market dynamics as price, customers, quality, and adulteration law, etc.

**Mr. Kanwal Singh Chauhan**, a farmer from Aterna, Sonapat, Haryana made a presentation on value chain in baby corn. He highlighted that there is enormous potential of export of baby corn for which agro-processing clusters having processing units, cold storage units and dry units need to be established at the district level.

**Mr. Nirbhai Singh**, an innovative smallholder farmer from Bhatinda, Punjab started his household farming after retirement from Indian army. He started diversifying his traditional agriculture to vegetable (onion, tomato, chilli) nursery raising from 0.25 acre in 2003 to 5 acres in 2015 and increasing his benefit: cost ratio by 4 times from same piece of land. In 2013, with the help of Punjab Agricultural University (PAU), Ludhiana he ventured into an innovative business of “Road Side Display” of agri-products. He modified the agri-products display model along with vermi-composting, verka milk booth, seed shop and sugarcane juice corner by integrating with urban sector amenities as washroom, parking, and kids entertainment park and swings. He further extended his rural-urban integration model with sale of vegetable nursery (onion, chilli, brinjal, cauliflower, tomato), vegetable seeds, ornamental plants (indoor and outdoor), seasonal flower plants (seed and seedlings), timber, fruit plants and grass as well as cemented and plastic pots. Today, his road side display business has been innovated into a dine and bite system along with agri-products. His business model provides rural youth employment as well as helping to motivate and connect urban youth with rural sector. His innovation has been appreciated and awarded by the State and Central Government in India.

**Ms. Mirnali Manohar**, Chief Public Relation Officer (CPRO), All India Agricultural Students Association (AIASA) shared a brief history of its formation in 2011 with an objective to outline and highlight the agri-students’ problems and way forward to relevant authorities and policy makers. Currently, AIASA is working towards empowering the agri-students through better policy advocacy at state and national levels. Some of the prominent areas include: agri-education at school level, addition of Indian Agriculture Services (IAS) like Indian Civil Services (ICS), better fellowship and education environment, and working towards attracting and retaining youth in agriculture (ARYA). AIASA has more than 800 associated colleges and more than 75,000 registered users. She highlighted the importance of short-term training modules for drop out rural students on agro-processing, agri-marketing, farm mechanization, seed production, etc. She also exhorted on introduction of youth services, like National Agricultural Service Scheme (NASS) on the pattern of National Service Scheme (NSS); short term funds under projects for agri-students; collaborative study programs with other Universities, organization, agro-based industry; licensing to agri-graduates for agri-preneuship and providing interest free loans and development of counseling and placement cells

of agri-graduates. She also highlighted gender imbalance problem in agriculture as well as agri-preneurship. In the end, she shared that to motivate and attract youth in agriculture, there is an urgent need to develop institutional linkages for service delivery among research, development, extension, marketing, trade, skill and entrepreneurship departments/institutions of different ministries as a single window system for youth awareness, capacity development and seed grants.

**Mr. Ashok Singh**, an innovative farmer from Jalaun, Uttar Pradesh shared that as a young farmer he got in touch with the KVK of Banda Agricultural and Technology University. He got training on vermi-composting and quality seed production from the KVK and later on started an agri-preneurship program. Currently, he is supplying the vermi-compost in more than 20 different districts of the state as well as providing jobs to rural youth. During the subsequent years, he diversified his rural-preneurship to quality/certified/truthfully labeled seed production on vegetable crops, and mentha. Now he has installed two mentha distillation units also along with biogas plant. He also emphasized that rural-preneurship should consider including the livestock as this plays an important part in the rural economy. He advocated for wider usage of solar energy in rural agri-preneurship.

### **Highlights and Recommendations**

- Currently, biofortification is extremely important and hence zero erucic high oleic mustard oil, black carrot with high anthocyanin are in greater demand and hence need to be promoted. Government needs to support commercialization of such agricultural technologies.
- Crops like baby corn and mushroom having high export potential need to be linked to value chain i.e. processing and marketing for which agro-processing clusters need to be established in states having greater promise.
- Innovative ideas on agri-business need to be upscaled. Road side display models need to be developed and be adopted for profitable agri-business. Emphasis also needs to be given on nursery raising for early returns on investments.
- Greater attention needs to be given to direct benefit transfer to farmers for quality seed production. Also, farmers and farmer producers organizations (FPOs) need to be linked to seed hubs so as to facilitate quality seed production.
- For attracting youth in agriculture, utmost attention needs to be given to agro-tourism, agri-business insurance, custom hiring models suited to remote areas, and farm mechanization in hilly areas.
- Entrepreneurship workshops/seminars need to be organized at the regional level involving SAUs and agricultural colleges for encouraging young students to embrace agriculture.

- Apart from formal degrees in agriculture, small enterprise oriented or vocational short course programs (for 3 months and 6 months) with award of certificates be offered to attract youth in agriculture.

## **TECHNICAL SESSION V: PANEL DISCUSSION: ENABLING POLICIES ON MAYA**

**Moderators** : Dr. R.S. Paroda, Chairman, TAAS, New Delhi  
Dr. S.K. Vasal, Former Distinguished Scientist, CIMMYT, Mexico

The Technical Session V “Panel Discussion: Enabling Policies on MAYA” was moderated by Dr. R.S. Paroda, Chairman, TAAS and Dr. S.K. Vasal, former distinguished scientist, CIMMYT, Mexico. Dr. R.S. Paroda briefly introduced the panel represented by Dr. Rita Sharma- Former Secretary, Ministry of Rural Development (MoRD); Dr. H.K. Bhanwala- Chairman, National Bank for Agriculture and Rural Development (NABARD); Dr. A.K. Srivastava- Chairman, Agricultural Scientists Recruitment Board (ASRB); Ms. Jyotsana Sitling- Joint Secretary, Ministry of Skill Development and Entrepreneurship (MSDE); Dr. P.K. Joshi, Director for South Asia, International Food Policy Research Institute (IFPRI); Dr. U.S. Sharma, Vice-Chancellor, MPUA&T, Udaipur; Dr. K.P. Singh, Vice Chancellor, Chaudhary Charan Singh Haryana Agricultural University (CCSHAU), Hisar and Dr. R.K. Dhaliwal, Director, Directorate of Students Welfare, Punjab Agricultural University, Ludhiana. Dr. Paroda introduced the subject and highlighted the issue on youth getting away from agriculture. He also emphasized on the need for reviewing the existing schemes in different areas, identify gaps and find out solutions. Dr. Paroda requested the panelists to share their rich experiences, analyze the problems and constraints and suggest the way forward for motivating, attracting and retaining youth in agriculture through enabling policies.

**Dr. Rita Sharma** highlighted that youth is a heterogeneous group and is divided based on state, region, socioeconomic conditions and education level, and therefore, the policy framing cannot be uniform. She also highlighted that agriculture is not just about more production but deals with all activities from production to consumption. There are several entrepreneurship options in value addition and post-harvest, through which youth can be empowered. She also suggested for a mission-mode approach of working in the rural areas to motivate and attract youth in agriculture.

**Dr. H.K. Bhanwala** started his response with general comments on current agriculture scenario that everyone wants to increase returns from agriculture. Therefore, the production system is over-burdened either due to high input-use in favourable ecologies or low input-use in unfavourable ecologies. The question is how to diversify agriculture and mitigate this burden. He emphasized

on standardization of commodities and stressed that the current agricultural scenario provides huge opportunities to youth not only in the production but in the production to consumption chain with post-harvest and value addition. The solution for such big problem of youth not interested in agriculture has to be provided at micro-level with micro-solution but this would need greater investments and enabling dynamic policies. The solution/ strategy needs a good database on current rural youth and its needs in agriculture. The modern agricultural science has to be linked with climate and medical science. He shared some of the NABARD initiatives on youth and agriculture and willingness of NABARD to support the agri-clinics scheme. He emphasized on more start-ups in agriculture, and up-front subsidy and grants for youth to start an agri-entrepreneurship business.

**Dr. A.K. Srivastava** in his response shared the detailed statistics on Indian agricultural production, productivity and per unit return over investment. He emphasized that all rural youth cannot be engaged in agriculture as it needs fewer youth than existing in the rural sector. Therefore, there is an urgent need to conduct scientific study in finding that how many youths would be required in the agricultural production system? He exhorted the policy makers and youth to put more emphasis on value, addition, post-harvest processing as these will open new avenues for youth engagements. The post-production management will not only provide employment and avenues for youth but also help to conserve the food produced.

**Ms. Jyotsna Sitling** mentioned that today's youth is inspired towards information technology (IT), engineering, petro-chemicals, etc. But, the industry sector cannot fulfill the aspirations of youth due to limited options. She underlined that problems in agriculture sector are diverse and therefore, skill development and training are essential for youth (men and women) even in the agriculture sector. She also emphasized on the needs of para-professionalism in agriculture for the youth especially in emerging sector of value addition, post-harvest, etc. She also stressed on the knowledge sharing and dissemination to enhance awareness of opportunities for youth in agriculture.

**Dr. P.K. Joshi** in his intervention raised a question about the need of 320 million youth for 140 million ha cultivated land. He stressed on quality life and dignity of people engaged in agriculture and shared that youth needs economically viable and socially respectable good opportunities. Therefore, agriculture has to be modernized and diversified through new avenues as agro-tourism, agri-business, disruptive agriculture, and home delivery system of agri-products. He emphasized on the need to evaluate the current programs and schemes, develop an inventory of needs and options and provide new options of placement for youth in different sectors of agriculture.

**Dr. U.S. Sharma** highlighted that youth is moving out of villages and agriculture and therefore, agriculture is getting old which is leading to a situation of slow adoption of new technologies. He shared that universities are the first pillar to enhance skill and motivate the youth towards agriculture. He further emphasized on the need for revision of course curriculum in agriculture education.

**Dr. K.P. Singh** in his response shared about the new incubation and business development facility at Haryana Agricultural University (HAU), Hisar. He emphasized on the need to establish technology parks for the benefit of young men and women farmers. He mentioned that possibilities of scaling-up are less and concerted efforts are needed for taking appropriate measures to address this deficiency on priority supported by enabling policies.

**Dr. R.K. Dhaliwal**, highlighted that moving away of youth from agriculture is a serious problem which is increasing day by day and hence it is utmost essential to take urgent steps to curb this exodus. The youth (both men and women) need to be provided the needed facilities for innovative agriculture, better living conditions in the villages, improved credit facilities, linking them to markets and enabling policies for promoting and attracting youth in agriculture.

During the discussion, Dr. Paroda emphasized on the need of youth in agriculture and also affirmed that taking farmers out of agriculture is not a good solution for countries like India. Dr. Paroda suggested for scrapping the Agricultural Produce Marketing Committee (APMC) act to facilitate the state to state sale of farmers' produce. He emphasized on making e-markets functional and the need for more scientific studies relating to existing policies and youth. Dr. Bhanwala emphasized on futuristic IT based extension and knowledge system. Dr. Rita Sharma emphasized on revisiting the state laws and legislation to make these more youth motivating and attracting. She suggested for constituting a Cabinet Committee on Agriculture to effectively deal with these infringing issues. Dr. S.K. Vasal shared his views on youth engagements in new avenues such as ayurvedic agriculture. He also mentioned that greater focus needs to be given on cultivation of pseudocereals and millets. Dr. Randhawa highlighted that the youth in the villages is not interested in agriculture as they do not get the required facilities, encouragement and enabling policies and stressed that these need to be addressed to retain them in agriculture.

## **PLENARY SESSION**

**Co-Chairs** : **Dr. R.S. Paroda**, Chairman, TAAS, New Delhi  
**Dr. A.K. Singh**, DDG (Extension), ICAR, New Delhi

The Plenary Session was co-chaired by Dr. R.S. Paroda, Chairman, TAAS and Dr. A.K. Singh, DDG (Extension), ICAR. In this session, the session-wise highlights and

recommendations were presented by Dr. C.M. Parihar for Technical Session I, Dr. Fai Collins for Technical Session II, Dr. Vikram Singh for Technical Session III, Dr. Rajbir Singh for Technical Session IV a, and Dr. P. Adhiguru for Technical Session IVb. Dr. Yash Saharawat presented the Road Map of Motivating and Attracting Youth in Agriculture (MAYA). For attaining faster the sustainable developmental goals (SDGs), all nations in South Asia need to develop and promote a sound strategy around “Role of youth for accelerated growth in agriculture” for which the following ‘Road Map’ offering the youth a number of opportunities for economic, social and agricultural development was adopted at the conference:

- There is an urgency to have a ‘National Mission on Youth in Agriculture’ with an aim to impart better knowledge and skill to youth on: i) sustainable, secondary and speciality agriculture, ii) efficient knowledge dissemination, including information communication technology (ICT), iii) technical backstopping for innovative farming, iv) new agri-business models, and v) entrepreneurship as well as linking farmers to markets through value chain. Under the Mission, concerted efforts are needed to build new skills of youth for innovative agriculture through both formal and informal education. The best option for this is to impart agricultural education right from school level. In addition, the central and state agricultural universities and ICAR institutes must initiate entrepreneurship training through vocational and formal diploma programs. Also, the university curriculum needs to be revisited to address the emerging needs and aspirations of present-day youth and markets.
- Priority attention needs to be given to develop a new research agenda for ‘Youth-Agriculture Nexus’ which (i) delineates different contexts for youth-oriented agricultural research, (ii) identifies opportunities for young people’s engagement in agricultural research and innovation for development (ARI4D), and (iii) determines youth’s future pathway for attaining sustainable agricultural growth and income.
- Involvement of youth in ‘Plough-to- Plate’ initiative can help in doubling farmers’ income. Hence, their greater involvement as entrepreneurs will be the key to future growth and development. For this, networking for knowledge sharing/ dissemination, participation of youth in outscaling of innovations through their validation using technology parks/innovation platforms, use of ICT, creation of agri-clinics, much needed support for mentoring/hand-holding, and awareness regarding intellectual property rights (IPRs) need to be the essential components of the proposed mission on youth.
- There is need for a paradigm shift from narrow focus on ‘youth as a farmer’ to ‘youth as value chain developer’. To provide better economic opportunities for rural youth in the changing agricultural scenario, there is an obvious need

to move beyond the plot/field level agriculture i.e. from production to post-production level and to link with market for better income opportunities. The combination of agricultural value chains, technology and entrepreneurship will unlock vast economic opportunities for youth in both the farm and non-farm sectors and hence youth need to be encouraged to set-up agri-service centers to offer custom-hire services for small and marginal farmers for mechanizing their farm operations to enhance production at reduced cost.

- The role of well trained and competent youth, with expertise in ICT application for e-NAM, start-up, stand-up and skill development schemes, agribusiness enterprises, etc. is extremely important. Youth would thus need enabling policies for long-term investments, availability of easy and soft credit, provision of subsidy upfront to the entrepreneurs, farmer exchange visits, easy market accessibility, land law reforms for entrepreneurs, no taxation system for rural-based primary value addition involving youth, review of Agri-Clinic support system by the National Bank for Agriculture and Rural Development (NABARD), reforms in marketing laws such as scrapping of Agricultural Produce Marketing Committee (APMC) Act, provision of ready insurance for covering risk of 'start-up' entrepreneurs, etc. would immensely encourage youth to embrace agriculture.
- The private sector has also to play a proactive role in creating much needed 'Agri-Youth Innovation Corpus Fund' as part of their corporate social responsibility (CSR) and enhance rural employment through special projects. Such an effort would enhance rural employment opportunities through small agri-business start-ups, public-private as well as private-private entrepreneurship. They may also help through soft loans and mentoring programs for involving rural youths as input dealers/suppliers as well as paid extension agents.
- There is an urgent need to 'institutionalize incentives' and 'award/reward system' in order to reward highly successful agricultural entrepreneurs and innovators. This will inspire as well as attract the youth to adopt agriculture as a profession for their happy living. Such an approach should be a strategic priority at the local, state, country, and the regional level to ensure youth-led inclusive growth in agriculture.
- Success stories/case studies of young agricultural entrepreneurs and innovators need to be brought out and widely disseminated. Such selective studies must be well documented and nicely published. The successful entrepreneurs also need to be recognized and encouraged to act as role models and help in capacity development/ technical back-stopping for other youth to be equally successful. In this regard, a compendium of youth-led success stories in various

sectors of agriculture from different ecoregions of the country be brought out on priority and made accessible to others.

- It is high time that the Ministry of Agriculture and Farmers Welfare creates a separate 'Department of Youth in Agriculture'. This will ensure collaboration and coordination with concerned departments in other Ministries such as Science and Technology, Skill Development and Entrepreneurship, Food Processing Industry, Rural Development, Commerce and Industry, Chemicals and Fertilizers, etc. so as to meet the aspirations of youth in agriculture. Such an institutional mechanism, with funding support through the proposed 'Mission on Youth in Agriculture' will help in motivating and attracting youth in agriculture and allied fields.
- A 'Regional Platform on Youth in Agriculture' needs to be established through facilitation role of global/ regional/national fora like Asia-Pacific Association of Agricultural Research Institutions (APAARI), Trust for Advancement of Agricultural Sciences (TAAS), Young Professionals for Agricultural Development (YPARD), etc. for knowledge sharing, capacity development, partnership and policy advocacy. They all could play an important proactive role in providing neutral platforms to youth for their capacity development and confidence building for entrepreneurship.
- It is well understood that youth (men and women) of today has a different mind-set and outlook. Unfortunately, there exists an 'aspiration-attainment gap'. Hence, their aspirations must be addressed on priority. They like to pursue intellectually satisfying, commercially viable and socially empowering activities. All these are critical for future growth and development of any nation and would, therefore, need an enabling environment through policy and institutional support by all concerned.

Dr. A.K. Singh, DDG (Extension), highlighted the need to holistically deal with the issue of motivating and attracting youth in agriculture. He also mentioned that concerted efforts will be made to speed-up the implementation of ARYA program of ICAR. He appreciated the efforts made by TAAS in organising this important regional conference in collaboration with ICAR and other organizations. He expressed great satisfaction on the outcome of the conference and for bringing out a MAYA Road Map Suggesting implementation plan.

Dr. R.S. Paroda expressed his satisfaction on the success of the conference and appreciated the support of all co-organisers. He mentioned that several important recommendations have emerged during the discussions held and MAYA Road Map must now be implemented by all stakeholders. It is now the responsibility of all concerned to motivate and attract youth in agriculture. He was very happy to note the significant achievements of some successful entrepreneurs and felt the need

to bring out their success stories for the benefit of others. He also appreciated the idea of holding regional conferences on motivating and attracting youth in agriculture which can be taken up by TAAS in due course.

Dr. Randhir Singh extended a vote of thanks. He expressed sincere thanks and appreciation to Dr. R.S. Paroda, Chairman, TAAS for his leadership role in organizing this conference in collaboration with ICAR and other organizers. He also thanked Dr. T. Mohapatra and Dr. A.K. Singh for their whole hearted support to the conference. He profusely thanked Prof. M.S. Swaminathan for his video message to the conference participants. He also thanked the co-chairs, moderators, panelists, speakers and participants. Finally, he thanked the chairs and committee members responsible for various arrangements and also to Dr. N.N. Singh, Dr. Bhag Mal, Dr. Yvonne Angel Lyngdoh, Ms. Simmi Dogra from TAAS, Dr. Yash Saharawat and Ms. Namita Marwah from ICARDA for their support for successful organization of the conference.

## Technical Program

### DAY 1: 30 AUGUST, 2018

---

09.00-10.40	<b>INAUGURAL SESSION</b>	
09:15-09:20	<i>Lighting the lamp</i>	
09:20-09:30	<b>Welcome and Introduction</b>	Dr. A.K. Singh, DDG (Extn), ICAR
09:30-09:40	Remarks	Dr. Ravi Khetarpal, ES, APAARI
09:40-09:50	Video Message	Prof. M.S. Swaminathan, Founder Chairman, MSSRF
09:50-10:05	Chairman's Remarks	Dr. R.S. Paroda, Chairman, TAAS
10:05-10:35	Inaugural Address by Chief Guest	Dr. T. Mohapatra, DG, ICAR
10:35-10:40	Vote of Thanks	Dr. Yash Saharawat, CR, YPARD
10:40-11:20	<i>Tea/Coffee Break &amp; Group Photograph</i>	
11:20-12:50	<b>Technical Session I: Current Initiatives on Youth Empowerment</b> <i>Co-Chairs: Dr. Rita Sharma and Dr. A.K. Srivastava</i> <i>Rapporteurs: Dr. R. Burman and Dr. C.M. Parihar</i>	
11:20-11:40	Indian Council of Agricultural Research (ICAR)	Dr. A.K. Singh, DDG (Extn), ICAR
11:40-12:00	Ministry of Youth and Skill Development	Dr. Satendra Arya, CEO, ASCI
12:00-12:20	National Innovation Foundation	Dr. Vipin Kumar, Director, NIF
12:20-12:50	Discussion	
12:50-14:00	<i>Lunch</i>	
14:00-16:15	<b>Technical Session II: Initiatives on Youth Empowerment in South Asia</b> <i>Co-Chairs: Dr. Dileepkumar Guntuku and Dr. Hemantha Wijewardena</i> <i>Rapporteurs: Dr. Fai Collins</i>	
14:00-14:15	Global Initiatives on Youth empowerment	Dr. Dileepkumar Guntuku, ISU, USA

---

---

14:15-14:30	Global Perspective - Developing Soft Skills and Ethical Leadership to Prepare Graduates to Become Catalysts of Change	Dr. J Kennelly, President GHERA (Presentation through Skype)
14:30-14:45	Regional Perspective - Facilitating Capacity Development for Agricultural Innovation in Asia-Pacific	Dr. Ravi Khetarpal, ES & Ms. Martina Spisiakova, Project Development Consultant, APAARI
	<b>Country Perspectives</b>	
14:45-14:55	Bhutan	Mr. Tashi Wangdi, Department of Agriculture
14:55-15:15	India	Dr. A.K. Vyas, ADG, ICAR
15:15-15:25	Nepal	Dr. Baidya Nath Mahto, Executive Director, NARC
15:25-15:35	Sri Lanka	Dr. Hemantha Wijewardena, Director/Secretary, SLCARP
15:35-15:45	Afghanistan	Mr. Hamid Helmandi, Senior Advisor to the President
15:45-16:15	Discussion	
16:15-16:35	<i>Tea/Coffee Break</i>	
<hr/>		
16:35-19:10	<b>Technical Session III: Motivating Youth for Enterprenuership</b> <i>Co-Chairs: Dr. V. Praveen Rao and Dr. U.S. Sharma</i> <i>Rapporteurs: Dr. Vikram Singh and Dr. M.S. Saharan</i>	
<hr/>		
16:35-16:55	Innovation Platforms for Enterprenuership	Dr. Ch Srinivas Rao, Director, NAARM
16:55-17:15	Strategy for Youth in CGIAR Research Programs	Dr. M.L. Jat, Pr. Scientist, CIMMYT
17:15-17:35	Role of Youth in Agricultural Extension	Dr. Randhir Singh, ADG (Extn) ICAR
17:35-17:55	YPARD Initiatives	Dr. Yash Saharawat, CR, YPARD
17:55-18:20	Agri-clinics and Advisory Services	Mr. S.K. Dora, GM, FSPD, NABARD
18:20-19:00	Discussion	
19:00-20:00	Display of Exhibits	
20:00-21:30	<i>Dinner</i>	

---

**DAY 2: 31 AUGUST, 2018****09:00-10:45 Technical Session IV(a): Scaling Innovation and Successful Business Models****Co-Chairs:** Dr. S.A. Patil and Dr. R.C. Srivastava**Rapporteurs:** Dr. Rajbir Singh and Dr. Pardeep Kumar

---

09:00-09:15	Success in Dairy Farming	<b>Ms. Nikki Pilania Chaudhary,</b> Pilibhit, Uttrakhand
09:15-09:30	Fishery Production	<b>Mr. Sultan Singh,</b> Karnal, Haryana
09:30-09:45	Honey Bee Keeping	<b>Mr. Jatinder Jeet Pal,</b> Ludhiana, Punjab
09:45-10:00	Linking Farmers to Markets	<b>Ms. Jyotsna Kaur Habibullah,</b> Lucknow, Uttar Pradesh
10:00-10:15	Value Chain - Farm Mechanization	<b>Mr. Sarbjit Singh,</b> Dasmesh Mechanical Works, Ludhiana, Punjab
10:15-10:30	Biofertilizers/Biopesticides	<b>Dr. B. Girenavar,</b> Criyagen, Bangalore, Karnataka
10:30-10:45	Discussion	
10:45-11:05	<b>Tea/Coffee Break</b>	

---

**11:05-13:05 Technical Session IV(b): Scaling Innovation and Successful Business Models****Co-Chairs:** Dr. Premjit Singh and Dr. P. Kaushal**Rapporteurs:** Dr. P. Adhiguru and Dr. Atul Kumar

---

11:05-11:20	Disruptive Innovations in Seed Sector	<b>Dr. Bhagirath Chaudhary,</b> Director, SABC, Delhi
11:20-11:35	Value Chain - Baby Corn	<b>Mr. Kanwal Singh Chauhan,</b> Aterna, Sonapat, Haryana
11:35-11:50	Roadside Display/Marketing	<b>Mr. Nirbhai Singh,</b> Bathinda, Punjab
11:50-12:05	Empowering Agri-Students	<b>Ms. Mrinali Manohar,</b> Chief Public Relation Officer, AIASA
12:05-12:20	Innovative Ways of Farming	<b>Mr. Ashok Singh,</b> Farmer, KVK Jalaun, Uttar Pradesh

---

---

12:00-13:00 Discussion

13:00-14:00 *Lunch*

---

**14:00-15:30 Technical Session V: Panel Discussion: Enabling Policies on MAYA**

***Moderators:* Dr. R.S. Paroda and Dr. S.K. Vasal**

***Panelists:***

Dr. Rita Sharma, Former Secretary, MoRD

Dr. H.K. Bhanwala, Chairman, NABARD

Dr. A.K. Srivastava, Chairman, ASRB

Ms. Jyotsna Sitling, Jt Secretary, MSDE

Dr. P.K. Joshi, Director South Asia, IFPRI

Dr. U.S. Sharma, Vice-Chancellor, MPUA&T

Dr. K.P. Singh, Vice-Chancellor, HAU

Dr. R.K. Dhaliwal, Director, Directorate of Student Welfare, PAU

---

15:30-15:50 *Tea/Coffee Break*

---

**15:50-17:00 Plenary Session**

***Co-Chairs:* Dr. R.S. Paroda and Dr. A.K. Singh**

---

15:50-16:20 Session-wise Recommendations *Rapporteurs*

16:20-16:35 MAYA Road Map **Dr. Yash Saharawat**

16:35-16:55 Concluding Remarks by Co-Chairs **Dr. A.K. Singh**  
**Dr. R.S. Paroda**

16:55-17:00 Vote of Thanks **Dr. Randhir Singh**

---

## **List of Participants**

1. **Abimanyu Jhajharia**  
NIAP, Pusa Campus, New Delhi
2. **Ajay Kumar**  
Sr. Scientist & Head, KVK, Kaushambi
3. **A.K. Jha**  
Asstt. Prof., Dairy Business  
Management, SGIDT, Patna
4. **A.K. Pandey**  
Professor Deptt of Entomology,  
GBPUAT, Pantnagar
5. **A.K. Singh**  
DDG (Extn.) ICAR, KAB, New Delhi
6. **A.K. Srivastava**  
Sr Scientist & Head, KVK Pratapgarh
7. **Anil Bawa**  
Executive Director, NAAS, New Delhi
8. **Anil Kumar**  
SMS, KVK, Tarn Taran
9. **Anil Kumar**  
Professor, Deptt. of Agriculture  
Economics, GBPUAT, Pantnagar
10. **Anita Babbar**  
Principal Scientist, AICRP on  
Chickpea (Lead Centre), Department  
of Plant breeding and Genetics,  
JNKVV, Jabalpur 482004 (MP)
11. **Anupriya Mamgain**  
Student M.Sc. (Home Science),  
Department of Foods & Nutrition,  
College of Community & Applied  
Sciences, MPUAT, Udaipur - 313001
12. **Anuradha Agarwal**  
Pr. Scientist, NBPGR, Pusa New  
Delhi - 110012
13. **Aradwad Pramod Pandurang**  
Scientist, Division of Agricultural,  
Engineering, IARI, New Delhi
14. **Arpita Bhattacharjee**  
AGM, BID, DSM(WIF), Punjab  
Regional Office, NABARD, Plot. No.  
3, Sector 34-A, Post Box No. 7, Near  
Piccadilly Mall, Chandigarh - 160 022
15. **Arun Kumar Singh**  
Vill. & PO-Madori, Block: Jalaun,  
Pincode-285128, Distt. Jalaun (UP)
16. **Arvind Kumar**  
IIMR, Pusa Campus, New Delhi
17. **Ashis Mondal**  
Director, Action for Social  
Advancement (ASA), E-5/A Girish  
Kunj, Above State Bank of India,  
Arera Colony, Bhopal -462016, M.P
18. **Ashish Kumar**  
Assistant Professor, Plant  
Pathology, Jawaharlal Nehru Krishi  
Vishwa Vidyalyaya, College of  
Agriculture Jabalpur M.P. 482004
19. **Ashish Kumar Padhy**  
Student, PAU, Ludhiana
20. **Ashok Chauhan**  
Village Aterna, Distt Sonapat, Haryana
21. **Ashok Kumar**  
Vill. & PO-Madori, Block: Jalaun,  
Pincode-285128, Distt. Jalaun (UP)

22. **Atul Kumar**  
Principal Scientist DSST ICAR-IARI  
New Delhi
23. **Babanpreet Kaur**  
Ph.D Scholar, Division of  
Microbiology, IARI, New Delhi
24. **Babita**  
Femal Entrepreneur, Chandu, Gurugram
25. **Baidya Nath Mahto**  
Executive Director, Nepal  
Agricultural Research Council  
(NARC), Singha Durbar Plaza, P.O.  
Box 5459, Kathmandu, Nepal
26. **Basavaraj Girenavar**  
MD, Criyagen, Bio Control  
Division, Dept of Plant Pathology,  
College of Agriculture, University  
of Agricultural Sciences, GKVK,  
Bengaluru, Karnataka 560065
27. **Bhag Mal**  
Sr. Consultant, TAAS, Pusa Campus,  
New Delhi - 110012
28. **Bhagirath Chaudhary**  
Founder Director, South Asia  
Biotechnology Centre (SABC) Level  
1, Regus, Red Fort, Tower, Bhai  
Veer Singh Marg, Gole Market,  
New Delhi-110001
29. **Bharat Bhusan Tyagi**  
Behta, Bulandshahar, UP- 245202
30. **Bharat Singh**  
SMS (Plant Protection), KVK,  
(ICAR-IARI), Shikohpur, Gurugram,  
Haryana- 122004
31. **Bhushan Pant**  
DGM/EACs, NABARD, New Delhi
32. **Bibhan Nag**  
Green Fedex Green Foods Products  
and Services
33. **Bimlesh Mann**  
Joint Director (Res), NDRI, Karnal
34. **B.R. Raghu**  
Scientist, Division of Vegetable  
Crops, ICAR-IIHR, Bengaluru
35. **Brahma Singh**  
E-713, Mayur Vihar - 2, Delhi 110091
36. **B.S. Rathore**  
Sr. Scientist and Head KVK, Bansur  
Alwar, Rajasthan
37. **Byomkesh Mishra**  
Co-founder, Medha 407 Dr. Baijnath  
Road, New Hyderabad, Lucknow -  
226007
38. **Ch Srinivasa Rao**  
Director, NAARM Rajendranagar,  
Telangana Hyderabad
39. **Chander Bhushan Singh**  
Farmer, Pipdiya, Distt, Kaumur,  
Bhathua Bihar
40. **Channaveeresh R Motag**  
Ph.D Illrd Year Agril Extension Student,  
IARI, Pusa Campus, New Delhi
41. **Chiranjit Mazumder**  
Scientist, Agril Economics, IARI,  
Pusa Campus, New Delhi
42. **C.M. Parihar**  
Scientist (SS), Agronomy Division,  
IARI, Pusa Campus, New Delhi
43. **C.P. Mansur**  
Dean (Agri) College of Agriculture,  
Hanumanmatti, Haveri Distt, Karnataka
44. **Darshan Shastri**  
KVK, Delhi
45. **Debasis Golui**  
Scientist, Division of Soil Science &  
Agricultural Chemistry, IARI, New Delhi

46. **Dharam Dev Yadav**  
Village: Saharanwas (Paharwas),  
Post: Bibirani, Tehsil: Kotkasim,  
District: Alwar
47. **Dharampal Singh**  
Technical Officer DSST ICAR-IARI  
New Delhi - 110012
48. **Dhruvinkumar Hasmukhbhai Patel**  
M. Tech (Dairy Engineering), NDRI,  
Karnal
49. **Dileepkumar Guntuku**  
Global Program Leader, Seed Science  
Center, College of Agriculture and  
Life Sciences, Iowa State University,  
0162 Seed Science Building, 2115  
Osborn Dr., Ames, IA 50011-1050
50. **Dinesh Kumar**  
MSc Horticulture, Department of  
Horticulture, College of Agriculture,  
CCS HAU Hissar, Haryana
51. **Divyata Joshi**  
Student, PAU, Ludhiana
52. **Era Vaidya**  
Scientist, Tissue Culture and  
Cryopreservation Unit, ICAR-  
NBPGR, New Delhi
53. **Fai Collins**  
Knowledge Management Coordinator,  
Asia-Pacific Association of Agricultural  
Research Institutions (APAARI), 4th  
Floor, FAO Annex Building, 202/1  
Larn Luang Road, Klong Mahanak Sub-  
District, Pomprab Sattrupai District,  
Bangkok 10100, Thailand
54. **G. Venkateshwarlu**  
ADG (EQR), ICAR, New Delhi
55. **Gurinder Randhawa**  
Pr. Scientist, NBPGR, Pusa New  
Delhi - 110012
56. **Gyan Prakash Mishra**  
Senior Scientist, Genetics, ICAR-  
IARI New Delhi
57. **Hamid Helmandi**  
Senior Advisor to the President,  
Afghanistan
58. **Hardeep Kaur**  
Student, PAU, Ludhiana
59. **Hari Abdul Samad**  
Scientist. Division of Physiology &  
Climatology, ICAR-IVRI, Izatnagar,  
Bareilly - 243122, UP
60. **Harjot Kaur**  
Student, PAU, Ludhiana
61. **Harsh Kumar Bhanwala**  
Chairman, NABARD, 24, Rajendra  
Place, New Delhi - 08
62. **Hemantha Wijewardena**  
Secretary, Sri Lanka Council  
for Agricultural Research Policy  
(SLCARP), 114/9, Wijerama  
Mawatha, Colombo, Sri Lanka
63. **Hemram**  
Ph.D Student (Floriculture), ICAR-IIHR,  
Off Campus, ICAR-IIHR, Bengaluru
64. **H.S. Sangwan**  
AGRICOS, WZ 249 A, II Floor,  
Inderpuri, New Delhi 110012
65. **I. Sophia**  
Scientist, Leptospira Laboratory,  
ICAR-Indian Veterinary Research  
Institute, Izatnagar, Bareilly
66. **Indu Arora**  
Assistant Scientist, CCS HAU Hisar
67. **Ishan Pasnja**  
KVK, Delhi
68. **Jatinder Jeet Pal**  
Maghi ram and sons, Begowal Raod  
Doraha Distt Ludhiana - 141421

69. **J.C. Katyal**  
A 104, Parkview City 2, Sohna  
Road, Sector 49, Gurgaon, Haryana
70. **Jiya Lal Gupta**  
Scientist, Lakhmipur, Khiri, UP
71. **J.L. Karihaloo**  
Trustee TAAS, Pusa Campus New Delhi
72. **Jogender**  
B.Sc. Student, CCS HAU, Hisar
73. **Jyotsana Sitling**  
Joint Secretary Ministry of Skill  
Development and Entrepreneurship,  
Shram Shakti Bhawan, Rafi Marg,  
New Delhi
74. **Jyotsna Kaur Habibullah**  
Founder Awadh Mango Growers  
Association, 11 Habibullah Estate,  
Hazratganj, Lucknow 226001
75. **K. Ponnusamy**  
Principal Scientist, NDRI, Karnal
76. **Kailash Jakhar**  
SMS, KVK, Ujwa, Delhi
77. **Kamalpreet Kaur**  
Asstt Extn Specialist, PAU,  
Ludhiana Punjab
78. **Kanhaiya Singh**  
Principal Scientist, F&HT ICAR-IARI  
New Delhi - 110012
79. **Kanwal Singh Chauhan**  
VPO Aterna 131023 Distt Sonapat,  
Haryana
80. **Kanya Dashora**  
IIT, Delhi
81. **Kavita Bisht**  
KVK, Gurugram, Haryana
82. **Kuldeep Singh**  
Director, NBPGR, Pusa Campus,  
New Delhi - 110012
83. **Kuldeep Tripathi**  
Scientist, Division of Germplasm  
Evaluation, ICAR-NBPGR, New Delhi
84. **M. Dharani Kumar**  
Ph.D, IIInd Year, Dairy Technology,  
NDRI, Karnal
85. **M. Gopala**  
Professor & Co-ordinator,  
SAMETI(N), UAS, Dharwad
86. **M. Premjit Singh**  
Vice-Chancellor, Central Agricultural  
University, Imphal-795004, Manipur
87. **M.K. Srivastava**  
Director, NRAA, NASC Complex,  
New Delhi
88. **Mahesh B. Tengli**  
Ph.D IIIrd Year Dairy Extension  
Student, NDRI, Karnal
89. **Manimaran B.**  
Scientist, Division of Nematology,  
IARI, New Delhi - 110012
90. **Manish Saini**  
Technical Officer DSST ICAR-IARI  
New Delhi
91. **Martina Spisiakova**  
Consultant, Asia-Pacific Association  
of Agricultural Research  
Institutions (APAARI), 4th Floor,  
FAO Annex Building, 202/1 Larn  
Luang Road, Klong Mahanak  
Sub-District, Pomprab Sattrupai  
District, Bangkok 10100, Thailand
92. **Md. Athar**  
Technical Officer DSST, ICAR-IARI  
New Delhi
93. **M.D. Davuddin Baig**  
Ph.D, Dairy Technology, IIInd Year,  
NDRI, Karnal

94. **Meena Shekhar**  
Principal Scientist, IIMR, Pusa New Delhi - 110012
95. **Meenakshi Sharma**  
SRF, IIMR, Pusa, New Delhi - 110012
96. **Meenu Kumari**  
Scientist, CHES, Bhubaneswar, Odisha
97. **Minu Gahlot**  
Entrepreneur, KVK, Delhi
98. **M.L. Jat**  
CIMMYT, NASC Complex, New Delhi
99. **Mohammad Azhar**  
IARI, Pusa Campus, New Delhi
100. **Mohit Sharma**  
Student M.Sc. (Ag), Department of Plant Breeding & Genetics, Rajasthan College of Agriculture, MPUAT, Udaipur - 313001
101. **Monika Rautela**  
Consultant, NABARD, New Delhi
102. **M.R. Meena**  
Sugarcane Breeding Institute Regional Center, Karnal 1320001
103. **Mrinali M. Mandape**  
PhD, Seed Science and Technology, Chief Public Relations Officer, AIASA, Indian Agricultural Research Institute (IARI), New Delhi-110012
104. **M.S. Kairon**  
B-4/3, First Floor, Nagarik Sarkari Karamchari Housing Society, (NSK Colony), Near Cambridge Council, Opp. Railway Enclave, Ravi Nagar, Nagpur-440001(Maharashtra)
105. **M.S. Saharan**  
Pr. Scientist, Division of Plant Pathology, IARI, New Delhi - 110012
106. **N. Parasuraman**  
Coordinator Youth & Sustainable Development, MSSRF, Chennai
107. **Namita Marwah**  
Senior Office Secretary, ICARDA South Asia & China Regional Program, NASC Complex, New Delhi
108. **Narendra Gupta**  
Trustee TAAS, Pusa Campus New Delhi
109. **Neelam Chaudhary**  
Dy Director, PPQS, Faridabad
110. **Neeraj Kulshreshtha**  
Head, ICAR-Sugarcane Breeding Institute Regional Center, Karnal 1320001
111. **Neeraj Patanjali**  
Scientist, Division of Agricultural, Chemicals, IARI, New Delhi
112. **Netrapal Malik**  
Scientist Extension, KVK, Kashganj, UP
113. **Nikki Pilania Chaudhary**  
Vill-Tanda Vijaisi, Post-Neoria, 262305 UP
114. **Niranjan**  
Ph.D student ( DSST), IARI, New Delhi - 110012
115. **Nirbhai Singh**  
S/o Ajmer Singh, Vill Sukha singh wala, PO Ghuman Kalan, The Maur, distt Bathinda 151509
116. **N.N. Singh**  
Secretary, TAAS, Pusa Campus, New Delhi
117. **O.P. Yadav**  
Director, CAZRI, Near Industrial Training Institute (ITI), Light, Industrial Area, Jodhpur 342003, Rajasthan

- 118. P. Adhiguru**  
Pr Scientist Agril Extn Division,  
ICAR, New Delhi - 110012
- 119. P. Kaushal**  
Vice-Chancellor, Birsa Agricultural  
University, Ranchi - 834 006 (Jharkhand)
- 120. Pankaj Kumar**  
Assistant professor, Department  
of AH Extension Education, Bihar  
Veterinary college Patna
- 121. Pardeep Kumar**  
Scientist, Division of Plant Quarantine,  
ICAR-NBPGR, New Delhi
- 122. Parthivi Nayak**  
B.Sc (Hons) Ag. IInd Year, College  
of Agriculture, Jabalpur
- 123. Pauline Kimani**  
Student, IARI, Pusa Campus, New Delhi
- 124. Piyush Mishra**  
ICAR KAB I Pusa New Delhi
- 125. P.N. Mathur**  
Former Coordinator, Bioersity  
International, NASC Complex, New  
Delhi - 110012
- 126. Pooja Kumari**  
Ph.D student (Plant Pathology),  
IARI, New Delhi - 110012
- 127. Pooja Sharma**  
Chandu, Gurgaon, Haryana-122001
- 128. Poornima Savargaonkar**  
Espace 42, Nirvana country, Sector  
50, Gurgaon, Haryana- 122018
- 129. Prachi Agarwal**  
Senior Manager - Projects, BIRAC
- 130. Prakash Athare**  
M.Sc., Dairy Economics, NDRI, Karnal
- 131. Pramendra**  
(Agril. Economics), CAZRI Jodhpur
- 132. Praphul Dev D.**  
M.Sc. II Year, Dairy Economic,  
NDRI, Karnal
- 133. Prashant Nikumbhe**  
Scientist (Horticulture), CAZRI Jodhpur
- 134. Pratibha Prakash**  
Student, IARI, Pusa Campus, New Delhi
- 135. Praveen S. Patted**  
Ph.D student (DSST), IARI, New  
Delhi - 110012
- 136. Prerna Kapila**  
Krishi Vigyan Kendra, Nag Kalan  
- Jahangir Majitha Road, Amritsar-  
143601
- 137. Pritam Singh**  
S/o Sh.Jaswant Singh Village  
UrlanaKhurad, Post Office: Urlana  
Kalan, District Panipat
- 138. Priya Saini**  
Scientist, Division of Soil Science  
& Agricultural Chemistry, IARI, New  
Delhi
- 139. Priyanka Meena**  
Student, IARI, Pusa Campus, New  
Delhi
- 140. Promod Kumar**  
Scientist, KVK Saharanpur, UP
- 141. P.S. Saini**  
B-1/B-1, Mohan Cooperative  
Industrial Estate, Mathura Road,  
New Delhi -110044
- 142. Punit Tripathi**  
KRB Aeroponic polyhouse, Bayana  
village, near Wave city (NH24),  
Ghaziabad

- 143. R. Burman**  
Pr. Scientist Agril Extn, IARI, New Delhi
- 144. Raghunandan K.**  
Scientist, Division of Genetics, IARI, Pusa Campus, New Delhi- 110012
- 145. Raj Kiran**  
Scientist, NBPGR, Pusa Campus, New Delhi
- 146. Raj Kiran Johri**  
AGM, NABARD, Distt Deval UP Meerut
- 147. Rajbir Singh**  
Director, ICAR-ATARI, PAU Campus, Ludhiana - 141004
- 148. Rajender Kumar**  
Ph.D. Dairy Technology, NDRI, Karnal
- 149. Rajesh**  
KVK, Delhi
- 150. Rajesh Rai**  
Scientist, Kanpur Dehat
- 151. Rajvinder Singh**  
Village & Post- Shahbajnagar, Block- Dadraul, Distt. Shahjahanpur (UP) 242001
- 152. Rajvir Singh**  
Senior Coordinator, KVK, Ujha, Panipat-132104 (Haryana)
- 153. Rakesh Kumar**  
SMS (Horticulture), KVK, (NHRDF), Vill. & post: Ujwa, Najafgarh, New Delhi - 110 073
- 154. Randhir Singh**  
ADG (Agril Extn), ICAR, KAB, New Delhi
- 155. Ravi Khetarpal**  
Executive Secretary, APAARI, 4th Floor, FAO Annex Building, 202/1 Larn Luang Road, Klong Mahanak Sub-District, Pomprab Sattrupai District, Bangkok 10100, Thailand
- 156. Ravinder Kaur Dhaliwal**  
Director, Directorate of Students' Welfare, Punjab Agricultural University, Ludhiana
- 157. Ravinder Kumar**  
Sugarcane Breeding Institute Regional Center, Karnal 1320001
- 158. Ravindra Kumar**  
Director Research, Bihar Animal Sciences University, Bihar Veterinary College Campus, Patna-800 014
- 159. R.C. Srivastava**  
Vice-Chancellor, Rajendra Agricultural University, Pusa, Samastipur-848125 Bihar
- 160. Reeta Mishra**  
KVK, Morena, RVSKVV, Gwalior, MP
- 161. Rita Sharma**  
Former Secretary, MoRD & Trustee TAAS, Pusa Campus New Delhi
- 162. R.K. Jain**  
Jt Director (Education) & Dean, IARI Pusa Campus, New Delhi
- 163. R.K. Singh**  
Director, Indian Veterinary Research Institute, Izatnagar, Bareilly-243122
- 164. R.R. Patil**  
Director of Extension, UAS, Dharwad

- 165. R.R.B. Singh**  
Director, National Dairy Research Institute, Karnal-132001 Haryana
- 166. R.S. Gandhi**  
ADG (AP&B), ICAR, New Delhi
- 167. R.S. Paroda**  
Chairman, TAAS, Avenue II Pusa New Delhi - 110012
- 168. S. Chandrasekhar**  
Scientist, Biochemistry Laboratory, Division of Virology, ICAR-Indian veterinary Research Institute, Mukteswar, Nainital, Uttarakhand
- 169. S. Niveditha**  
Scientist, Division of Plant Exploration and Germplasm Collection, ICAR-NBPGR, New Delhi
- 170. S.A. Patil**  
Former Director IARI, Chairman, Karnataka Krishak Mission, Karnataka
- 171. Sadhna Pandey**  
Principal Scientist (Ae), ICAR-ATARI, Zone-III, Kanpur-208002
- 172. Sahebpal**  
Ph.D. Student, (Vegetable), ICAR-IIHR, Off Campus, ICAR-IIHR, Bengaluru
- 173. Sain Dass**  
C141 Second Floor, Front side Motinagar, Delhi 110015
- 174. Samar Pal Singh**  
KVK, Ujwa, Delhi
- 175. Sanchay Kumar Biswas**  
Sr Scientist, Division of Virology, ICAR-Indian Veterinary Research Institute, Mukteswar Campus, Nainital 263 138, Uttarakhand
- 176. Sandhya**  
Scientist, NBPGR, Pusa Campus, New Delhi
- 177. Sanjay Singh**  
Principal Scientist, NRCPB, New Delhi
- 178. Santosh Onte**  
Ph.D II Year Department of Agronomy, NDRI, Karnal
- 179. Sarbjit Singh**  
Dasmesh Mechanical Works, Amargarh, District Sangrur -148022 Punjab
- 180. Satendra Arya**  
CEO, Agriculture Skill Council Of India (ASCI), 6th Floor, GNG Building, Plot No. 10, Sector - 44, Gurugram, Haryana - 122 004
- 181. Satyabratt Pradhan**  
Research Scholar, Div of Fruits, IARI, New Delhi - 110012
- 182. S.B. Patil**  
Head, STU, UAS, Dharwad
- 183. Seema Rani**  
Professor & Coordinator ELP, Department of EECM, COHS, CCSHAU, Hisar-125004, Haryana
- 184. Shaily**  
JRF DST Project, IARI, New Delhi - 110012
- 185. Sharath**  
GM, M.Sc., Dairy Extension, NDRI, Karnal
- 186. Shiran**  
Scientist (Agroforestry), CAZRI Near Industrial Training Institute (ITI), Light, Industrial Area, Jodhpur 342003, Rajasthan

- 187. Shreya**  
B.Sc. Student, CCS HAU, Hisar
- 188. Shrija Sinha**  
Ph.D, IInd Year, Dairy Extension,  
NDRI, Karnal
- 189. Shubham Thakare**  
M. Tech (Dairy Engg., NDRI, Karnal
- 190. Shumaila Shahid**  
Scientist, Division of Plant  
Pathology, IARI, New Delhi
- 191. Simmi Dogra**  
Office Secretary, TAAS, Avenue II,  
Pusa Campus, New Delhi
- 192. Sitaram Bishnoi**  
Scientist, Division of Agricultural  
Economics, IARI, New Delhi
- 193. S.K. Dora**  
General Manager, Farm Sector Policy  
department, NABARD, New Delhi
- 194. S.K. Sharma**  
Prof. (Agronomy) & zonal Director  
Research, MPUAT, RCA Udaipur - 313001
- 195. S.K. Vasal**  
Distinguished Scientist, C-2/2394,  
Vasant Kunj, New Delhi - 110070
- 196. Smaranika Mishra**  
Scientist, Division of Vegetable  
Crops, ICAR-IIHR, Hessaraghatta  
Lake, Post, Bengaluru-560089,  
Karnataka
- 197. Smriti Kaul**  
Student, PAU, Ludhiana
- 198. S.N. Singh**  
Principal Scientist & Head, Krishi  
Vigyan Kendra, ICAR-Indian  
Institute of Sugarcane Research,  
Lucknow, PO-Dilkusha, Raibarelli  
Road, Lucknow-226002
- 199. Sonali Singh Parmar**  
B.Sc (Hons) Ag. IInd Year, College  
of Agriculture, JNKVV, Jabalpur
- 200. Sonica Priyadarshini**  
National President, AIASA  
(Interim.), A/G-4, National  
Societies Block, National  
Agriculture Science Centre Complex  
(NASC), Pusa, New Delhi - 110012
- 201. S.S. Singh**  
215, Sainik Vihar, Pitampura, Delhi  
- 110034
- 202. Subhashree Sahu**  
Scientist, IARI, New Delhi
- 203. Sudama Ram Sahu**  
Student, IARI, Pusa Campus, New  
Delhi
- 204. Sudhanand Prasad Ial**  
Division of Agril Extn. IARI, New Delhi
- 205. Sudhir Kochhar**  
144, Millennium Apartments,  
Sector 18, Block C, Rohini, New  
Delhi - 110089
- 206. Sultan Singh**  
Progressive Farmers' Village -  
Butana Post Office - Nilokheri,  
Tehsil - Nilokheri Karnal Karnal HR  
132117
- 207. Suman Talukder**  
Scientist, LPT Division, ICAR-IVRI,  
Izatnagar, Bareilly-243122
- 208. Sunil Kumar**  
Research Scholar, Div of Fruits,  
IARI, New Delhi - 110012
- 209. Sunita Gahlot**  
Entrepreneur, KVK, Delhi

- 210. Sunita Yadav**  
Scientist, CESCRA (Environmental Sciences), IARI, New Delhi
- 211. Sushil Kumar**  
Chairman, KVK, Raiberilly II, UP
- 212. Sushil Kumar**  
Scientist (Extension), KVK, Farrukhabad, UP
- 213. T. Mohapatra**  
Secretary, DARE & DG, ICAR, Krishi Bhawan, New Delhi -110001
- 214. T. Satyanarayana**  
Director, South Asia Program, International Plant Nutrition Institute (IPNI), 354, Sector-21, HUDA, Gurgaon 122016, Haryana. INDIA
- 215. Tashi Wangdi**  
Department of Agriculture, Ministry of Agriculture and Forests, PB No. 119, Thimpu, Bhutan
- 216. Umesh Srivastava**  
GH4/50, Meera Apartments, Paschim Vihar, New Delhi 110063
- 217. U.S. Sharma**  
Vice-Chancellor, Maharana Pratap University of Agriculture & Technology, University Campus, Udaipur - 313 001 (Raj)
- 218. V. Praveen Rao**  
Vice-Chancellor, Prof. Jayashankar Telangana State Agricultural University, Admn. Office, Rajendranagar-500030 (Hyderabad)
- 219. Vikram Singh**  
Senior Scientist (Extension), IPTM, KAB-1, Pusa, New Delhi
- 220. Vinod Kumar Singh**  
SMS-Horticulture, Krishi Vigyan Kendra, PG College Ghazipur-233 001 (UP)
- 221. Vinod Prakash**  
Scientist, Extension KVK, Aligarh, UP
- 222. Vipin Kumar**  
Director, National Innovation Foundation, Ahmedabad, Gujarat - 380015
- 223. Vipin Kumar**  
Entrepreneur, KVK, Delhi
- 224. V.V. Sadamate**  
Agril. Extension Specialist & Former Adviser Agriculture, Planning Commission, GOI., C-59, Nanakpura, South Motibagh, New Delhi-110021
- 225. Yash Saharawat**  
Country Representative, YPARD, ICARDA, NASC, New Delhi
- 226. Yashwant Singh**  
Program Coordinator, KVK, Mohali, Punjab
- 227. Yvonne Angel Lyngdoh**  
Scientist, F&HT, ICAR-IARI, New Delhi - 110012



## Recent TAAS Publications

- Brainstorming Workshop on Soybean for Household Food and Nutritional Security - Proceedings and Recommendations, March 21-22, 2014.
- The Eight Foundation Day Lecture on “Sustainable Agricultural Development - IFAD's Experiences” by Dr. Kanayo F. Nwanze, President, IFAD, August 5, 2014.
- Need for Linking Research with Extension for Accelerated Agricultural Growth in Asia - Strategy Paper by Dr. R.S. Paroda, September 25, 2014.
- Global Conference on Women in Agriculture - Proceedings and Recommendations, March 13-15, 2015.
- Brainstorming Workshop on Upscaling Quality Protein Maize for Nutritional Security - Recommendations, May 21-22, 2015.
- The Ninth Foundation Day Lecture on “21st Century Challenges and Research Opportunity for Sustainable Maize and Wheat Production” by Dr. Thomas A. Lumpkin, Former DG, CIMMYT, September 28, 2015.
- National Dialogue on Efficient Management for Improving Soil Health - New Delhi Soil Health Declaration - 2015, September 28-29, 2015.
- Regional Consultation on Agroforestry: The Way Forward - New Delhi Action Plan on Agroforestry 2015, October 8-10, 2015.
- National Dialogue on Innovative Extension Systems for Farmers' Empowerment and Welfare - Road Map for an Innovative Agricultural Extension System, December 17-19, 2015.
- Round Table Discussion on Promoting Biotech Innovations in Agriculture and Related Issues - Proceedings & Recommendations, August 4, 2016.
- Awareness cum Brainstorming Meeting on Access and Benefit Sharing – Striking the Right Balance – Proceedings, October 22, 2016.
- Delhi Declaration on Agrobiodiversity Management – Outcome of International Agrobiodiversity Congress 2016, November 6-9, 2016.
- National Conference on Sustainable Development Goals: India's Preparedness and Role of Agriculture, May 11-12, 2017.
- Policy Brief on Efficient Potassium Management in Indian Agriculture, August 28-29, 2017.
- Regional Policy Dialogue on Scaling Conservation Agriculture for Sustainable Intensification, Dhaka, Bangladesh, September 8-9, 2017.
- Policy Brief on Scaling Conservation Agriculture in South Asia.
- Retrospect and Prospect of Doubling Maize Production and Farmers' Income – Strategy Paper by Dr. N.N Singh, September 10, 2017.
- Indian Agriculture for Achieving Sustainable Development Goals - Strategy Paper by Dr. R.S. Paroda, October, 2017.
- Strategy for Doubling Farmers' Income - Strategy Paper by Dr. R.S. Paroda, February, 2018.
- Livestock Development in India - Strategy Paper by Dr. A.K. Srivastava, Member, ASRB & Trustee, TAAS, February, 2018.
- Policy Brief on Agricultural Policies and Investment Priorities for Managing Natural Resources, Climate Change and Air Pollution - April, 2018.
- Women Empowerment for Agricultural Development - Strategy Paper by Dr. R.S. Paroda, May, 2018.
- Brainstorming Meeting on Harnessing Intellectual Property to Stimulate Agricultural Growth – Proceedings and Recommendations, July 27, 2018
- Road MAP on Motivating and Attracting Youth in Agriculture (MAYA)
- Regional Conference on Motivating and Attracting Youth in Agriculture (MAYA) - Proceedings and Recommendations, August 30-31, 2018
- Motivating and Attracting Youth in Agriculture - Strategy paper by Dr. R.S. Paroda, November, 2018