

56th Foundation Day Lecture

(1st November, 2017)

Prof. S.K. Rao

Vice Chancellor

Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya
Gwalior (Madhya Pradesh)



An ISO 9001:2015 Certified Institution
ICAR-Indian Grassland and Fodder Research Institute
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Prof. (Dr.) Surapaneni Koteswara Rao, Vice Chancellor, Rajmata Vijayaraje Scindia Krishi Vishwavidyalaya, Gwalior, Madhya Pradesh is an accomplished plant breeder by profession and an able research manager as well as administrator. He has served as Director of Research (2015-2017), Jawaharlal Nehru Agriculture University, Jabalpur, Dean, Faculty of Agriculture (2012-2015), Vice Chancellor (Additional Charge 10.07.2015 to 14.08.2015), Director Farms (Additional Charge) (2001-2012), Dean, College of Agriculture, Rewa (2009-2012), University Professor and Head (2001-2009), Scientist (1990-2001), Junior Scientist (1980-1989), Senior Research Assistant (1980). He was born in Polukonda, Krishna District of Andhra Pradesh, India

on 8 March, 1952. He obtained his Doctorate and Master Degree from JNAU, Jabalpur with a Certificate of Honours & B.Sc. from Andhra University (A.P.) having a brilliant academic record. He was awarded Department of Atomic Energy Scholarship for his Ph.D. program.

He attained expertise in several externally funded national/international research projects and participated in various global programmes organized in Germany, USA, Mexico, Uruguay and Japan. He has developed several crop varieties like "JG 322": "JGG 1": "JG 63": "TJM 3": Wheat JW 3173, JW 3211, JW 1203 and JW 1202, JW 1215, JW 3288, Jawahar Fababeen-1 and 2 early maturing rice hybrids: JRH-4 & JRH-5, JRH -8, JRH-19, and JR 81, improved chinoor, Jeera Sanker and JS 97-52. He was associated with establishment of brand image for high quality seeds and planting materials called Jawahar Seeds which led to Jawaharlal Nehru Agriculture University emerged as a top ranking institution for breeder seed production in the National Agriculture Research System (NARS) in India. He has published over 200 research papers and several articles in national and international Journals and edited a book on promotion of public bred hybrids of field crops.

He has been in the various committees of national agriculture research and development system like Board of Directors of Management Committee of MP Seeds/ MPSSCA/ MPSSCA/ M.P. State Cooperative Seed Federation and Marketing Ltd., Member of the Broad Subject Matter Area Committees for assisting the National Core Group for the restructuring of Master's and Doctorate degree course curricula and syllabi., Member of RAC, IMC, QRT of several ICAR Institutes in the country, Member of the Germplasm Registration Guideline Formulation Committee, ICAR, NBPGR New Delhi, Member of the Task Force Committee to streamline and ensure the registration of Extant notified varieties of ICAR-SAU system with the protection of PVPFRA, Member of the Task Force on Documentation, Indexing and Cataloguing of farmers' varieties (Task Force 02/2014). PPVFRA, MOA, GOI (2014), Co-convenor of the Fifth Dean Committee constituted by the ICAR for Agriculture Science (2014-2015), Chairman, Research Advisory Council Indian Institute of Seed Research MAU ICAR (2014-2017) and Member of accreditation team of ICAR for Assam Agriculture University, Assam (2016) and others.

His contributions have been recognized with several awards such as Rafi Ahmed Kidwai Award for Biennium 2007-2008 for Outstanding Contribution in Field of Crop Science by Indian Council of Agriculture Research, New Delhi, India on 16.7.2009, Dr. Kailash Nath Katju Award for Year 2008 for Contributions in Science by Government of Madhya Pradesh on 17.9.2010, ICAR Award for Outstanding Inter-Disciplinary Team Research in Agriculture and Allied Sciences for Biennium 2007-2008 for Outstanding Research Contribution in Soybean Improvement on 16.7.2010, Achievers Award 2010 for Contribution in Agriculture Development by Society for the Advancement of Human and Nature (SADHNA) during 2011. He is actively associated with several professional societies and awarded Fellow of the National Academy of Agriculture Sciences, India, Indian Society of Pulse Research and Development and Indian Society of Genetics and Plant Breeding.

Forage Resource Development in India: Looking Ahead

Ladies and Gentlemen, on the occasion of Institute's 56th Foundation Day, it is my pleasure to be associated with the ICAR-Indian Grassland and Fodder Research Institute (ICAR-IGFRI), Jhansi. First of all, I take this opportunity to congratulate each and every member of IGFRI family on this important event. Completing 55 years of glorious journey is a historical moment for an institute and at the same time, it also provides retrospective and prospective platform in light of emerging challenges and opportunities.

Established on 1st November, 1962 by Government of India, ICAR-IGFRI has shown excellence in field of research on forage crop improvement, production, utilization and rangeland development. Indeed, it is the only research institute working on range grasses and legumes for the development of livestock, grazing lands, pastures and which are all linked with the upliftment of resource poor and under privileged farmers, rural women, nomadic tribes and graziers in Asia. Many suitable technologies have been developed and demonstrated for maximizing fodder and seed production in different agro-climatic situations and under various crop rotations and land uses. Year round fodder production technologies were developed to meet the requirement in lean period. Various post harvest technologies and machines for fodder cultivation has been developed and popularized. The institute had worked on means and ways for forage production and utilization from non-arable lands and developed grasslands in Madhya Pradesh, Rajasthan, Bihar, Arunachal Pradesh, Sikkim, Himachal Pradesh and others in association with State Governments and NGOs. Different fodder technologies have been showcased under various outreach programmes in Bundelkhand, Leh, Chhattisgarh, and all over the country through NIFTD and gained appreciation among the stakeholders. The key national programmes for the welfare of farmers such as Mera Gaon Mera Gaurav (MGMG) programme is also under operational with complete zeal to develop fodder based dairying in 80 villages of Bundelkhand region. The institute took a lead and successfully organized 23rd International Grassland Congress in 2015 for the first time in India and brought international recognitions. Considering institute's outstanding achievements and contributions to the farming community, the institute has recently been bestowed with prestigious '*Sardar Patel Outstanding ICAR Institution Award 2015*'.

Livestock sector and forage resources

The two main components of our mixed farming system are crop and livestock, which influence our agricultural economy and provide sustenance. The importance of livestock in India's economy can be gauged from the fact that 90 million farming families, cultivating 140

million hectare area, rear 90 million milch animals. Livestock production is an important source of income and employs 8% of the country's labour force. Milk production alone involves more than 30 million small producers, each raising one or two cows or buffaloes. Livestock provides a large share of draught power, with about half the cattle population and 25 per cent of the buffalo population being used to cultivate 60 million ha of crop land. It acts as a supplementary and complementary enterprise. Thus livestock plays a significant role in the economic development and contributes over 27% of the agricultural GDP. Thanks to our rich genetic diversity, institutional infrastructure, competent human resource and policy support for linking small holder farmers to markets that have enabled us to witness 'White Revolution' in the country. Today India is the world's leading milk producing country.

But India possesses around 512 million heads of livestock, which accounts for around 15% of world's livestock population in 2% of world's geographical area indicating huge pressure on land. It has been projected that the demand for milk and meat will be around 400 and 14 million tonnes, respectively by the year 2050; whereas the present production (2016) is around 155 and 7 million tonnes, respectively. Hence, there is an urgent need for improvements in productivity of livestock. This will require overcoming feed and fodder scarcity and improvements in delivery of animal health and breeding services. At present (2017), the country faces a net deficit of 32% green fodder, 11% dry crop residues and 44% concentrate feed ingredients. In India, out of 55 micro-regions as much as 43 micro-regions are deficient in fodder resources.

Despite this precarious situation, forage production and development have not received its due importance. It has remained as 'Grey Area' as far as forage seed production and availability are concerned. The main challenge is of ownership by both agriculture and animal husbandry departments. Dairy farmers now require new knowledge on innovations which can help them to produce more from less input and support them to improve their livelihood. Largely the livestock farmers are small and landless, and they require both technical and financial supports. Under this circumstance, we need to have strategies and policy supports with a clear road map for effective implementation.

Strategies and policy supports

The forage resource development is a more complex issue than food and commercial crops. Lack of momentum in fodder development in the country owes much also to poor organizational structure. Keeping in view the huge livestock population and their nutritional security, the area under fodder cultivation should not be less than 10% of the gross cropped area.

Indian grasslands are also most neglected and abused ecosystems in the country. Indian grasslands/grazing lands have been observed as fragile eco-systems and ranked them as class IV and V in their land capability classification. The carrying capacity of these areas is 0.20 to 1.47 adult cattle units (ACU)/ha, but the present stocking rates are much higher. In semi-arid areas, the present stocking rates are 1 to 51 ACU/ha against the carrying capacity of 1 ACU/ha, while in the arid areas, the stocking rates are 1 to 4 ACU/ha against the carrying capacity of 0.2-0.5 ACU/ha. Thus overgrazing has caused the near complete loss of edible forage species. A holistic approach is required for grassland development. If grasslands are removed from a village, it disturbs the whole village, its economy, social aspects and may lead to migration of people. Therefore, keeping grassland intact, progressive, prosperous and well harmonized with agriculture systems and development programs is the utmost important, particularly in India.

Action points for implementation

- Area-based approach for cultivated green forage production
- Integrating forage production with food and other crops
- Rejuvenation of grazing lands/common property resources
- Promoting forage production from problem soils/wastelands
- Monitoring the availability of forages from forests
- Promoting fodder species under agro-forestry initiatives
- Promoting area/situation specific hydroponic green fodder production
- Promoting the forage bank concept of preserving surplus production from rangelands/grasslands during rainy season
- Growing forages on bunds or fodder tree based boundary plantations under non-competitive land use approach
- Exploiting non-conventional/underutilized fodder resources that can provide green herbage to animals under varied management conditions
- Establishing a national centre of excellence (CoE) for fodder and pasture development

Policy supports needed

- *Judicious use of available crop residues:* Policy guidelines to prevent the burning of crop residues in fields need to be put in place covering all the states with stringent implementation and monitoring. Similarly, diversion of edible crop residues towards packaging industry and bio-fuel production needs to be checked.
- *Allowing grazing or harvesting of forage resources from forests:* A synergistic approach between the forestry and livestock departments needs to be adopted for the controlled use of grasses in forest margin which supply a considerable quantity of forages for our livestock.

- *National grazing-cum-fodder and pasture management policy*: It should address issues pertaining to diversion of grazing lands for other purposes, conversion of critical grassland habitats into plantations, research on grassland ecology and pasture management, capacity building of managers and resource users, rehabilitation of degraded grazing lands, collaborative management of grazing lands and fodder resources with local communities.
- *Insurance and minimum support price for fodder crops*: Fodder crop should get a central place within the various agro-ecosystems and be treated at par with the facilities provided to agricultural crops like crop insurance, minimum support price (with the concept of fodder bank) and similar other benefits.

Prioritization of research

- Breeding programmes on cereal crops should include improvement in grain as well as in crop residue in terms of quantity and quality
- Development of multi cut and nutritive varieties of fodder crops for cultivated areas and perennial grasses and legumes for arid and semiarid pastures
- Developing techniques for production of hydroponic fodder in rural areas and more useful in arid and hilly regions, and in areas of high population density where there are scarcities of cultivable land and water
- Assessment of carbon foot prints in the complex fodder-animal-human chain to develop adaptation to climate change and mitigating the greenhouse gas emissions to minimize climate change

Convergence and strengthening linkages

- Tailoring forage resource development related activities keeping in view the policies of Central Government with developmental and livelihood supporting projects such as Horti-Mission, MGNREGA, and the National Rural Livelihoods Mission etc
- Providing supports from Central and State Governments for credit and market linkages to forage based livestock production to enable livestock keepers to improve their income from animal husbandry
- Establishing producer companies, market linkages with private sector agencies involving research and education institutes along with farmers participation in a holistic manner

Once again, congratulation to you all on this 56th Foundation Day Celebration of the Institute and wish a great success in your future endeavors to serve the farming community with green production processes through dedicated works.

Good Luck!



एक कदम स्वच्छता की ओर



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