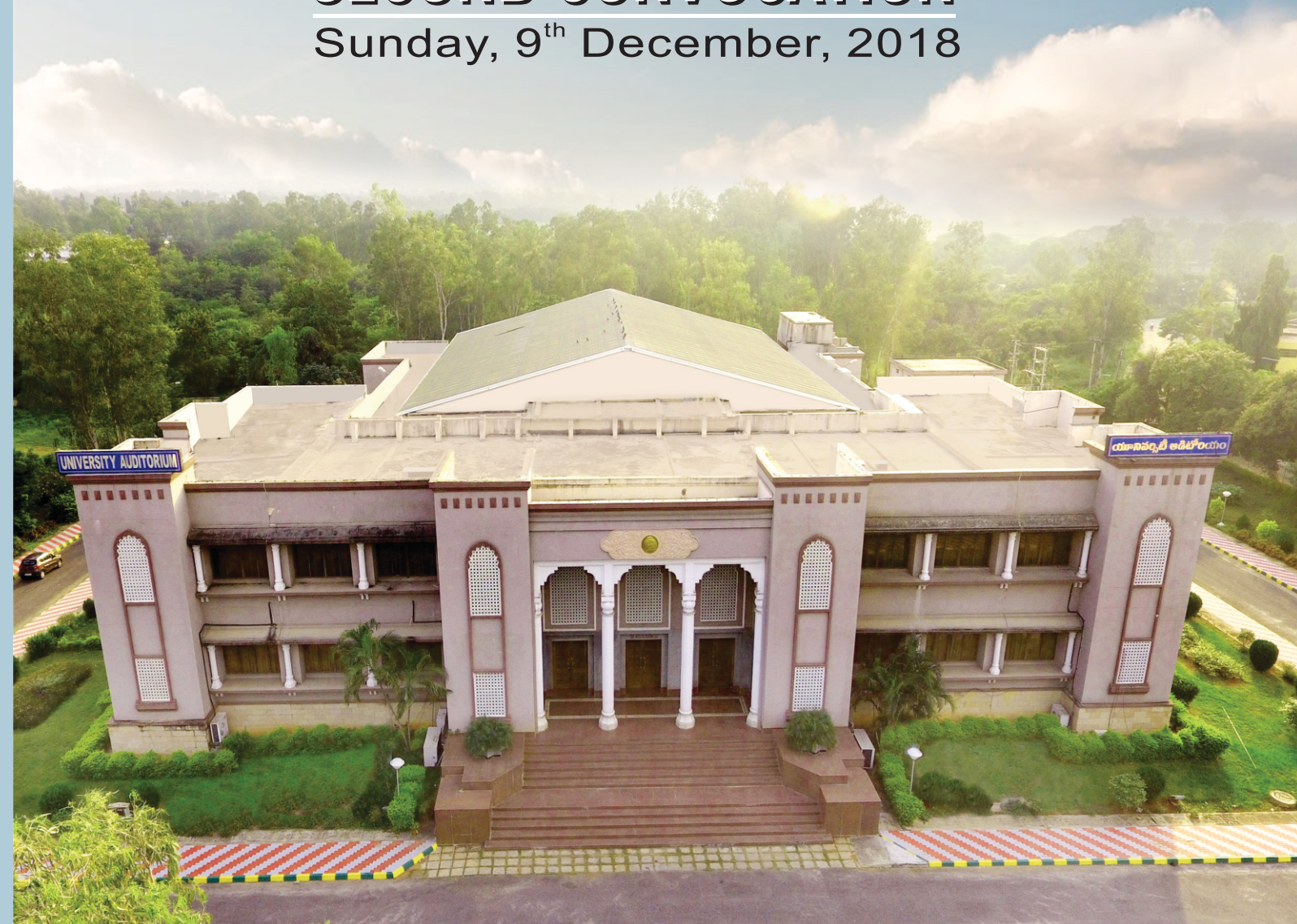


PROFESSOR
JAYASHANKAR
TELANGANA STATE
AGRICULTURAL
UNIVERSITY



SECOND CONVOCATION

Sunday, 9th December, 2018



Striving for a greener tomorrow

Professor Jayashankar Telangana State Agricultural University
Rajendranagar, Hyderabad - 500 030, Telangana State.
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SECOND CONVOCATION

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Convocation Address

Padma Bhushan Dr. R.S. Paroda

Chairman, Trust for Advancement of
Agricultural Sciences (TAAS), New Delhi &
Former Secretary, DARE &
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The Hon'ble Governor of Andhra Pradesh and Telangana and the Chancellor of Professor Jayashankar Telangana State Agricultural University (PJTSAU), Sri ESL Narasimhanji; Dr. V. Praveen Rao, Vice Chancellor, Dr. S. Sudheer Kumar, Registrar, members of the Board of Management, members of the Academic Council, learned faculty, officials and staff of the University, distinguished guests, dear students, representatives of press and media, ladies and gentlemen!

At the outset, I extend my sincere thanks to the Hon'ble Chancellor, Sri Narasimhanji for bestowing on me the honorary degree of Doctor of Science, which I value the most, and for inviting me to deliver the Convocation Address.

I am extremely happy to be present amongst the august gathering of academia, policy makers, and the students participating in the 2nd Annual Convocation of this vibrant University. My heartiest congratulations to all the students who are receiving their degrees

and awards today. I also congratulate the faculty members, who worked so hard to impart quality education, and to the proud parents of those students who are receiving their degrees.

Jumping from 12th to 6th rank in just one year at the national level, as adjudged by ICAR, is indeed a remarkable achievement, for which I congratulate the Vice Chancellor, Dr. Praveen Rao for his able leadership and the entire faculty to turn this University into a forward looking institution. I am pleased that considerable efforts have been made for building new infrastructure, bringing in academic reforms, drawing a road map for scaling research technologies, strengthening technology transfer and much needed public-private partnership. Starting four new colleges, one research station, two KVKs and creating new infrastructure and human resource with the support of the State Government and the ICAR are indeed praiseworthy. I am particularly impressed that ICAR has declared AICRP centres of rice, maize, weed management and forage crops of this University as the best performing ones at the national level.

This University has the onerous responsibility of catering to the needs of the Telangana State, the 12th largest in India, with a geographical area of 112.08 lakh ha, 60 per cent of which is semi-arid. Since 55 per cent of the total workforce is dependent on agriculture, future growth in the field of agriculture becomes a necessity for achieving higher economic growth.

We know that even at the national level, agriculture plays an important role in India's economy, Over 58 per cent of our population is dependent on agriculture despite reduced share in the country's GDP (down from 53% in 1950 to around 13% presently). Hence, it is critical that institutions like PJTSAU continue to play a major role towards future agricultural growth of Telangana and the nation.

The world population is projected to grow from present 7.0 billion to nearly 9.7 billion by 2050 and that of India will be 1.6 billion. In fact, we are adding one Australia (around 16 million) each year. Hence, all our progress gets nullified on account of population pressure. Therefore, continuous challenge before us, is to produce enough nutritious food to ensure both food and nutrition security at the household level. Nobel laureate Dr. Norman Borlaug had candidly mentioned: "You cannot build a peaceful world on empty stomachs and human mercy".

Thanks to the Green, White and Blue Revolutions, India has left behind an era of food insufficiency and frequent famines. Today, we are self-sufficient in our requirement for food grains, milk, fruits and sea foods. We have become net exporters of our agricultural products. Today, we are the largest producer of milk, second largest in rice, wheat, fruits and vegetable production. All this has become possible since independence-which means in my generation. From 'begging bowl' to an era of "self-sufficiency" is not a small achievement. We could also reduce poverty by half - which is an important Millennium Development Goal. Despite these achievements, agriculture in India currently faces several concerns on account of second generation problems of Green Revolution like factor productivity decline, degradation of natural resources (soil, water, agrobiodiversity, etc.), increased pests and diseases and above all the adverse impact of climate change. Also, the costs of inputs have risen and our farmer's income as well as size of farm holdings are declining. Almost 80 per cent of our farmers are small holders having less than 2 ha of land.

In my view, agriculture should not be seen as a cause but the solution of problems. In fact, it must liberate India from the twin scourge of hunger and poverty while ensuring sustainability of our natural resources. It must also address effectively the concern of hunger and malnutrition among children. Today, we have around 20 per cent poverty (around 200 million) and 40 per cent of our children below 5 years of age are hungry and malnourished. This by no means is a happy situation and hence must draw urgent attention of all to remove both poverty and hunger, being the most important of the sustainable development goals (SDGs). To achieve these, the needs and aspirations of resource-poor smallholder farmers must be addressed in the first place through innovation-led accelerated and sustainable agricultural growth. Historically, the adoption of high yielding dwarf varieties of wheat and rice under the 'Green Revolution' era addressed both; hunger and poverty. However, of late, the yield gaps in agriculture and the income divide in farm and non-farm sectors have been widening; primarily due to the gaps in the required knowledge, skills and timely access to improved technologies. Outscaling of appropriate technologies to reach the farmers at the appropriate time has emerged as a complex issue. Why farmers are unable to access or adopt the new technologies are the issues that haunt the development officials and scientists alike. Further, the growing challenges of natural resource degradation, escalating input costs, market volatility and above all the effects of global climate change too contribute to the

decline in yield as well as farm income, thus making agriculture both non-profitable and unattractive. Therefore, it is important to ensure an inclusive growth in agriculture through innovative and synergistic approaches for achieving sustainable food and nutrition security. Thus, agricultural research for development (AR4D) requires a paradigm shift to 'agricultural research and innovation for development' (ARI4D).

For sustainable agriculture and much needed resilience, we need now a twin pillar strategy i.e., besides genetic improvement, major efforts should be now focussed on natural resource management and adoption of good agricultural practices (GAP). Climate smart agriculture would also require better adapted varieties and species, timely farm operations, conservation agriculture and integrated nutrient and pest management. Fortunately, India has rich genetic variability being a mega centre of agrobiodiversity, which we need to explore and utilize. We now need urgently the resource saving technologies such as: conservation agriculture for much needed carbon sequestration and for restoring health of our soils which have low organic matter content. Greater use of new science such as: biotechnology, nanotechnology, ICT, Big Data, artificial intelligence, robotics etc. do offer new opportunities to make agriculture more efficient and remunerative.

Reducing post-harvest losses is another area which needs an urgent attention. On an average, post-harvest losses are reported to be 4 to 6 per cent in food grains and 12 to 15 per cent in fruits and vegetables. The challenge is, therefore, to minimise such losses and provide options to farmers for value addition for higher income. Agro-processing is now regarded as a sunrise sector of the Indian economy, especially in view of its huge potential for both employment and income generation. Some estimates suggest that in developed countries, up to 14 per cent of the total work force is engaged in agro-processing sector directly or indirectly. However, in India, presently only about 3 per cent of the work force finds employment in this sector revealing thereby vast untapped potential for future employment. Once properly developed, agro-processing sector can make India a major player at the global level for marketing and supply of processed food, feed and a wide range of plant and animal products. In this context, India also has a comparative advantage on account of our expanding internal market.

Global population growth and increasing prosperity would increase the demand for food by 70 per cent by 2050. But our planetary boundaries are already reaching their limits. Land and freshwater resources, the very basis of our food production, are under heavy stress, and oceans, forests, and other ecosystems are being degraded at an alarming rate. The challenges to feed the world sustainably are huge and to successfully implement the SDGs, Governments of developing countries must play their critical role, to deliver the sustainable development goals. There is an urgent need for India to reshape its agriculture and food systems for which the following five priority areas would require urgent attention: i) enhanced investment in agriculture where the need and potential for increasing agricultural productivity and production are the greatest, ii) make sure that smallholder farmers, who produce nearly 70 per cent of all food consumed worldwide, are at the heart of all our efforts. Government and the private sector must form innovative partnerships with farmers' organizations and smallholders, providing access to better seeds, sustainable farming techniques, and modern technologies, iii) ensure that agriculture and food systems become nutrition-smart since nutrition is crucial for younger generation as well as for economic growth. We must urgently adopt the right policies and mobilize resources to scale-up nutrition, iv) develop food systems that produce more food but with fewer resources. We shall have to adopt, enforce and strengthen policies that promote efficient natural resource management and prevent the loss of natural habitats, forests and biodiversity, and v) make concerted efforts to develop climate-smart agriculture and food systems. There is need to shift towards renewable energy sources which will help to avert climate catastrophe and create new opportunities for investment, growth and employment. At the same time, we need to strengthen farmers' resilience to climate-related shocks through effective weather forecasting contingency production systems, and crop insurance plans.

In order to effectively meet our future challenges, we shall need a change management to meet the sustainable development goals (SDGs). Change is a sign of growth. We know that change is must but change is difficult. As stated earlier, having accomplished an impressive progress on all fronts, India is faced with numerous challenges to meet SDGs successfully by 2030. No organization that shows resistance to change can grow. Change also requires commitment of not only the leaders and policy makers, but the entire organization and the system. Often the process of

'change of mindset' meets with stiff internal resistance. Yet the dynamic institutions have gradually grown through needed periodic organization and management reforms in order to meet the new challenges. In fact, change management is needed at different levels i.e. organization, institution, research, policy, and technology dissemination. Fortunately, the Indian National Agricultural Research System (NARS), comprising ICAR and the SAUs, has emerged to be one of the strong organizations in the world, through timely policy and structural reforms. Still the system needs change to meet the emerging challenges, which demands self-introspection. Some of the desired changes, requiring paradigm shifts, are listed below:

- Moving from NARI to NARS, through involvement of all stakeholders such as farmers, private sector and NGOs. There is definite need to embrace private sector more proactively, including stronger public-private partnership.
- Reorientation of agricultural research to address the needs of smallholder farmers – to make research more farmer participatory.
- Moving from crop and commodity to farming systems research - to include horticulture, livestock, agroforestry, fishery, etc.
- Shifting emphasis from research publications to that on innovations for impact - to let the outcomes reach the end users through translational research.
- Knowledge dissemination by adopting 'bottom-up' approach rather than 'top down' as in the past - to serve the entire farming community rather than individual farmers.
- Shifting towards culture of corporatization with provision of needed incentives for IPRs - including the provision of registration, patents, trade mark, GI, licensing. For this, enabling environment for greater public-private partnership becomes critical.
- Reorienting educational system to embrace new science and to move from formal to informal education for skill development - through greater emphasis on vocational training.

In addition, the strategy to double our farmers' income would demand sustainable intensification, diversification, improved resource-use efficiency and resilience in farming that is economically rewarding. A three pronged strategy needs to be pursued in this regard:

- i) improving productivity and production efficiency,
- ii) agricultural diversification - including secondary and speciality agriculture, and
- iii) policy support for linking farmers to market.

There is considerable scope for promoting diversified, secondary and speciality agriculture. Also, as emphasised earlier, greater focus will be needed on post-production management and value addition. Equally important will be the use of new science, educational reorientation, and scaling of innovations. In view of emerging new challenges, change towards new and efficient agricultural practices will be required. This calls for emphasis on translational research and innovative agriculture. To ensure this, India must triple its investment on AR4D to achieve food, nutrition and environmental security. We need to spend at least 1.0 per cent of agricultural GDP from current level of around 0.4 per cent to compete globally. Today, China spends almost twice (around 8 billion) compared to India on agricultural R&D, with greater focus on human resource development and agricultural innovation.

Agricultural extension in India presently requires real transformation. The current transitional phase also needs a 'renewed interest' and 'policy attention'. Public extension system played a vital role during the Green Revolution era, but it was mainly confined to the irrigated areas. This past success was also due to a holy alliance among researchers, extension specialists, farmers and policy makers. At the same time, the technology dissemination approach remained 'top-down' focusing on individual farmers. The current scenario of Indian agriculture is confronted with multi-faceted challenges arising due to inefficient management of natural resources. All these have led to decline in factor productivity and farm profitability. Apparently, this complexity of problem cannot be overcome by routine transfer of technologies. Rather, efforts are needed towards translational research; requiring outscaling of innovations through 'Out of Box' extension systems. Also, conscious deployment of rural youth, women and progressive farmers could help in a speedy

transfer of technology and the needed impact on livelihood of smallholder farmers. Farmers' welfare needs to be ensured through, for example, 'Farmer First' approach to equally benefit both; the producers and consumers. Further, in view of diverse demand of new innovations, new products and new information, we need new approaches for extension to ensure needed confidence among the farmers to take risk and adopt new technologies in agriculture. In the process, knowledge sharing on good agricultural practices, without dissemination loss, and incentives for critical inputs become highly critical to achieve successes in agriculture sector.

Fortunately, India presently has the largest population of youth (356 million in 10-24 year's age group) in the world (UN Report 2014) which is even more than China (269 million). This obviously reflects 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. At present, hardly 5 per cent of youth are interested in agriculture as a profession for their livelihood. Hence, a major challenge today is how to promote and attract youth in agriculture. The declining interest of rural-youth (including women) is directly related to existing poor physical amenities, socioeconomic conditions and lack of enabling environment. Economic factors such as low paid employment, inadequate credit facilities, low profit margins, and lack of insurance against crop failure are also discouraging factors. Moreover, youth is not keen to continue with traditional agricultural practices. They are relatively keener to adopt innovative agriculture, including secondary and speciality agriculture which provide better returns.

Earlier, seeds, pesticides, fertilizers and farm machinery were the only potential sectors to employ agricultural graduates/rural youth. Lately, the new opportunities are emerging in IT linked agricultural extension, seed technology, biotechnology, food processing, cold storage, packaging, supply chain management, insurance and farm credit. Private sector and non-governmental organizations (NGOs) are also engaging rural youth. In this context, we now need greater thrust on vocational training of youth for relevant skill acquisition and greater confidence building to serve as 'Technology Agents' as well as efficient knowledge/service providers on custom-hire basis. It is high time that earnest efforts are made at all levels to engage youth in multifarious activities around 'Plough-to-Plate' so as to make farming attractive as well as lucrative profession.

Also, there is new option to empower youth (men and women) through vocational training and by building a cadre of 'Technology Agents' to provide much needed technical backstopping as well as custom-hire service to the smallholder farmers. In the suggested transformation process, the Agriculture Technology Agents will need to become "Job-Creators" and not "Job-Seekers" and provide best technologies as well as quality inputs on farmers' door steps. Another important action that can change the game is to promote establishment of 'Agri-Clinics', where technology agents are able to join hands in providing single window system of advisory services to farmers.

I would like to emphasize that healthy and prosperous societies are built on three pillars: i) peace and security, ii) inclusive development, and iii) the rule of law and respect for human rights. There can be no long-term peace and security without development. There can be no long-term development without peace and security. And no society can prosper for long without respect for the rule of law and human rights. So, let us turn aspiration into action and build a food secure, sustainable, and prosperous India, founded on these pillars of progress.

The importance of ethics in science need not be re-emphasized. There is a dire need to maintain transparency in the entire process of developing new agri-innovations so as to ensure exchange of knowledge/skill and to ensure benefit sharing. This will encourage the technology innovators to continue working on developing new innovations.

As you step forward, try to remain young at heart and be open to new ideas. Endeavour to be the best in the world in whatever you choose to be. India needs Gold Class graduates. Necessary qualities of a good citizen are sincerity, integrity and compassion to humanity. My advice to young graduates is that be prepared always to change your mindset. You must have 'Out of Box' thinking and aspire to be job creators rather than job seekers. Instead of looking for white collar jobs in the Government sector, you must think of becoming young entrepreneurs to identify and promote new innovation and work hard towards its success. Ample options are there in the horizon like protected cultivation, micro-irrigation, fertigation, bio-fertilisers, bio-pesticides, small farm mechanisation, post-harvest processing and value addition, herbal medicines, ICT for advisory services, insurance sector, credit and marketing, etc. Hence, you must move forward and grab available opportunities. Remember, sky is the limit.

I personally see a bright future for you all. However, you need to be more inquisitive as well as innovative. We see this happening in the western world, and now we see it happening in China. Innovation is the key to our future success. Fortunately, for you, the private sector is growing fast, banks are opening their coffers, and enabling policies such as 'Make in India' are being launched with major support under skill development mission. You just have to harness these opportunities with much needed confidence and an element to take risk. Also, be proud of your *alma mater* and do carry its name to newer heights by being honest and diligent. Remember, it is not intelligence alone but your hard work and determination that would lead you to success. Never compromise on ethics. This nation is yours. Hence, it is your moral responsibility to protect, conserve and replenish available natural resources and pass them on to the future generations in better shape than what you have inherited.

According to the Hon'ble former President of India, Dr. A.P.J. Abdul Kalam, you must have dreams but then you must work hard to realize your dreams. So, make sincere efforts and use the knowledge and skills you have acquired to achieve the success. I wish you a very bright career ahead and a very satisfying professional life. Remember, most successful people in the world did experience rejection once in their life. So, never get disheartened. The second President of India, Dr. S. Radhakrishnan had stated: "The end-product of education should be a free creative man who can battle against historical circumstances and adversities of nature." In agriculture, we certainly need graduates of this kind. Lastly, remember that perseverance always pays. Just keep on doing your best and the success will ultimately be yours. Let the Almighty be with you in your journey to serve the society with human face.

At the end, while congratulating all graduating students and meritorious awardees once again, I also congratulate their parents for their constant support all through. My best wishes for a successful career ahead.

JAI HIND!

About the Orator

Dr. Rajendra Singh Paroda was born on August 28, 1942 at Ajmer. He completed B.Sc (Agriculture) from DAV college, Ajmer and Master's degree in Genetics and Plant Breeding from University of Udaipur in 1964. After obtaining a Doctoral degree from IARI, New Delhi in 1968 he went abroad on a commonwealth Post doctoral fellowship to University of Wales, UK during 1968-70. He started his career as a forage breeder at the Haryana Agricultural University and steadily rose to become the Director General of the Indian Council of Agricultural Research (ICAR) and Secretary, Department of Agricultural Research and Education (DARE), Government of India, New Delhi during 1994-2001, a memorable period for Indian agricultural scientific community. The prestigious National Agricultural Technology Project (NATP) of the World Bank was conceived and developed by him to reorient Indian agriculture, research, education and extension system to meet new challenges. He was instrumental in initiating several visionary programmes, viz., Special hybrid research program for rice, single cross maize, *rabi* sorghum, pigeonpea and castor; Special food grain production programme that enhanced production by 5 million tonnes annually; new seed policy to promote PPP; Drafting of PPV & FR Act; promotion of biotechnology including Bt –Cotton and IPM through official release of biopesticides. Known as the architect of more than 30 new institutions he is best known for establishing the National Gene bank, the world's second largest, housing more than 4 lakh crop accessions and the State of Art National Agricultural Science Centre (NASC) that is home for major national and international agri-scientific institutes, particularly of CGIAR.

Acknowledged internationally for his scientific leadership, he occupied coveted positions as the first Chairman of the Global Forum on Agricultural Research and Innovation (GFAR), Rome; Executive Secretary of the Asia Pacific Association of Agricultural



Research Institutions (APAARI), Bangkok which he served for 22 years; Chairman of ICRISAT Governing Board; Member of several statutory bodies of CGIAR; General President of Indian Science Congress Association (ISCA) Kolkata and President of National Academy of Agricultural Sciences (NAAS) from 1998-2000 among others.

He ably organized a number of national and international conferences, a few outstanding ones being – Second International Crop Science Congress in New Delhi (1996); 88th Indian Science Congress (2001); the First Global Conference on Women in Agriculture (GCWA) (2012); Global Conference on Agricultural Research for Development (GCARD 2) in 2013 at Uruguay.

Dr. Paroda is a Fellow of many Science Academies of India, besides being a Fellow of Third World Academy of Sciences (TWAS), Russian Academy of Agricultural Sciences. He was elected Honorary Member of the American Society of Agronomy and the Crop Science Society of America. He has been conferred honorary D.Sc. Degree by 15 academic institutions.

He was decorated by the former President of India Late Dr. K.R. Narayanan with the Padma Bhushan in 1998. He was also honoured with the Norman Borlaug Award in 2006 by the former President of India Late Dr. A.P.J. Abdul Kalam during the 93rd Indian Science Congress held in Hyderabad apart from more than fifteen prestigious awards that he was honoured with starting from 1982.

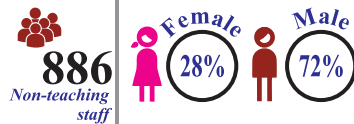
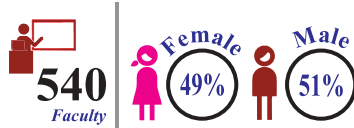
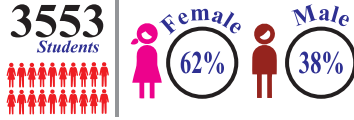
He has also been a recipient of many other awards such as the Rafi Ahmad Kidwai Memorial Prize (1982–83), ICAR Team Research Award (1983–84), FICCI Award (1988), Om Prakash Bhasin Award (1992), Asia-Pacific Seed Association Special Award (1995), CGIAR Award for Outstanding Partnership (2000), Life Time Award by Association of Agricultural Scientists in America (2001), Dr. Harbhajan Singh Memorial Award (2001), INSA Silver Jubilee Commemoration Medal (2001), Dr. B.P. Pal Memorial Award (2003), ISCA Gold Medal for Excellence in Science (2006), Gold Medal from Ministry of Agriculture of Armenia (2006), Life Time Achievement Award of 'Agriculture Today' (2008), Dr. A.B. Joshi Memorial Award (2012), Prof. Kanniyam Memorial Award (2012), Gold Medal from Ministry of Agriculture of Vietnam (2012) and *Krishi Shiromani Samman* by Mahindra and Mahindra Ltd. (2013).

Currently, Dr. Paroda is serving as Chairman of the Trust for Advancement of Agricultural Sciences (TAAS), New Delhi and as Chairman of Haryana Farmers' Commission.



PJTSAU at a glance

People



Students



Schools



Research



Extension



International Collaborations



National Collaborations



Recognition, Accreditation & Membership



Rankings





9 Colleges • 13 Polytechnics • 15 Research Stations • 21 Extension Centres