# Proceedings

# 7<sup>th</sup> Brainstroming Session "Youth and Smart Agriculture: Challenges and Opportunities"

28<sup>th</sup> - 29<sup>th</sup> September, 2016 Hyderabad



Organized by



Professor Jayashankar Telangana State Agricultural University, Hyderabad

Indian Agricultural Universities Association, New Delhi

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# 7<sup>th</sup> Brainstorming Session on

# Youth and Smart Agriculture : Challenges and Opportunities

# 28 - 29 September, 2016

# Venue:

Hotel Novotel, Shamshabad, Hyderabad.

# Organized by

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> Indian Agricultural Universities Association, New Delhi











#### PREFACE

Changing the image of agriculture as an "unattractive proposition" is the biggest challenge which the agriculture sector has to address today. In this backdrop, youth could be the ideal catalysts to transform this perception through their innovative ideas, skills and attitude. The proactive role of youth could be stimulated through improving the opportunities, skill development, adequate funding and developing smart systems of farming. Tapping the advantage of abundant youth power in our country's demography would be a smart step in making agriculture a most sought after career. The 7th Brainstorming Session on "Youth and Smart Agriculture : Challenges and Opportunities" has been successful in identifying the crucial deficiencies and exploring new opportunities and remedial measures for attracting and retaining youth in agriculture.

I am sure that the deliberations at the conference were a timely effort and have contributed to chalking out a roadmap for transforming the image of agriculture as a profitable venture deserving the passion of the youth across the country.

> V. PRAVEEN RAO Vice Chancellor PJTSAU, Hyderabad.



#### ACKNOWLEDGEMENT

The Vice Chancellor, University Officers, faculty, staff and students of Professor Jayashankar Telangana State Agricultural University register their profound gratitude and thanks to Indian Agricultural Universities Association for bestowing the opportunity to host the 7th Brainstorming Session on Youth and Smart Agriculture: Challenges and Opportunities. The support extended in terms of finance and administrative guidance for organizing the Vice Chancellors meet is highly appreciated and acknowledged.

We would also like to thank all the Hon'ble Vice Chancellors of various Agricultural and allied science Universities for their presence and valuable contributions at the brainstorming session. A deep sense of gratitude is also expressed to all the chairs, co-chairs, speakers and rapporteurs of different technical sessions for sharing their experiences and moderating the sessions adding value to the sessions.

We also thank our sponsors Andhra Bank, State bank of Hyderabad, Telangana State Seed & Organic Certification Authority and Telangana State Seed Development Corporation for extending necessary financial support for hosting the event.

#### **S. SUDHEER KUMAR**

Registrar PJTSAU, Hyderabad.



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# PROGRAMME

# Wednesday, September 28, 2016

# **Inaugural Session**

10:00 - 10:15 hrs	Invocation and lighting of the lamp	
10:15 - 10:25 hrs	Welcome Address	Dr. V. Praveen Rao Vice Chancellor PJTSAU, Hyderabad
10:25 - 10:35 hrs	Introduction	Dr. N. C. Patel Vice Chancellor AAU, Anand
10:35 - 10:55 hrs	Presidential Remarks	Prof. M.C. Varshneya Vice Chancellor, KU & President, IAUA New Delhi
10:55 - 11:25 hrs	Keynote Address by the Chief Guest "The Future of Agriculture – Smart Farming"	Dr. N.S. Rathore DDG (Edn.) ICAR, New Delhi
11:25 - 11:30 hrs	Vote of Thanks	Dr. Kuldeep Singh Dangi Dean of Agriculture PJTSAU, Hyderabad
11:30 - 11:50 hrs	High Tea	
11:50 - 12:10 hrs	Group Photograph	

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# Session - I

Chairman	Dr N.S. Rathore, DDG (Edn.), ICAR,	New Delhi
Co-Chairmen	Dr. B. Venkasteswarlu, VC, VNMKV, Dr. P.D. Juyal, VC, NDVSAU, Jabalpa	Parbhani ur
Rapporteurs	Dr. D. Raji Reddy, Director of Resear Dr. M. Shanthi, Senior Scientist, PJT	ch, PJTSAU, Hyderabad SAU, Hyderabad.
Time	Торіс	Speaker
12:10 - 12:40 hrs	Attracting and Retaining Youth in Agriculture – Challenges & Incentives.	Dr. Aravazhi Selvaraj Chief Operating Officer ICRISAT, Hyderabad
12:40 - 13:20 hrs	Youth in Agriculture – Redefining Focus of Agricultural Education.	Dr. B. Venkateswarlu Vice Chancellor VNMKV, Parbhani
13:20 - 13:50 hrs	Views of Panelists & Chairman's Reman	ks

13:50 - 14 :30 hrs Lunch Break





# Session - II

Chairman	Dr. N. C. Patel, VC, AAU, Anand	
Co-Chairmen	Dr. B.M.C. Reddy, VC, Dr YSRHU, Tadep Dr. M. Premjit Singh, VC, CAU, Imphal	alligudem
Rapporteurs	Dr. K.V.S. Meena Kumari, Comptroller, P. Dr. K. N. Yamini, Asst. Professor, PJTSAU	JTSAU, Hyderabad , Hyderabad.
Time	Topic	Speaker
14:30 - 15:00 hrs	Initiatives of DAC for Youth in Agriculture	Dr. P. Chandra Shekara Director (Agril. Extn.) MANAGE, Hyderabad
15:00 - 15:30 hrs	Reorientation of Agricultural Research towards Smart Agriculture.	Dr. D. Rama Rao Director NAARM, Hyderabad
15:30 - 16:00 hrs	Development of Agripreneurship among Youth in Rural Areas.	Dr. K. Ramasamy Vice Chancellor TNAU, Coimbatore
16:00 - 16:30 hrs	Views of Panelists & Chairman's Remarks	
16:30 - 17:00 hrs	Tea Break	
18:00 - 19 :00 hrs	Musical Concert	
19:00 - 21:00 hrs	Dinner	





# Thursday, September 29, 2016

# **Session - III**

Chairman	Dr. K. Ramaswamy, VC, TNAU, Coimbator	•e
Co-Chairmen	Dr. Pradeep K. Sharma, VC, SKUAST, Jam Dr. S.L. Goswami, VC, BUAT, Banda	imu
Rapporteurs	Dr. R. Subhash Reddy, Dean of Student Affa Dr. K. B. Eswari, Assoc. Professor, PJTSAU	airs, PJTSAU, Hyderabad , Hyderabad
Time	Торіс	Speaker
09:30 - 10:00 hrs	ICT interventions for promotion of Smart Agriculture.	Dr. N.C. Patel Vice Chancellor, AAU
Anand		
10:00 - 10:30 hrs	Corporate Social Responsibility – Role in capacity building and employment generation for youth in Agriculture.	S. Bhaskar Reddy Executive Director Syngenta Foundation, New Delhi
10:30 - 11:00 hrs	Developing Human Capacity and Talent pool for a global seed industry	Dr. Raman Babu M/s. DuPont Pioneer, Hyderabad
11:00 - 11:30 hrs	Soft Skills – SAUs Training Experience	Ms. Radha, CEO SMART Series Bengaluru
11:30- 11: 50 hrs	Views of Panelist's & Chairman's Remarks	

11:50 - 12:00 noon Tea Break





# **Session - IV**

Chairman	Dr. N.C. Patel, VC, AAU, Anand
Co-Chairmen	Dr. V. Praveen Rao, VC, PJTSAU, Hyderabad
	Dr. R.P. Singh, Executive Secretary, IAUA, New Delhi
Rapporteur	Dr. A. Mrinalini, Dean of Home Science, PJTSAU, Hyderabad Dr. D. Sreedevi Assoc, Professor, PJTSAU, Hyderabad
	Di. D. Siecuevi, Assoc. 110(essol, 1315AU, 119uerabau
Time	Торіс
12:00 – 12:45 hrs	Open House
12:45 – 13:00 hrs	Valedictory
13:00 – 14:00 hrs	Lunch Break











# **ABOUT THE HOST INSTITUTION**

Professor Jayashankar Telangana State Agricultural University (PJTSAU) was established on 3<sup>rd</sup> September, 2014 at Rajendranagar, Hyderabad consequent to the bifurcation of the unified State of Andhra Pradesh. It is the only farm University in the State catering to the needs of an enterprising farming community of Telangana State which is endowed with abundant natural resources, diverse soil and agro-climatic conditions suitable for varied cropping systems and has the potential to become the "Seed Bowl of India".

#### FACT SHEET

Main campus area	: 2534 acres
Off-campus area	: 1734 acres
Faculties	: Agriculture Agricultural Engineering and Technology Home Science
Colleges	: Agriculture (5) Agricultural Engineering (1) Food Science and Technology (1) Home Science (1)
Polytechnics	: Agriculture (11) Seed Technology (1) Agricultural Engineering (1)
Research Stations	: Including three Regional Agricultural Research Stations (15)
Research Schemes	: All India Coordinated Research Project schemes (AICRP) (28) Government of India Projects (2)
Extension Units	<ul> <li>Agricultural Advisory and Transfer of Technology Centres (DAATTCs) (9)</li> <li>Krishi Vigyan Kendras (KVKs) (6)</li> <li>Extension Education Institute (EEI) (1)</li> <li>Farmers Call Centre (FCC) (1)</li> <li>Agricultural Technology Information Centre (ATIC) (1)</li> <li>Electronic Wing (1)</li> </ul>
Teaching Staff	: 378
Non-Teaching Staff	: 975







## **INAUGURAL SESSION**

Professor Jayashankar Telangana State Agricultural University (PJTSAU), Hyderabad in collaboration with Indian Agricultural Universities Association (IAUA), New Delhi organized the 7<sup>th</sup> Brainstorming session on **Youth and Smart Agriculture: Challenges and Opportunities** during 28<sup>th</sup> - 29<sup>th</sup> September, 2016 at Hotel Novotel, Shamshabad, Hyderabad.



The session was inaugurated by **Dr. Narendra Singh Rathore**, Deputy Director General (Education), Indian Council of Agricultural Research, New Delhi who graced the occasion as the chief guest. **Dr. M. C. Varshneya**, President, IAUA and Vice Chancellor, Kamdhenu University, Gandhinagar;**Dr. N. C. Patel**, Vice Chancellor, AAU, Anand; **Dr. V. Praveen Rao**, Vice Chancellor, PJTSAU and **Dr. Kuldeep Singh Dangi**, Dean (Ag), PJTSAU were the other guests of honour who shared the dais. After the traditional invocation, by rendering a prayer to Lord Ganesha, the remover of all obstacles, the inaugural session commenced with the ceremonial lighting of the lamp by all the dignitaries on the dais.







**Dr. V. Praveen Rao**, Hon'ble Vice Chancellor of Professor Jayashankar Telangana State Agricultural University extended a warm welcome to all the distinguished guests.

After a brief introduction about the host institute, Dr. Rao expressed that the theme of the meet was selected based on the experiences shared during *"Telangana Yuvarythu Sagubadi*" a novel training programme with emphasis on the skill development of practicing young farmers, a flagship programme of PJTSAU. He opined that the subject was particularly relevant to India of which is blessed with a demographic dividend of a young workforce

of 456 million, 70 per cent of which resided in rural areas where agriculture is the primary occupation.

He lamented that of late, farming is not a preferred occupation by even farmer's children due to the agrarian crisis that is prevalent in the country. He felt that the need of the hour is to enhance agricultural literacy – particularly among the young generation right from the level of secondary school. The agribusiness man / agripreneur being buzzwords of the day, the younger generation should be trained to exploit the umpteen opportunities that have opened up due to globalization/ changes in lifestyle and consumer preferences particularly in the food markets and allied sectors. That said, he also emphasized the need to empower the youth to face the challenges of climate change, global competition, dwindling natural resources, limited knowledge of markets, marketing strategies and tapping the financial sources.

He mentioned that the emphasis today was on producing more crop per drop of water, per inch of soil and with less human toil. Quoting a recent Goldman Sachs report titled – India: "A Tale of Two economies- Rural and Urban", he opined that a three-pronged approach of raising agricultural productivity, diversifying sources of rural income and urbanizing rural areas was needed for sustained growth of rural economies where most of our youth were concentrated.

As no single agency, could bring about this transformation he stressed the need for combined thought and action by various public and private stakeholders like academic institutions, research institutes, industry, voluntary agencies and service providers in channelling the creative energies of the young minds into becoming a valuable asset for themselves and the country. He concluded his welcome address hoping that the deliberations during the brainstorming sessions would bring forth new ideas and views which can be put to practice and that the delegates would carry home with them the productive outcomes of the meet.







While delivering the keynote address, on "The Future of Agriculture – Smart Farming", **Dr. Narendra Rathore**, ADG (Education), ICAR, New Delhi highlighted the advantageous position that India enjoys currently having an envious edge of possessing 57 per cent youth population below 30 years of age. The group is very receptive to changes and innovations and hence there existed a tremendous potential to harness their energies into smart agriculture. He stressed upon the need for research efforts to improve productivity and bringing agricultural literacy in the country.

He stressed that education and entrepreneurship need to go hand in hand to encourage youth to choose farming as a profession/career.

He thanked the Union Minister of Agriculture and Farmers Welfare, **Shri Radha Mohan Singh** *ji* for according professional status to Agricultural Education which would enable the students to receive fellowships and scholarships to study aboard giving a fillip to the scarce technical human resource in the agriculture field. He opined that there was a need to inculcate a sense of entrepreneurshipamong the rural youth. He also emphasized the need to explore ways and means to enhance productivity besides maintaining consistent quality which was also the message of our Hon'ble Prime Minister, **Shri Narendra Modi**. He also urged the Universities to follow the V<sup>th</sup> Deans Committee recommendations wherein emphasis has been made towards skill development amongst agricultural graduates enabling them to start enterprises.

He suggested that the 3 H's i.e., Happy living, Healthy working and Heavenly environment were required in Agricultural Universities. He also mentioned that the draft prepared for the constitution of a National Council for Agricultural Higher Education was ready which was a welcome step towards further strengthening the agricultural education and employment scenario in the country. While quoting that 2058 farmers were abandoning farming each day, he expressed concern over the agrarian crisis that the country would be facing as a consequence of increasing number of farmers leaving agriculture. While concluding, he urged all the State Agricultural Universities to work towards improving work culture and creating self-employable agricultural human resource.







**Dr. N. C. Patel**, Hon'ble Vice Chancellor, Anand Agricultural University, Gujarat in his introductory remarks stressed that India with a population comprising of 60 crore youth with an average age of 29 years had to take advantage of the vibrant energy to rule the world. With 85 per cent of the world's population in developing countries living in rural areas where agriculture provided the main source of income, more efforts need to be made to attract young people to farming which presently has a poor social image.

He felt that the youth had the necessary capability to make significant changes in agriculture but need the right

policy support and grooming.

Speaking of the antecedents of Young Professionals in Agricultural Research for Development (YPARD), which was formed as a result of deliberations of a global conference in 2006 organized by Global Forum for Agricultural Research, he said that the challenges of retaining youth in agriculture was recognized prominently in the GCARD 2 (Global Conference on Agricultural research for Development) at Uruguay during 2012.

As a follow-up to the resolutions passed at GCARD 2, India organized a National Workshop on "Foresight and Future Pathways of Agricultural Research through Youth in India" under the aegis of Indian Council of Agricultural Research (ICAR), Asia Pacific Association of Agricultural Research Institutions (APAARI) and Trust for Advancement of Agricultural Sciences at National Agricultural Science Centre (NASC) Complex, Pusa, New Delhi during 1-2 March, 2013.

The deliberations at this workshop led to the development of a roadmap to define pathways for developing and nurturing a new generation of young agricultural professionals and entrepreneurs with greater emphasis on technical capacity development, institutional arrangements, innovative networking and appropriate investments to harness the full potential of youth and bring a qualitative change in their lives.

He emphasized upon prioritizing investments on youth and agriculture, which remains a crucial factor for attracting Youth to Agriculture. Greater and active involvement of youth in farm advisory, empowering them through creating technology led business models to provide value added services and employment opportunities is the way forward.

He strongly advocated a paradigm shift in policy to transform youth from "Job seekers" to "Job providers" and an urgent need to involve them in decision making processes at all levels in





relation to agricultural research and development. He suggested that youth should play a catalytic role in the "Plough to Plate" chain through greater involvement in networking for effective knowledge sharing and out scaling of innovations essential for the prosperity of farming communities.

In his Presidential address, Professor **M. C. Varshneya**, President of IAUA, New Delhi and Vice Chancellor, Kamdhenu University, Gandhinagar pointed out that the average age of the population in India is 29 years whereas that of China is 35 years and in Japan it is 48 years which puts India in an advantageous position where the services of the young population can benefit the nation and the world.



He acknowledged that India's food grain production presently is more than needed, with vegetable and food production at 265 million tonnes. It also ranked first in the world in milk production at 157 million tonnes. However, earnings from rice and wheat were less than that from milk production. He expressed concern that though India had the highest milk production, 68.5 per cent of it was adulterated which he termed as a form of "Terrorism".

He pointed out that the countries producing lesser milk than India were exporting because of better quality standards whereas India was unable to do so in a big way

due to poor quality. **Professor M. C. Varshneya** shared the success stories of young agricultural graduates who became successful entrepreneurs through their innovative thinking. He urged the



Universities to develop a brand name for all their products and innovations following the example of Amul. He emphasized the need to carry out value added processing and packaging going beyond the production activity alone.

**Dr. Kuldeep Singh Dangi**, Dean of Agriculture, PJTSAU proposed the Vote of Thanks marking the close of the inaugural session. Apart from the Vice Chancellors of member universities of IAUA, Directors of ICAR institutes at Hyderabad, representatives from ICRISAT and Agri based industry graced the occasion.





# **SESSION - I**



Chairman	:	Dr. Narendra Singh Rathore, DDG (Edn.), ICAR, New Delhi
Co-Chairman	÷	Dr. B. Venkateswarlu, VC, VNMKV, Parbhani
	:	Dr. P. D. Juyal, VC, NDVSU, Jabalpur
Rapporteurs	÷	Dr. D. Raji Reddy, Director of Research, PJTSAU, Hyderabad
	:	Dr. M. Shanti, Sr. Scientist, AICRP on Forage Crops, PJTSAU, Hyderabad

# "Attracting and Retaining Youth in Agriculture - Challenges and Incentives"

#### Dr. Aravazhi Selvaraj

Chief Operating Officer, Innovation & Partnership Program (INP), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad.

**Dr. Selvaraj** highlighted the role of ICRISAT which has been working on 6 mandate crops suited to the semi-arid tropics since 1972, in initiating measures to encourage youth into agriculture through AIP- Agri-business and Innovation Platform.

He referred to the case in Tamil Nadu, wherein youth from several villages were encouraged to take up seed production of rice. INP-Innovation and Partnership and NPK- Nutri plus Knowledge were also the components of AIP and the youth were empowered to take up several agriculture based enterprises in the Public Private Partnership mode. The programme was supported by DIPP (Department of Industrial Policy and Promotion) under Ministry of Commerce and Industry. The



speaker threw light on the several benefits delivered to the rural youth through these programmes with the help of incubation centres.

The incubation centres or Startups encouraged the youth to take up agri based enterprises by hand holding them through business development, finance, capacity building and also in providing infrastructure. Under this programme, ICRISAT also came up with several commercial products like smart foods and sorghum based breakfast cereals by entering into partnership with a number of organizations viz., NSTEDB (National Science and Technology Entrepreneurship Development Board), DST, ASSOCHAM, FICCI (Federation of Indian Chambers of Commerce and Industry), ICAR, NABARD to name a few.

The speaker also apprised the house that the CSR (Corporate Social Responsibility) activity that has been made mandatory to corporate sector, has been also linked with agriculture based entrepreneurship in rural areas. A scheme of measures has been suggested to attract youth to agriculture. Certain steps like encouraging youth to innovate, creating young farmer forums, introducing IT in agriculture, identifying missing opportunities, increasing business acumen and interaction with R & D would help youth to direct their energies towards agri-entrepreneurship. **Dr. Selvaraj** concluded his talk by sharing the success story of Vennela Educational Society (VES).

In the ensuing discussion, **Prof. M. C. Varshneya**, Vice Chancellor, Kamdhenu University, Gandhinagar, urged that youth pursuing agriculture as a career should command respect. **Dr. V. Ravindra Babu**, Director, Indian Institute of Rice Research(IIRR), Hyderabad added that by merely following improved crop management practices the yields can be doubled and opined that changes should be made in curriculum to motivate youth to take up entrepreneurship.

**Dr. D. Raji Reddy**, Director of Research, PJTSAU emphasized that activities initiated by various organizations to attract youth towards agriculture must also involve Agricultural Universities in the vicinity. He further added that working in isolation would not help in attracting youth into agriculture and emphasized the need for all organizations to come together to achieve the intended goals.





#### "Youth in Agriculture- Redefining focus of Agricultural Education"

#### Dr. B. Venkateswarlu

Vice Chancellor, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani

**Dr. Venkateswarlu** began his talk by explaining the trends in youth population in India and the world as a whole, emphasizing the advantage of the demographic dividend that India enjoyed. He also discussed the reasons why agriculture was not attractive to youth viz. low income and high risk, low dignity of profession, incompetent agricultural policies and lack of organizational focus in the sector.



The recent initiatives taken up by ICAR like ARYA, Student READY programs aimed to empower rural youth to take up resource and capital intensive enterprises in agriculture and allied sectors like processing, value addition and marketing, establish network groups were highlighted. The said programs aimed to demonstrate the convergence of opportunities available through functional linkages between all stakeholders. He emphasized that feeding the increasing population of the country would be possible only by persuading the educated youth to farming. He further highlighted the challenges in bringing youth towards agriculture viz., lack of new technologies in agriculture, lack of diversification of work, uncertainty in mechanization, small holdings, poor financial services, non-involvement in policy making, low income generation as compared to their expectations and climate risk.

Speaking of the strategies to retain youth, he emphasized the need to focus attention on capacity development of youth without formal agriculture education through trainings, to provide incentives for secondary agriculture, and promote FPCs and group farming and strengthen non-farm sector. After quoting some success stories from Maharashtra, **Dr. Venkateswarlu** concluded that a supportive policy framework, professional status to agriculture, institutional and financial support would go a long way in retaining youth in agriculture.





During the discussion, **Dr. Pradeep K. Sharma**, Vice Chancellor, Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu opined that 55-60 % population in rural areas need not depend on agriculture and that only a small fraction of educated youth could make India surplus in agricultural production. The speaker suggested that ICAR could take up a study to assess the percent of population to be retained in agriculture to achieve the targets.

#### SUMMARY

The following issues were identified during the deliberations of the session:

Why youth were not attracted to agriculture - Low dignity of profession, low income, high risk, incompetent agricultural policies, lack of organizational focus in the sector, lack of motivation for youth, insufficient financial support to bring a large fraction of youth into agriculture, climate dependency of agriculture.

**How youth could be motivated towards agriculture** - Initiatives which could draw youth's attention towards agriculture are needed such as changes in education system, encouraging start-ups for agriculture, encouraging business development through AIP- Agribusiness and Innovation Platform, financial support though various schemes, imparting training and skill development through various organizations. Besides, improving farm mechanization to reduce labour dependency, capacity building in terms of knowledge and finance, imparting knowledge on climate resilient agriculture, conglomerating all the organizations working on agriculture either through education or funding, providing infrastructure were identified as the successful tools to make agriculture as a career choice.





# **SESSION - II**



Chairman	•	Dr. N. C. Patel, Vice Chancellor, AAU, Anand
Co-Chairman	:	Dr. B. M. C Reddy, Vice Chancellor, YSRHU, Tadepalligudem
		Dr. M. Premjit Singh, Vice Chancellor, CAU, Imphal
Rapporteurs	:	Dr. K.V.S. Meena Kumari, Comptroller, PJTSAU, Hyderabad

Dr. K. N. Yamini, Asst. Professor, PJTSAU, Hyderabad

#### "Reorientation of Agricultural Research towards Smart Agriculture"

#### Dr. D. Rama Rao

#### Director, ICAR-National Academy of Agricultural Research Management, Hyderabad

**Dr. Rama Rao** defined smart agriculture as low cost, innovative ways of managing water, time and labour in agriculture in a socially acceptable manner.

He compared the transition of knowledge systems through the labour, machine and precision farming eras from the pre 1920s through to 2050 wherein agriculture transformed from low input / low output in labour era to high input high output in machine era and was projected to produce higher outputs with optimum inputs in the precision farming era characterized by internet of things and data analytics.



The knowledge systems shaping agriculture had transformed from labour era through manual to semi mechanical to complete mechanization to precision agriculture. He felt that success of smart agriculture in the country depended on economic viability, climate change, improving carbon/water foot print, environment friendliness, green and energy efficient technologies, machines for smart agriculture value chain, enhanced capacity of farmers on use of advanced scientific tools and techniques etc. He opined that Smart agriculture thus warranted basic and strategic research in climate change effects, water budgeting, hydrological modelling tools and ICT tool research in developing Spatial expert system for monitoring and planning agri-production and value chain, farmer friendly gadgets to aid decision making process, and sensor based precision agriculture. He also stressed the need for applied research in developing cost effective bio remediation processes, de eutrophication of water bodies through green technologies and agribusiness incubation and start-ups.

Speaking on the Way Forward he stressed on improving crop production efficiency through cyclic optimization process and the need to establish linkages across partnership ecosystems. He felt that there was a bias in identifying the profession of agriculture and a lot needed to be done to make universities cope with the technology barriers. He strongly felt that changes were dynamic and expert systems do not work in present day for our country. There was a need to articulate the knowledge system by understanding the limitations of long term commitments and partnerships. He concluded his talk by stressing the need for a few focused national missions to be formulated and worked upon for improvement in the sector.





#### "Initiatives of DAC for Youth in Agriculture"

#### Dr. P. Chandrashekara

Director (Agricultural Extension), National Institute of Agricultural Extension Management (MANAGE), Hyderabad

**Dr. Chandrashekara** presented the initiatives of MANAGE in empowering agricultural graduates and diploma holders. He enlightened the forum about the program on Agribusiness and Agri-Clinics of MANAGE that has so far trained 49,000 agricultural graduates and led to setting up of 21,000 agribusinesses with a turnover ranging from Rs. 2 lakhs to Rs. 100 crores.



The activities included agribusiness centres, agro ecotourism, animal feed units, biofertilizer production and marketing, contract farming, cultivation of medicinal plants, direct marketing, farm machinery unit, fishery development, floriculture, horticulture, veterinary clinics, vegetable production and marketing, vermicomposting, organic manure, crop production, rural godowns, dairy, goatry, piggery, poultry etc. He highlighted the difficulties in obtaining loans for Agripreneurs besides showcasing several success stories of agri-clinic participants from across India.

#### "Development of agripreneurship among youth in rural areas"

#### Dr. K. Ramasamy

#### Vice Chancellor, Tamil Nadu Agricultural University, Coimbatore

Expressing that small farmers contribute the maximum to food production and availability in the country, **Dr. Ramasamy** opined that educating them should be the prime focus to transform their lives. Though the average age of youth is 29 years, he observed that the youth turned towards agriculture as a profession after exhausting all the options between 35-44 years of age. He enlightened the forum on the status of India with regards to entrepreneurship particularly agri entrepreneurship which was at the bottom of the pyramid. He stressed on the need for rural entrepreneurship and





enlisted the Government initiatives at both the national and State level. Enumerating success stories from Tamil Nadu he explained the various models such as Networking agribusiness model, Profit sharing model and business incubation model. He expressed several measures such as establishing agribusiness incubation centres, networking, resource mapping for skill competency exposure visits, financial assistance, mobile training centres, tailor made rural packages, special youth and student agripreneurship policy at state level, minimum support price for all crops/ value added products produced by rural youth start-ups, amendment of MNREGA for promoting agribusiness.

He highlighted the success stories at TNAU in promoting agri-preneurship among youth like hybrid production in horticultural crops, value addition and popularization in millets, business incubation model for producing organic palm sugar from palmyrah etc. He opined that with the limited technical human resource available in the universities, role of agri-universities should be restricted to producing knowledge/ skill and not on entrepreneurship development. **Dr. Ramasamy** concluded with a quote by Yash Pal 2010 urging the Universities to relate to the world outside and be porous through the walls of disciplines to let other voices be heard.



To the question on why the agricultural scientists are not duly credited for the services provided for green revolution or other agricultural breakthroughs whereas technology providers took all the credit - The house was divided on the question with some expressing that the Agricultural scientists were definitely recognized but efforts could definitely be made to improve communication/projection and packaging of the technology deliverables on par with the private technology providers.

The other issue raised was whether the universities are more restricted to traditional agriculture rather than smart agriculture defined as modern precision/ high tech agriculture and whether the universities are equipped to handle this divide due to the budgetary constraints.

It was felt that agricultural universities had to become more proactive in protected and smart agriculture through active collaboration in PPP mode. Trained and dedicated human resources were needed for achieving excellence in an identified field.





On the question about "How to motivate students towards agri–entrepreneurship?" The suggestion was to "organize interaction meetings with successful agripreneurs and encouraging them to be mentors to the students to motivate them to help in finding solutions."

**Dr. M. Premjit Singh** gave his views and stressed on targeting the school drop outs from rural households who were unable to take up full time courses in universities through vocational courses for a period of 3 or 6 months or 1 year for profitable livelihood. He also opined that ICT tools must be given thrust especially in remote areas which could reap benefits. The Chairman of the session, **Dr. N. C. Patel**, Vice Chancellor, Anand Agricultural University, Anand in his remarks stressed on the need to attract youth in agriculture and focused on the areas such as precision farming, role of ICTs, need to develop and use local sensors/gadgets instead of importing, training support from SAUs for skill development of rural youth in identified areas by the different departments of agricultural Universities. He commended the efforts of TNAU in motivating youth especially, by working on Saturdays and Sundays in villages to motivate them towards agri-entrepreneurship. He also expressed that the suggestions on the 5th Deans' Committee recommendations will be revisited once again for the benefit of all universities.

#### **SUMMARY**

#### The session emphasized the deficiencies in the system such as:

Non-recognition of agricultural scientist's role in smart agriculture. Knowledge system/expert system not geared for smart agriculture, poor access to credit for agripreneurs., limited agri-tech human resources in universities to encourage entrepreneurship, etc.

# Certain measures were identified which were promising to attract youth to takeup agriculture such as:

Improving communication, projection and packaging of technology deliverables from universities on par with private enterprises, proactive role of universities in protected and smart agriculture through active collaboration in PPP mode, train and deliver technical agripreneurs in an identified field of smart agriculture over an extended period, involving successful agripreneurs for mentoring the young graduates and farmers.





# ERRAVALLE - A SUSTAINABLE FARMING MODEL IN THE MAKING

- PJTSAU and Govt. of Telangana Consortium Intiative

Prior to the commencement of session-III, **Dr. V. Praveen Rao**, Vice Chancellor, PJTSAU was applauded for the appreciation and felicitation he received from the Hon'ble Chief Minister of the Telangana State **Sri. K. Chandrashekar Rao** for the responsibility he shouldered in coordinating a pilot project in 2014 to transform the two villages of Erravalle and Narsannapet in Medak District of Telangana into self-sufficient and self-sustaining economically and ecologically viable models through increased farm productivity. The aim was to achieve inclusive growth by catering to the needs of the people with a focus on welfare.



The philosophy was to treat the farmer as a center point for development and the project was established to act as a showcase of modern growing methods on commercial basis. The main objectives of the project were such that, drip irrigation and advanced farm machinery would form two sides of a commercial activity triangle while, the third side would be the technical know-

how (agronomic support) which would complete the "Potential Yielding Capacity", which in turn would change the meaning of crop production process.

The project components included

- Characterization of agricultural resources
- Farm mechanization
- Improved tillage and broad bed propagation
- Efficient irrigation and fertigation scheduling system
- Marketing intelligence
- Production of quality seeds of diverse crops
- Capacity building of stake holders.

It was envisaged that by developing agriculture on commercial lines in a project mode, the farmers of the region would be encouraged to join, invest efforts and some funds to improve their production levels along with their bargaining capacity in competitive markets.





# **SESSION - III**



Chairman	:	Dr. R. Ramasamy, Vice Chancellor, TNAU, Coimbatore
Co-Chairman	•	Dr. Pradeep K. Sharma Vice Chancellor, SKUAST, Jammu Dr.S.L. Goswami Vice Chancellor, BUAT, Banda
Rapporteurs	:	Dr. R. Subash Reddy, Dean of Student Affairs, PJTSAU, Hyderabad Dr. K. B. Eswari, Assoc. Professor, PJTSAU, Hyderabad

#### "ICT intervention for promotion of Smart Agriculture"

#### Dr. N. C. Patel

Vice Chancellor, Anand Agricultural University, Anand

**Dr. Patel** threw light on the importance of using ICT's in agriculture, since farmers always need accurate and up-to-date information on crop and soil health.

Smart agriculture being the buzzword of the present day, it can be achieved through Information technologies like remote sensing applications, GIS, GPS, Bioinformatics, agriculture drones, wireless sensor networks, data mining, mobile technology with various mobile applications, web portals, radio frequency identification system and enterprise resource planning as back office functions related to technology service and human resources.

He also added his experiences of operational technologies in Gujarat. To encourage utilization of ICT in agriculture a very innovative smart farming project was undertaken at Junagadh Agriculture University, Junagadh with the approval of Government of Gujarat under RKVY in May 2011.









The objective of the project was reclamation of the sodic soils of coastal regions of Saurashtra (Gujarat), which measured and monitored the changes in soil pH, EC, temperature and moisture with the observed sensor data through farmlinc portal from anywhere any time with the support of Space Application Centre (SAC) in Ahmedabad.

He also opined that, there is a need to set up ICT hubs, near market and agricultural commodity centres which should be easily accessible to farmers and otherrelated organizations. Young entrepreneurs are to be encouraged to invest in setting up such ICT hubs in commercial enterprises. Wide acceptance and application of ICTs in rural areas will increase the retention of youth in agriculture and enhance access to new technology.

Some of the measures to attract youth towards use of ICT's in agriculture were also suggested:

- ICT use would be a gateway for better job and employment opportunities in farming.
- The youth should be made more proficient in using ICT skills for farm planning, production and marketing.
- Producing reliable marketing and production information on existing livestock and crops.

### "Corporate Social Responsibility – Role in Capacity Building and Employment Generation for Youth in Agriculture"

#### Dr. S. Baskar Reddy

#### Executive Director, Syngenta Foundation, New Delhi

**Dr. Reddy** informed the gathering that Syngenta focused on building sustainable livelihoods to eradicate hunger and poverty. Agriculture, water and land use efficiency, environmental sustainability, biodiversity, education and skill development in youth, and rural development etc. were some of the areas of focus. *Krishi Mitr* was a resource centreof Syngenta Foundation on Agriculture engaging in the agriculture related activities. They were also involved in establishing





youth clubs, sponsoring scholarships to students, training on agricultural activities and support to village panchayats to develop rural infrastructure, rural development projects etc.

**Dr. Reddy** reiterated that there was a lot of scope for employment of rural youth in service sector related to agriculture and allied activities. Highlighting the role of Syngenta Foundation India in empowering rural youth, he explained the various activities taken up by the foundation in training agri entrepreneurs.

He discussed the IDBI Bank model to showcase innovative credit delivery to farmers as a way to get over the challenges of agri credit targeted at small farmers. SFI adopted the aggregation strategy to pool farmers for availing credit services to reduce transaction costs and bolster repayment certainty. SFI played a catalytic role in bringing all the partners to a single platform, anchoring agrientrepreneurs, developing business models for agriculture development, using agri credit as a central pillar to all business development. Dr. Baskar Reddy narrated the role of an IDBI model agri entrepreneur as a correspondent of the bank who facilitates delivery of credit, inputs, market linkages, extension and irrigation services. He also informed that SFI reached 1627 farmers through credit linkage. He enlightened the group about the selection, training and assistance process that SFI used to train diligent, youth who had completed X std to become agri entrepreneurs. The agri technology assistants were given induction and on job training in soil testing and analysis, drip and sprinkler maintenance and management, spraying services, seed production, seedling production, rice transplanting services.

One agri-entrepreneur so trained was able to earn 2-4 lakhs/annum, train 300-350 farmers facilitating disbursal of 40-60 lakhs agricultural credit and 30-40 lakhs worth agri inputs finally helping the farmer to earn Rs 7000 to Rs 9000 per month of additional income. He informed the forum that SFI has its training centres in Pune, Nanded, Ahmednagar, Jawahar Palghar district, Kalahandi in Odisha and Hyderabad in Telangana whose mandate is to train 1000 ATA a year and anchor around 150 entrepreneurs.





### "Developing Human Capacity and Talent Pool for a Global Seed Industry"

#### Dr. Raman Babu

#### M/s. Dupont Pioneer, Hyderabad

**Dr. Raman Babu** introduced the audience to the initiatives of M/s Dupont worldwide in nurturing budding scientists with endowed chairs in universities, young professor awards, graduate scholarships, pre-and post-doctoral internships at Pioneer research facilities, up gradation of skills of staff through post-doctoral programmes, organization of plant science symposia's in public sector institutes like ICAR and SAU's.



He also explained about other well-known initiatives like skill development, summer programme for high school kids etc. Dr. Raman Babu enlightened the group about the organizational setup, mission and goals of Dupont Pioneer R&D and explained its role in engaging with academia worldwide. He listed a few initiatives like endowed chairs in Universities, Young Professor award, Graduate scholarships, Pre-andpost-doctoral internships at their R & D facilities, plant science symposia series by the students for the students and skill development, summer programs for high school kids etc. He added that Dupont Pioneer strives towards enhanced discussion between the academic community and the private sector, building key technical, organizational and management skills in future plant scientists and exposing future scientists to diverse career opportunities in agriculture. In this context, he informed that since 1968, over 700 professors in more than 140 institutions in 19 countries were awarded fellowships to the tune of \$ 50 million.

He opined that plant breeders in the present time should have technical expertise, business acumen, legal knowledge and people skills and felt that they should be trained towards product orientation keeping needs of farmers in mind with cutting edge science.

He lamented that skill and development corporations offer several IT courses but nothing in the arena of practical know how in hybrid seed production, Big data analysis in agriculture, precision phenotyping, spatial analysis and BLUPS, to name a few. He envisaged a proactive role for the



private sector by continuously engaging with regional and world academia, evolving effective collaboration mechanisms, participation in modern curriculum design and supporting establishment of regional/global centres of excellence.

### "Soft skills - SAU's training experiences"

#### **Ms. Radha** CEO, SMART Services, Bengaluru



**Ms. Radha** explained about the activities of SMART services like personality development training, improvement of teaching skills to research scholars and faculty members in organizing training programme on time management, listening and communication skills and presentation skills etc. for empowering agricultural graduates.

#### SUMMARY

The Chairman of the session **Dr. Ramasamy**, VC, TNAU, Coimbatore, concluded that agriculture sector had lot of opportunities for rural youth in providing services related to agriculture such as ICTs, crop insurance, water management, credit facilities, farm machinery, marketing agriculture inputs etc. The public sector should provide the basic training and knowledge in agriculture to the youth who could then make their livelihood in different areas of agriculture in the private sector and earn profits. Hence, at the present juncture, the private sector should fund the public institutions for providing infrastructure, education, training and basic research.





# **SESSION - IV**



#### **OPEN HOUSE**

Chairman	:	Dr. N. C. Patel, VC, AAU, Anand
Co-Chairman		Dr. V. Praveen Rao, VC, PJTSAU, Hyderabad
		Dr. R. P. Singh, Executive Secretary, IAUA, New Delhi
Rapporteur	:	Dr. A. Mrinalini, Dean of Home Science, PJTSAU, Hyderabad
	:	Dr. D. Sreedevi, Assoc. Professor, PJTSAU, Hyderabad

During this session, the rapporteurs of Session - I, **Dr. D. Raji Reddy**, Director of Research, PJTSAU, Hyderabad; Session - II, **Dr. K.V.S. Meena Kumari**, Comptroller, PJTSAU, Hyderabad and Session - III, **Dr. R. Subhash Reddy**, Dean of Students Affairs, PJTSAU, Hyderabad briefly summarized the proceedings of their respective sessions and presented the recommendations to the house for modifications and amendments.





## RECOMMENDATIONS

#### **SESSION - I**

- Promote capacity building among youth in terms of knowledge based agriculture encompassing climate resilient technologies and farm mechanisation for profitable agriculture.
- Curriculum development in agricultural education should include enterprise development in agri related businesses.
- Coordinated efforts of all the organisations, public, private, voluntary working in and for agriculture are needed for synergy in empowering youth towards agripreneurship and smart agriculture.

#### **SESSION - II**

- Improve the image and projection of agriculture through packaging the technology deliverables from universities in a way that is attractive to youth and draws them towards the field.
- Encourage Start-ups to serve as mentors to the outgoing graduate students in the final year in their respective agri-enterprises.
- Impart focussed training in identified areasfor the faculty of universities in agri-preneurship.
- Effective technical back stopping and hand holding with regard to finance and skill towards conversion of youth into successful agri-entrepreneurs for sustainable livelihoods is imperative.
- Investment in agriculture shall include indigenous development of sensor based technologies/ gadgets for smart farming.

#### **SESSION - III**

- Reorient agricultural system to the present needs by making use of tools such as Remote Sensing, GIS, GPS, use of sensors, drones, mobile technology, different web portals for data mining and bioinformatics etc.
- Encourage capacity building of agricultural faculty in use of field applicable ICT tools.
- Agricultural graduate students should register one e-course and faculty should use one e-book during the period of the course.
- Harness employment opportunities in agricultural related services like water, insurance, credit, inputs, market linkages and technologies.
- More private investment is needed in basic research in public organisations working for agriculture.
- Introduce agriculture and allied subjects as a part of curriculum at primary school(STEMA) level to attract youth towards choosing agriculture as a profession.
- Increase fellowships for PG education in agriculture and allied subjects to promote higher education for developing a talented technical human resource in the field.





## VALEDICTORY



The valedictory of the 7<sup>th</sup> Brain storming Session was chaired by, **Dr. N. C. Patel**, Vice Chancellor, Anand Agricultural University, Anand who expressed his heartfelt appreciation for the excellent arrangements and hospitality extended by PJTSAU.

**Dr. V. Praveen Rao**, Vice Chancellor, PJTSAU thanked IAUA for selecting PJTSAU to host the 7<sup>th</sup> Brainstorming Session on "Youth and Smart Agriculture: Challenges and Opportunities".

**Dr. R. P. Singh** opined that the Vice-Chancellors of SAU's should actively take part in the Vice Chancellor's meetings for improving the academic, research extension and administrative standards of the Universities related to Agriculture and allied Sciences.

The session concluded with **Dr. R. Subhash Reddy**, Dean of Student Affairs, PJTSAU proposing the vote of thanks.





S. No.	LIST OF PARTICIPANTS
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2	Dr. R. P. Singh, Executive Secretary, IAUA, New Delhi
3	Dr. Narendra Singh Rathore, Dy. Director General (Education), ICAR, New Delhi
4	Dr. V. Praveen Rao, Vice Chancellor, Professor Jayashankar Telangana State Agricultural University, Hyderabad
5	Dr. P.D. Juyal, Vice Chancellor, Nanaji Deshmukh Veterinary Science University, Jabalpur
6	Dr. K. Rathnakumar, Vice Chancellor, Tamil Nadu Fisheries University, Nagapattinam
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14	Dr. N. C. Patel, Vice Chancellor, Anand Agricultural University, Anand
15	Dr. S.L. Goswami, Vice Chancellor, Banda University of Agriculture and Technology, Banda
16	Dr. Pradeep K. Sharma, Vice Chancellor, Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu
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- 24 Dr. Vilas A. Tonapi, Director, ICAR- Indian Institute of Millets Research, Hyderabad
- 25 Dr. A. Vishnu Vardhan Reddy, ICAR-Indian Institute of Oilseeds Research, Hyderabad
- 26 Ms. Radha, CEO, Smart Series, Bengaluru
- 27 Dr. S. Baskar Reddy, Executive Director, Syngenta Foundation India, New Delhi
- 28 Dr. P. Chandrashekara, Director (Agril. Extension), MANAGE, Hyderabad
- 29 Dr. Raman Babu, DuPont Pioneer, Hyderabad
- 30 Dr. S. Sudheer Kumar, Registrar, PJTSAU, Hyderabad
- 31 Dr. K.V.S. Meena Kumari, Comptroller, PJTSAU, Hyderabad
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- 35 Dr. B. Jamuna Rani, Dean of PG Studies, PJTSAU, Hyderabad
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- 37 Dr. K. Anand Singh, Director of Extension, PJTSAU, Hyderabad
- 38 Dr. N. Sreedhar, Controller of Examinations, PJTSAU, Hyderabad



























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