



# ANNUAL REPORT

2014-15

  
NATIONAL ACADEMY  
OF  
AGRICULTURAL SCIENCES



**National Academy of Agricultural Sciences**

NASC, DPS Marg, New Delhi - 110 012, India

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## PREFACE

The National Academy of Agricultural Sciences (NAAS), a credible think-tank and platform for science-policy interface, leads in promoting excellence and convergence of agricultural research, education and extension for the growth of national economy with a dynamic farm sector. In pursuance of this mission, the Academy has been organizing congresses, conferences, brainstorming sessions, consultations, lectures and dialogues on important research, innovation, development and policy issues, and communicating their outcomes to the concerned stakeholders towards promoting ecologically sustainable, economically vibrant and socially equitable agriculture. This Report presents an account of the Academy's activities during the year 2014-15 focused to meet these objectives.



*Dr. S. Ayyappan*

During the year, the Academy organized ten brainstorming sessions, interactive sessions and lectures, including the Foundation Day Lecture delivered by Bharat Ratna Prof. C.N.R. Rao, National Research Professor, Linus Pauling Research Professor and Honorary President, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru on 'Doing Science In India' on June 5, 2014. He expressed that quality higher education in India still remains elite in nature and not accessible to a large population.

The NAAS organized the 12<sup>th</sup> Agricultural Science Congress with the theme of 'Sustainable Livelihood Security for Smallholder Farmers' at National Dairy Research Institute (NDRI), Karnal during February 3-6, 2015, this came as a follow up of the year 2014, declared as the 'International Year of Family Farming' by the United Nations. The event was an unprecedented gathering of the Fellowship as well as the Agri-fraternity in the cause of Smallholder farmers.

I place on record my gratitude to Prof. R.B. Singh, Immediate Past President, NAAS; the NAAS Executive Council; Prof. Lalji Singh, Dr. P.L. Gautam, and Prof. Anupam Varma (w.e.f. 1.1.2015) Vice-Presidents; Prof. N.K. Singh, Prof. M.P. Yadav, Dr. K.V. Prabhu (w.e.f. 1.1.2015) Secretaries; Dr. S.M. Virmani, the Foreign Secretary; Prof. P.K. Chhonkar, Dr. (Ms.) Prem Dureja and Dr. K.K. Vass (w.e.f. 1.1.2015), Editors; and Dr. Himanshu Pathak, Treasurer, for their guidance and contributions. I would like to thank Prof. Anupam Varma, Editor-in-Chief of the NAAS journal, 'Agricultural Research', for his untiring

efforts in bringing out all issues of the Journal on time and the high visibility that the journal has brought to the Academy. I am grateful to the Conveners of the brainstorming sessions, Silver Jubilee symposia, and special lectures for successfully organizing each event.

My sincere thanks are due to Colleagues in NAAS Secretariat, Shri H.C. Pathak, Shri P. Pande, Shri Miraj Uddin, Ms. Minu Tiwari, Shri P. Krishna, Shri Umesh Rai, Shri Jai Singh, Shri Kamal Singh and Shri Banwari Lal for effectively managing the day to day activities of secretariat. The financial and logistics support of the DARE and ICAR is gratefully acknowledged.



**S. Ayyappan**

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## ABOUT THE ACADEMY

Inspired by the vision of the late Dr. B.P. Pal, FRS, the National Academy of Agricultural Sciences (NAAS) was established in 1990. The main focus of the Academy is on the broad field of agricultural sciences including crop husbandry, horticulture, animal husbandry, fisheries, agro-forestry, agricultural engineering, and interfaces between agriculture and agro-industry. The Academy's role is to provide a forum for agricultural scientists to deliberate on important issues of agriculture, agricultural research, education and extension, and offer views of the scientific community as policy inputs to planners and decision/opinion makers at various levels. The Academy organizes and supports national and international congresses, conferences, seminars, symposia, workshops and brainstorming sessions on the critical issues in the field of agricultural sciences. It articulates issues of agricultural research and education in various fora.

### OBJECTIVES

- ❖ To promote ecologically sustainable, economically vibrant and socially equitable agriculture.
- ❖ To recognize and support excellence in scientific research in the field of agriculture performed by scientists.
- ❖ To provide promising scientists with the conditions necessary for the advancement of their work.
- ❖ To promote contact among research workers in different institutions and organizations within the country and with the world scientific community.
- ❖ To organize and undertake inter-disciplinary analyses of issues of importance to farmers, farming and agrarian transformation to strengthen science-policy interface and bring out documents for the advancement of agricultural research, extension and education for development.
- ❖ To secure and manage funds and endowments for the promotion of agricultural sciences.
- ❖ To carry out other activities relevant to the accomplishment of the above goals.



The Academy has emerged as a vibrant national level body devoted to agricultural sciences. The Fellows of Academy, recognized for their contributions to science include distinguished personalities in the field of agriculture and allied sciences, both from India and abroad.

## Structure of the Academy

- ❖ The General Body: The General Body of the Academy is constituted by its Fellows.
- ❖ The Executive Council: EC is the main policy and decision making body. It is assisted by different Committees to deal with various aspects of governance of the Academy.
- ❖ Regional Chapters: Fourteen Regional Chapters of the Academy are functioning at Bengaluru, Bhubaneswar, Chennai, Hyderabad, Jodhpur, Jorhat, Karnal, Kochi, Kolkata, Lucknow, Ludhiana, Mumbai, Nagpur, and Patna.

## SCIENTIFIC ACTIVITIES

### *XII Agricultural Science Congress – Biennial Event*

XII Agricultural Science Congress (XII ASC-2015) under the aegis of NAAS in collaboration with Indian Council of Agricultural Research (ICAR) was organized at



National Dairy Research Institute, Karnal, Haryana during February 3-6, 2015. The theme of the XII ASC was '*Sustainable Livelihood Security for Smallholder Farmers*', with an objective of promoting a vibrant platform for discussing and exchanging views on contemporary topics in Indian Agriculture such as Crop and Vegetable Production,

Animal Production Systems, Fisheries Technologies and related Social Science issues. The Congress was attended by over 1700 participants representing the Faculty & Students from 42 SAUs and 9 Traditional Universities, 32 ICAR Institutes, 600 Farmers, KVKs, ZPDs, NGOs, the World Bank, banking institutions and policy makers from the State and Central departments. The international representation included ILRI, CIMMYT, Michigan State University (USA), IFPRI, BISA, and Polish Academy of Sciences. The Congress was inaugurated on February 3, 2015 by the Chief Guest Hon'ble Governor of Punjab

and Haryana, Prof. Kaptan Singh Solanki. Mr. Kevin Gallagher, FAO representative in India; Dr. David Bergvinson, Director General, ICRISAT, Hyderabad; Dr. Jimmy Smith, Director General, International Livestock Research Institute, Nairobi, Kenya; Dr. J. Voegelé, Senior Director, World Bank, Washington, USA; Dr. Sanjaya Rajaram, World Food



Prize winner and Former Director, CIMMYT Global wheat programme; Dr. R.S. Paroda, Past President NAAS, Prof. R.B. Singh, Immediate Past President, NAAS were Guests of Honour. Dr. S. Ayyappan, President NAAS, Secretary DARE & Director General, ICAR presided over the inaugural function. Dr. A.K. Srivastava, Convener of Congress, Director & Vice-Chancellor, NDRI extended a hearty and floral welcome to the chief guest, all dignitaries, distinguished participants and delegates, and gave an overview of the Congress.

Dr. S. Ayyappan in his welcome address highlighted the achievements of agriculture sector and also outlined the second generation challenges facing the sector. He stressed that for more sustainable growth, the problems of small farmers need to be addressed. He stressed that 'robust agriculture can make strong India'. He also gave the slogan of '*Smart farming for small farmers*' and called upon scientists to understand and work on the issues of small farmers. In his inaugural address, Prof. Kaptan Singh Solanki, Hon'ble Governor of Haryana, lauded the organizers for organizing such an important conference and said that we all have gathered here for the National cause as farmers are the pillars of agriculture. He emphasized that the problems faced by the small farmers are unique and the scientific community should take lead in educating the farmers with new technologies for optimum utilization of resources available with the farmers. On this occasion, Hon'ble Governor also presented the Academy Awards, certificates to New Institutional Members of NAAS and released the Compendium of the Congress, a documentary on NAAS and other publications. He declared the Congress open and wished all delegates intellectually beneficial discussion and implementable output from the celebrations. On February 4, 2015 three plenary lectures were presented by Dr. Juergen Voegelé; Dr. R.S. Paroda, and Dr. Jimmy Smith. The scientific programme was covered under 12 Technical Sessions, 6 Plenary Lectures, 2 Round Table Meetings on Plant and Animal Science issues, an elaborate poster session, the Inter-Zone Elocution Contest by students, the young

scientist presentations by researchers of below 35 years, a specially organized Farmers Session and ASC India Expo. The scientific programme was deliberated by more than 50 eminent invited and plenary speakers.

## TECHNICAL SESSIONS

- ❖ Livelihood security for smallholder farmers
- ❖ Attracting and retaining youth in agriculture
- ❖ Skill and human resource development for diversification of employment and income opportunities
- ❖ Linking small holder farmers with market
- ❖ Intensification of livestock production for smallholder and landless farmers
- ❖ Group dynamics of smallholder farmers, SHG, producers companies, cooperatives and contract farming
- ❖ Mechanization & post-harvest technologies for small farmers
- ❖ Natural resource management & climate change: international perspective
- ❖ Policy challenges for protecting smallholder farmers
- ❖ Empowerment of women in agriculture
- ❖ Credit flow and insurance support to smallholder farmers
- ❖ Special Session : Curbing Regional issues for Profitable Agriculture

The issue of Group dynamics of smallholder farmers being key to their sustainability was deliberated in detail. *How to retain and attract youth in agriculture* was deliberated as one of the core theme areas during the congress. Along with other issues the effect of climate change was deliberated by several speakers. It was recommended that the concept of Climate Smart Villages must include several risk management interventions and provide an opportunity for building effective resilience strategies. One of the technical sessions was especially dedicated for intensification of livestock as a means of sustainable livelihood security of small holder farmers. The Valedictory function was held on February 6, 2015 with Hon'ble Chief Minister of Haryana Shri Manohar Lal Khattar as the Chief Guest. Shri Khattar in his address stressed that small farmers cannot sustain long on the wheat and rice cultivation cycle, and they should go for community and cooperative farming to reduce the input costs. He presented awards to the winners of Best Poster Presentation

and young researchers. Dr. S. Ayyappan, on this occasion in his remarks, said that a 'Farmer to Consumer' approach is required to be put in place to avoid middlemen. Small farmers are to be trained to familiarize them with technology in production planning, consumer access and financial management. Prof. A.K. Srivastava, Director, NDRI in his concluding remarks lauded the efforts of the small



farmers in making the nation secure on the food front. Prof. M.P. Yadav, Secretary, NAAS proposed vote of thanks on the occasion.

## Brainstorming Sessions

During the year 2014-15, following brainstorming sessions were organized:

Sl. No.	Title	Convener	Dates
1	Preparedness for Monsoon 2014	Dr. A.K. Sikka	June 6, 2014
2	Monitoring and Evaluation of Agricultural Research, Education and Extension for Development (AREE4D)	Dr. P.G. Chengappa	June 28, 2014
3	Hydroponic Fodder Production in India	Dr. H.S. Gupta and Prof. M.P. Yadav	July 5, 2014
4	Developing PME Indicators and Mechanisms in NARS	Dr. Mruthyunjaya	July 12, 2014
5	Breeding Policy for Bovines in India	Dr. M.L. Madan and Prof. M.P. Yadav	July 12, 2014
6	Linking Smallholder Farmers and Markets : Towards inclusive Growth in Indian Agriculture	Dr. Anjani Kumar	July 26, 2014

Sl. No.	Title	Convener	Dates
7	Reservoir Fisheries Development in India: Management and Policy Options	Dr. W.S. Lakra	September 19, 2014
8	Sustaining Soybean Production and Productivity in India- A Resource Domains Initiatives	Dr. S.M. Virmani	November 28, 2014
9	Rating of Agricultural Universities and Institutions	Prof. R.B. Singh	December 4, 2014
10	Good Aquaculture Practice Certification in India	Dr. Iddya Karunasagar	December, 29-30, 2014

### Preparedness for Monsoon 2014 (Convener: Dr. A.K. Sikka)

A Brainstorming on *'Preparedness in the Wake of Possible Rainfall Deficits During the Ensuing South West Monsoon'* was organized at NAAS, New Delhi on June 6, 2014. The session



was chaired by Dr. S. Ayyappan, President NAAS. Dr. A.K. Sikka, DDG (NRM) informed the house about the possible scenarios that may include delayed onset, prolonged dry spells early, withdrawal, less or excessive rainfall and other extreme weather events. To mitigate the impacts of these scenarios he elaborated

that ICAR in collaboration with State Agricultural Universities through CRIDA has prepared more than 500 district level contingency plans covering 23 states to tackle aberrant monsoon situations that lead to drought and floods, adversely affecting crops, livestock and fisheries. All the 500 district plans are in the 'Farmer Portal' of the Ministry of Agriculture, Government of India (<http://www.farmer.gov.in>) and also on the ICAR/CRIDA website (<http://www.crida.in>) for downloading the full plan by stakeholders for operational use.



## Monitoring and Evaluation of Agricultural Research, Education and Extension for Development (AREE4D) (Convener: Dr. P.G. Chengappa)

A Brainstorming on *'Monitoring and Evaluation of Agricultural Research, Education and Extension for Development (AREE4D)'* was organised on June 28, 2014 at the Institute for Social and Economic Change (ISEC), Bengaluru. Dr. P.G. Chengappa, National Professor, ICAR and Convener stressed the importance of Monitoring and Evaluation (M&E) for rational investment decisions and enhancing the development effectiveness in agricultural research, education and extension (AREE). Dr. Chinnadurai, Director, CARDS, TNAU, in his remarks expressed the need for M&E because large number of



projects that are being implemented the funding agencies are keen in assessing the impacts of such projects. Both Government and donor agencies look for the outputs and impacts of the projects being implemented at the NARS, through third party evaluation but paucity of trained M&E personnel are the major hurdle in having proper evaluation. The BSS suggested suitable recommendations and action plan. Prof. M.P. Yadav, Secretary, NAAS and Chief Guest in the inaugural session underlined the importance of PME for enabling funding agencies to support AREE programmes linked to development and livelihood of farmers.

## Hydroponic Fodder Production in India (Conveners: Dr. H.S. Gupta and Prof. M.P. Yadav)



A Brainstorming on *'Hydroponic Fodder Production in India'* was organized at NAAS, New Delhi on July 5, 2014. The session was chaired by Dr. S. Ayyappan, President, NAAS and Co-chaired by Prof. R.B. Singh, Immediate Past President. Dr. S. Ayyappan expressed that through hydroponic

technique, it is possible to achieve comparable fodder production to conventional practices. Prof. R.B. Singh emphasized the need for preparing a green fodder deficit map for entire India to access the problem in finding plausible solutions. Dr. H.S. Gupta, Director, IARI and Convener informed that though India is the largest producer of milk in the world, the productivity per animal is low for which inadequate nutrition including green fodder is a major limiting factor. Since there is no scope for horizontal expansion of land for fodder production or grazing, there is a need to harness the potential of hydroponic fodder production (HPFP). Prof. M.P. Yadav explained that HPFP technology has several advantages, such as highly nutritious and palatable fodder, minimal use of pesticide, conserving water, soil, saving of time and labour, and uninterrupted supply throughout the year. Dr. Ayyappan opined that ICAR institutes and KVKs should consider establishing hydroponic fodder production units. Dr. M.J. Saxena suggested that Ayurvet has so far commissioned 12 commercially viable indigenously HPFP machines in various parts of the country. He suggested that a delegation of scientists and farmers may visit these units and give their opinion to NAAS.

### Developing PME Indicators and Mechanisms in NARS (Convener: Dr. Mruthyunjaya)

A joint Brainstorming of NAAS-IFPRI was organised at NAAS, New Delhi on July 12, 2014. The session was chaired by Dr. Mruthyunjaya, Ex-National Director,



NAIP, ICAR. Dr. P.K. Joshi, Director-South Asia, IFPRI, New Delhi emphasized the concerns about the institutionalization of the Project Monitoring & Evaluation (PME) in ICAR and the need for developing simple PME indicators and mechanisms in NARS. Dr. N.K. Singh, Secretary, NAAS expressed that systematic scientific studies on costs and

returns to investment in research projects are important for research resource allocation and assessing the impact. Dr. Mruthyunjaya reiterated that input from PME is itself not a decision but an aid to decision making.

## Breeding Policy for Bovines in India (Conveners: Dr. M.L. Madan and Prof. M.P. Yadav)

A Brainstorming on '*Breeding Policy for Bovines in India*' was organized at NAAS, New Delhi on July 12, 2014. The session was chaired by Dr. S Ayyappan, President NAAS and Co-chaired by Prof. R.B. Singh, Immediate Past President NAAS. Prof. M.L. Madan presented a SWOT analysis of the breeding policy for bovines. He opined that livestock has far-reaching implications for the rural poverty alleviation, women empowerment, combating protein deficiency, production system sustainability and ecosystem stability. As livestock is mostly owned by resource poor population including marginal, small and landless farmers; inclusiveness in growth and development are possible at a faster pace through livestock R & D activities. Need for appropriate breeding policy for cattle and buffalo at National and State level was emphasized with holistic approach addressing issues of health protection, providing balanced and adequate nutrition, market linkage, value addition and policy backup. Several policy options and strategies were discussed.



## Linking Smallholder Farmers and Markets - Towards Inclusive Growth in Indian Agriculture (Convener: Dr. Anjani Kumar)

A Brainstorming on '*Linking Smallholder Farmers and Markets: Towards Inclusive Growth in Indian Agriculture*' was organized at NAAS, New Delhi on July 26, 2014. The session was chaired by Dr S. Ayyappan, and Prof. R.B. Singh, President and Immediate Past-President,



respectively of NAAS. Several policy options and strategies were discussed to strengthen the linkage between farmers and markets to ensure inclusive agricultural growth in India. A few of them emerging from the deliberation are; (i) different strategies for different categories and regions of



farmers; (ii) SWOT analysis for each model before execution; (iii) financing, registration of contract, assured market and linked prices and risk aversion plans; (iv) delineation of agri-business zones for different commodities on cluster-based approach; (v) developing hub-and-spoke approach for marketing of farm outputs and inputs; (vi) the NARS to lay due emphasis on market driven agricultural technologies for effective adoption, higher productivity, more returns, contributing to higher agri GDP growth; (vii) need for market research and intelligence, encouraging incubation and mentoring for new entrepreneurship (viii) evolving innovative licensing models for risk sharing and equity participation to strengthen linkages and partnership among different kinds of stakeholders.

### **Reservoir Fisheries Development in India: Management and Policy Options (Convener: Dr. W.S. Lakra)**

A Brainstorming on '*Reservoir Fisheries Development in India: Management and Policy Options*' was organized at NAAS, New Delhi on September 19, 2014. The session was chaired by Dr. S. Ayyappan, President NAAS. Several issues concerning fishery development in reservoirs were discussed in detail. Dr. Ayyappan in his remarks emphasized to explore



the possibility of branding reservoir fish as organic since it was raised in natural ecology and is preferred by consumers. He expressed that for new reservoirs, the fisheries development plan should be incorporated from the planning stage itself. He

impressed on the experts to discuss all the critical issues confronting the reservoir fisheries development in a fresh perspective. Dr. Lakra, Convener and Director, CIFE made a lead presentation outlining the priority concerns of bridging the existing gap between actual fish productivity and potential in a sustainable manner to improve the livelihoods of reservoir fishers. He emphasized that policy and governance issues need to be addressed to tackle the complex issues of conflicting inter-sector water demands, ownership of water bodies, and ecosystem conservation.

### **Sustaining Soybean Production and Productivity in India-A Resource Domains Initiatives (Convener: Dr. S.M. Virmani)**

A Brainstorming on '*Sustaining Soybean Production and Productivity in India – A Resource Domains Initiatives*' was organized at NAAS, New Delhi on November 28, 2014.

Dr. Mangala Rai, Former DG, ICAR and also the architect of Oilseeds Mission of GOI chaired the session. The BSS was attended by large number of experts from NAAS fellowship, ICAR Scientists and Vice-Chancellor of SAU's. The Convener Dr. Virmani, in



his presentation highlighted the contribution of soybean to the Indian economy and in greening rainfed ecoregions of the country. On different themes/ aspects of soybean many researchers gave their presentations. The important issue of import of soya oil and the export of soya cake was deliberated in detail. The BSS came up with fourteen (14) recommendations to be implemented by different stakeholders to achieve sustainable soybean production in the country. It was strongly suggested that NAAS may take an initiative to formalize, in a PPP frame work, a mission mode project on soybean, involving ICAR- DAC-MOEFCC.

## Rating of Agricultural Universities and Institutions (Convener: Prof. R.B. Singh)

A Brainstorming on '*Rating of Agricultural Universities and Institutions*' was organized at NAAS, New Delhi on December 4, 2014. It was convened by Prof. R.B. Singh,



Immediate Past President, NAAS. Dr. S. Ayyappan, President, NAAS chaired the session and gave a brief account about the need and the genesis of the BSS, particularly in context of the concern expressed by Hon'ble President and Prime Minister of India, that none of our universities and institutions find a

place in the top 200 universities globally as per the ranking by various agencies abroad. He informed that Govt. of India has constituted a Committee to advice on the ranking of the Indian universities. Presently, India has 70 Agricultural Universities inclusive of Veterinary, Animal Sciences, Fisheries and Horticulture, thus constituting about 10% of the total of around 700 universities in India. Dr. Ayyappan emphasized the need to

have a database on agricultural universities and institutions in the country. After a lot of discussion by eminent scientists, there was a consensus for a requirement for ranking of our agricultural universities/institutions which need to be taken up on priority. A small committee of 4-5 expert members be formed by the Academy for the purpose. The first mandate of this committee should be to finalize the indicators of benchmarking suitable for agricultural universities/institutions. The Committee should submit its report as early as possible for taking the matter further.

### **Good Aquaculture Practice Certification in India (Convener: Dr. Iddya Karunasagar)**

A Brainstorming on '*Good Aquaculture Practice Certification in India*' was organized on December 29-30, 2014 at NAAS, New Delhi. Dr. S. Ayyappan, President, NAAS and



Prof. R.B. Singh, Immediate Past President, NAAS addressed the Session. Dr. Iddya Karunasagar, Senior International Consultant, FAO was the Convener of the Session, which was attended by 22 participants from various organizations such as Bureau of Indian Standards, Quality Council of India, National

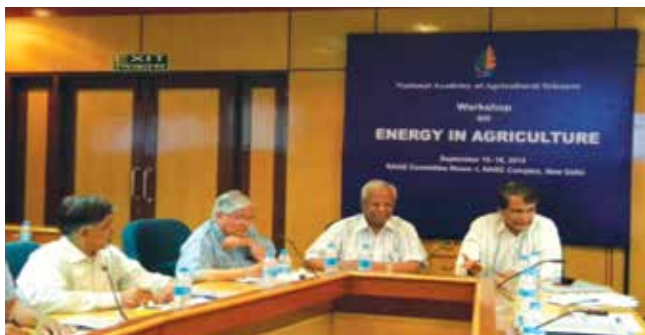
Accreditation Board for Certification Bodies, Coastal Aquaculture Authority of India (CAA), National Fisheries Development Board (NFDB), Marine Products Export Development Authority (MPEDA), Central Institute of Brackish Water Aquaculture, Central Institute of Freshwater Aquaculture, Central Marine Fisheries Research Institute, State Agriculture Universities and private certified auditors for aquaculture farms. After in depth deliberations, recommendations for Good Aquaculture Certification in India were brought out.

### ***National Workshops***

### **National Workshop on Energy in Agriculture (Conveners: Prof. Anwar Alam and Dr. P. Chandra)**

Two day workshop was organized at NAAS on September 15-16, 2014 to deliberate and

draw out a road map on the vital subject of '*Energy in Agriculture*' under the convener-ship of Prof. Anwar Alam, Former Vice-Chancellor, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Srinagar, J&K, and Dr. P. Chandra, Ex. Director, Central Institute of



Agricultural Engineering, Bhopal. At the inaugural session Shri Suresh Prabhu, Chairman, Council for Energy, Environment and Water, while discussing Energy Status in India, observed that over a period of time, energy intensity in agriculture has gone up considerably because we are using more of ground water, lifting from great depths. Ground water is depleting rapidly increasing lift ultimately increases the use of commercial energy – diesel and electricity and Modern agriculture is not possible without commercial energy. For their efficient use, both power and water use should be metered and monetized. Solar power will be half of the cost of coal power. Recalling Rio+20 Declaration, he told the goal is 'green energy', 'green agriculture', and 'green economy'. Fossil and living energy should exist together. Prof. Anwar Alam presented a comprehensive paper on Energy Footprints of Indian Agriculture. Dr. P. Chandra and Dr. K.C. Pandey elaborated on the Potential of Fossil Feed Replacement in Agriculture by Green Energy. Scope of Renewable Feeds for Engine Power was emphasized by Dr. Murari Shyam.

### **National Workshop on Water in Agriculture (Conveners: Dr. Himanshu Pathak and Dr. B.P. Bhatt)**

A National Workshop on '*Water in Agriculture*' was organized on October 7-8, 2014 at ICAR Research Complex for North East Hill Region, Barapani, Meghalaya under the Convener-ship of Dr. Himanshu Pathak, Professor, Center for Environment Science and Climate Resilient Agriculture, IARI, New Delhi and Dr. B.P. Bhatt, Director, ICAR-Research Complex for Eastern Region, Patna. The Session was attended by more than 60 participants who discussed current status of water in agriculture; technological frontiers; water management in various sectors including livestock and fisheries and regions such as North East Hill region, Eastern India and north west India; water, climate change and pollution, and water policies, institutions and governance. Experts including Dr. J.S. Samra; Dr. A.K. Sikka, Dr. A.K. Singh, Dr. S.M. Virmani, Dr. K.M. Bujarbaruah, Padma Bhushan Shri C.P. Bhatt, and Dr. B.R. Sharma made presentations and gave valuable inputs.



## Special lecture

### Science of Cow Mega-bodies (Mega-antibodies) for Better Human Health

A special lecture on '*Science of Cow Mega-bodies (Mega-antibodies) for Better Human Health*' was delivered by Dr. Azad Kumar Kaushik, University of Guelph, Ontario, Canada on

January 22, 2015 in the NAAS Lecture Hall at NAAS, New Delhi. Dr. Kaushik emphasized the novelty of the antibodies of cow (cattle) among all the other animal species studied as the cattle antibodies are the longest, i.e. having up to 65 amino acids as compared to the usual 22-25 amino acids in other species. Cows produce the large sized antibodies among whole animal kingdom. These antibodies are distinct and poised to be more effective at attacking diverse species of bacteria and viruses. Dr. Kaushik opined that by giving more emphasis on production traits in the selection of livestock we have lost lots of good genes, particularly those responsible for health. His researches indicate that these so called mega antibodies of cattle would be ideal next-generation therapeutics

and have the potential for forming the basis of new vaccines, diagnostics, medicines and immune-modulator agents to treat and prevent human diseases.

## Award Lecture

### Dr. A.B. Joshi Memorial Lecture

The second Dr. A.B. Joshi Memorial lecture on '*Zero Hunger India : The Challenge*' was delivered by Prof. R.B. Singh, Chancellor,



Central University, Imphal on February 6, 2015 during XII ASC at NDRI, Karnal. Prof. R.B. Singh paid rich tributes to the memory of the Late Dr. A.B. Joshi. Prof. R.B. Singh made a masterly presentation of the challenges faced by Indian Agriculture and mentioned that the Government of India has evolved several social safety nets to address these challenges. He ended by saying to meet our Zero Hunger Challenge we must be guided by the following profound words of the Father of the Nation: knowledge with character, commerce with morality, science with humanity, and politics with principle.

## Regional Chapters

A brief of activities organised by Regional Chapters during the year is detailed as under:

Chapter and Convener	Region(s) covered	Activities Organized
• <b>Bengaluru</b> <i>Dr. M. Udaya Kumar</i>	Karnataka	—
• <b>Bhubaneswar</b> <i>Dr. T. Mohapatra</i>	Odisha	An interaction meet with school students during Agriculture Education Day Interaction meet with Prof. M.S. Swaminathan
• <b>Chennai</b> <i>Dr. Ajay Parida</i>	Tamil Nadu; Puduchery	—
• <b>Hyderabad</b> <i>Dr. Ch. Srinivasa Rao</i>	Andhra Pradesh; Telangana	Agenda for Rainfed Agricultural Research and Drought Preparedness Guest Lecture on 'Role of CGIAR in Indian National Agricultural Research System'
• <b>Jodhpur</b> <i>Dr. J.C. Tarafdar</i>	Rajasthan; Gujarat	—
• <b>Karnal</b> <i>Dr. A.K. Srivastava</i>	Haryana; Chandigarh	Application of Animal Biotechnology for Sustained Agricultural Productivity Talk on 'Progress on Transgenic Animal Production in India'

Chapter and Convener	Region(s) covered	Activities Organized
• <b>Kochi</b> <i>Dr. A. Gopalakrishnan</i>	Kerala; Lakshdweep	—
• <b>Kolkata</b> <i>Dr. Biswapati Mandal</i>	West Bengal; Andaman & Nicobar	—
• <b>Lucknow</b> <i>Dr. P.S. Pathak</i>	Western U.P.; Uttarakhand, Bundelkhand	Reducing the cost of cane cultivation vis a vis sugar production
• <b>Ludhiana</b> <i>Dr. B.S. Dhillon</i>	Punjab; Himachal Pradesh; Jammu & Kashmir	—
• <b>Mumbai</b> <i>Dr. W.S. Lakra</i>	Goa; Western Maharashtra	NAAS Silver Jubilee Rally on Fisheries and its Importance
• <b>Nagpur</b> <i>Dr. K.R. Kranthi</i>	Madhya Pradesh; Vidharbha, Marathwada, Chattisgarh	—
• <b>NEH Region</b> <i>Dr. K.M. Bujarbaruah</i>	Assam; Sikkim; Manipur; Arunachal Pradesh; Nagaland; Mizoram; Tripura; Meghalaya	—
• <b>Patna</b> <i>Dr. B.P. Bhatt</i>	Bihar; Eastern U.P.; Jharkhand	Meet on IPR in Agriculture

## Patna Chapter

### Meet on IPR in Agriculture

The Patna Chapter of NAAS and ICAR Research Complex for Eastern Region jointly organized ‘*Meet on IPR in Agriculture*’ during February 27-28, 2014 at ICAR Research Complex for Eastern Region, Regional Research Centre, Ranchi. About 40 participants from different eastern states participated in the Regional Meet. Dr. R. Ramani, Director, IINRG, Ranchi Chief Guest and Dr. R.P. Singh Ratan, Director (Extension Education), BAU, Ranchi and Guest of Honour addressed the gathering, among others on various facets of IPR in agriculture.

## Hyderabad Chapter

On the National Science Day (28.02.2015) the Chapter organized a debate among students on the topic '*Agricultural Research as a Career Option*'. Dr. S.M. Virmani, Foreign Secretary of Academy was the Chief Guest and gave away awards to winners.

The chapter organized a Guest Lecture on '*Role of CGIAR in Indian National Agricultural Research System*' delivered by Dr. David Bergvinson, Director General, ICRISAT at CRIDA, Hyderabad on March 13, 2015. Dr. Peter Carberry, DDG, ICRISAT and Dr. Anthony Whitbread, Director,



Resilient Dryland Systems, ICRISAT, Dr. A. Padmaraju, Vice-Chancellor, ANGRAU, Directors of ICAR Institutes, Fellows of NAAS from Telangana and Andhra Pradesh, and scientists from CRIDA, NRSA and representatives from NGOs attended this lecture. Dr. Ch. Srinivasa Rao, Director, CRIDA, welcomed the dignitaries and participants to this special lecture. Dr. D. Rama Rao, Director, NAARM, Dr. Padmaraju, VC, ANGRAU, Dr. Witbread, ICRISAT and Dr. Peter Carberry, ICRISAT made very valuable suggestions in their opening remarks and suggested that there are plenty of opportunities for India, Africa and Australia to work together due to similar climate and challenges.

Dr. David Bergvinson in his lecture highlighted that the CGIAR system is committed to reduce poverty and hunger, improve human health and nutrition, and enhance ecosystem resilience through high-end research. He felt that there is a need for stronger coordination and complementarity between ICAR and CGIAR institutions. He suggested action plan for strategic partnerships that accelerate the development and delivery of farmer-preferred technologies in dryland areas. All participants actively participated in interactions which led to a major conclusion that the CGIAR system, ICAR and SAUs should work together for raising incomes and livelihood of farmers.

## Karnal Chapter

During the seminar on '*Application of Animal Biotechnology for Sustained Agricultural Productivity*' organized at NDRI, a one day meeting of NAAS-Karnal Chapter at Karnal on July 26, 2014 was organised. A total of 60 participants attended the meeting.



Dr. A.K. Srivastava, Director, NDRI emphasized that different agencies working in the region for the welfare of farmers and livestock keepers should come on a common platform with the NAAS Regional Chapter. He congratulated the team of scientists on their successes in cloning a buffalo calf, Rajat. Dr. A.K. Rawat, Director, DBT delivered a lecture on 'Application of Animal Biotechnology for Sustained Agricultural Productivity'. Subsequently, on December 27, 2014 the chapter also organized a special lecture that was delivered by Dr. Subeer Majumdar Scientist, National Institute of Immunology, New Delhi on '*Progress on Transgenic Animal Production in India*'. He highlighted in detail the importance of transgenic animals in Indian agriculture with specific reference to production of therapeutic proteins in milk and production of transgenic animals with higher growth rate. He informed that his group has developed an easy method for sperm mediated transgenic animal production technology in mice. This technology has high potential in farm animals, particularly cattle and buffaloes. He expressed confidence that his group in collaboration with the animal scientists in India shall be able to produce transgenic animals in near future.

### *Mumbai Chapter*

The NAAS Silver Jubilee Rally on '*Fisheries and its Importance*' was organized at CIFE, Mumbai, on November 29, 2014. The main objective of this rally was to create general awareness among the public and especially fisher folks about the fisheries education, research and its importance. It was addressed and flagged off by Dr. W.S. Lakra, Director and Vice-Chancellor of CIFE, Mumbai in the presence of Shri Pradeep Tapke, a prominent fisher community leader of Versova. A total 250 people, including students and staff members of CIFE participated in the rally, which covered major streets of Versova. Pamphlets containing information about fisheries education, extension and its importance were distributed during the rally.

### *Bhubaneswar Chapter*

The NAAS-Bhubaneswar Chapter organized an interaction meet with school students during Agriculture Education Day on November 14, 2014 at CRRI, Cuttack. A total of 200 students of class VIII to XII standard from 18 Schools and Junior Colleges around the city along with their teachers participated. The day-long celebrations included Debate competition on '*Can Modern Science Contribute to Climate-Resilient Agriculture?*'; Quiz competition on '*General Agriculture*'; and Group Song competition. Apart from this an Exhibition project competition was also organised to showcase the innovative ideas of the students in the form of models, lives was charts, graphs and live materials.

The Chapter organized another interaction meet on November 16, 2014 with Prof. M.S. Swaminathan, Former-President, NAAS at CRRI, Cuttack. Prof. Swaminathan emphasized on the role of public research institutes in agricultural development of the country and suggested that the climate and natural resource degradation issues must be addressed vigorously. He drew the attention of the scientists to the plights of small and marginal farmers. Describing the food security scenario of India, he advised that scientists should conduct research to increase the productivity of rice by 50% from the available land, and estimated 30% less water than today, by conserving water use, and efficient use of chemical fertilizer and labour.

### *Lucknow Chapter*

The NAAS-Lucknow chapter organized a discussion on ‘*Reducing the cost of cane cultivation vis a vis sugar production: A growing concern of Indian Sugar Industry*’ on December 29, 2014 at IISR, Lucknow. Dr. P.S. Pathak, Convener, highlighted the importance of the subject. Dr. R.K. Singh, Ex. Vice-president NAAS highlighted the issues of closure of sugar mills in U.P., reduction of the area of cane cultivation in eastern UP, shortage of labour and thus a change of the cropping system, poor varietal replacement and poor seed availability. He stressed the need for critical analysis to address the issue of cost of cultivation so that the interest of farmers is sustained. Dr. Solomon, Director of IISR delivered the keynote address covering all the issues of cultivation and management.

## **LINKAGES**

### **Developing NAAS-PAAS linkages**

An interface meeting of the professional associations of agricultural sciences was organized by NAAS on December 2, 2014 at Delhi. It was chaired by Prof. R.B. Singh, and co-chaired by Dr. P.L. Gautam, and attended by 33 representatives from 31 societies. In introductory remarks, Dr. Gautam informed the participants the genesis of the NAAS-PAAS meeting for greater participation of PAAS in the activities of NAAS. He also emphasized the need to improve the journals being published by various societies. Prof. R.B. Singh emphasized the importance of greater participation of PAAS in the activities of NAAS for strengthening agricultural research, education and extension in the country. He also suggested for active participation of PAAS in the Agricultural Science Congress in February 2015 and other meetings of the Academy.

## USA delegation Interaction with NAAS / NARES

A delegation of alumni of Michigan State University (M.S.U.), U.S.A. headed by Dr. Karim Maredia, Director, South Asia International Program of M.S.U. visited the Academy on February 16, 2015. The meeting was chaired by Prof. R.B. Singh, Immediate Past President of the academy. It was attended by 30 participants from USA and India. Prof. M.P. Yadav,



Secretary, NAAS, extended a very warm welcome to all the participants. Prof. R.B. Singh briefed the participants that the purpose of the meeting was to explore the possible areas of common interest for collaboration between M.S.U., NAAS, and National Agricultural Research

and Education System (NARES), particularly ICAR institutes and Agricultural universities. Prof. R.B. Singh suggested exploring the possibility of trilateral collaboration between Michigan State University, India and African countries. Dr. Karim mentioned that the delegation was thankful to the authorities in Government of India for arranging their visit to different scientific organizations/institutions. He highlighted the activities of M.S.U. in US and their collaboration/activities in other countries. Prof. R.B. Singh also informed that under existing bilateral collaborations of India with African countries, possibilities could be explored for any international programmes between NAAS/MSU for African countries. The meeting ended with a vote of thanks proposed by Dr. K.V. Prabhu, Joint Director (Res.), IARI and Secretary, NAAS.

## Memorandum of Understanding

The National Academy of Agricultural Sciences (India) and the Association of Agricultural Scientists of Indian Origin (AASIO), U.S.A., recognizing the need to establish linkages between the two entities to promote close and enduring co-operation based on relevance and excellence in vital areas of agricultural research and development, agreed to collaborate in mutually beneficial programs in all branches



of fundamental and applied research, education, extension for agricultural development, including crop husbandry, animal husbandry, fishery, forestry, food processing and allied environmental sciences. The specific programs, cooperation and details thereof will be decided periodically by both the cooperating institutions based on mutual needs and availability of resources and facilities.

The MOU was formalized at NAAS, New Delhi on March 13, 2015 in the presence of Dr. S. Ayyappan, President, NAAS, Dr. Vijay Gopal Kakani, President, AASIO, U.S.A. NAAS Fellows and Office-bearers of NAAS. Possible areas of collaboration between NAAS and AASIO were discussed in the meeting.

### *Silver Jubilee National Symposia*

During the period under report following symposia were organized:

Sl. No	Title	Convener	Venue	Dates
1	Mechanization of Small Farms: Review and Road map for 25 years	Prof. Anwar Alam	CIAE, Bhopal	July 18, 2014
2	Nutritionally Sensitive and Environmentally Sustainable Agriculture for India's Food and Nutrition Security: Challenges and Opportunities'	Dr. Mahtab S. Bamji	NAARM, Hyderabad	August 23, 2014
3	Indian Fisheries and Aquaculture	Dr. W.S. Lakra	CIFE, Mumbai	October 21-22, 2014
4	Enhancing and sustaining Agricultural productivity for Food and Nutrition Security	Dr. Ajay Parida	MSSRF, Chennai	November 22, 2014
5	Strategic approaches for horticultural research, education and development – way forward	Dr. H.P. Singh	NAAS, New Delhi	December 26-27, 2014
6	25 years of research on insect resistance to toxins – the way forward	Dr. K.R. Kranthi	CICR Nagpur	December 27, 2014

Sl. No	Title	Convener	Venue	Dates
7	Natural Resource Management for Posterity	Dr. Biswapati Mandal	BCKVV, Kalyani, West Bengal	December 30, 2014
8	Technology-policy integration for pushing livestock growth and productivity	Dr. K.M. Bujarbarua	Faculty of Veterinary Science, AAU Khanapara, Guwahati	January 12-13, 2015

### **Mechanization of Small Farms: Review and Road Map for 25 Years**

The Symposium on '*Mechanization of Small Farms: Review and Road map for 25 Years*' was held on July 18, 2014 at CIAE, Bhopal in collaboration with the Directorate of Agricultural Engineering, Madhya Pradesh. On this occasion an exhibition on modern agricultural machinery was also organized for the benefit of 400 farmers and the delegates participating from all over the state. Prof. Anwar Alam, Ex-DDG (Agri Engg.) and Ex-Secretary, NAAS was the Convener of the Symposium. The symposium and the exhibition were inaugurated by Shri Gouri Shanker Bisen, Hon'ble Minister of Farmers Welfare and Agriculture Development, Govt. of Madhya Pradesh. Shri Bisen in his inaugural address lauded the efforts made by the scientists, government officials of line departments and farmers in the phenomenal progress of agriculture in the state of Madhya Pradesh. In order to increase farm mechanization, the state government has abolished VAT on agricultural machinery and efforts are made to abolish 2% entry tax on farm machinery. The symposium was planned to present the road map for mechanization of small farms with the existing status of machinery availability and to project actions to be initiated for continued growth in mechanization leading to sustainable growth in Indian agriculture.

### **Nutritionally Sensitive and Environmentally Sustainable Agriculture for India's Food and Nutrition Security: Challenges and Opportunities**

A Silver Jubilee symposium on '*Nutritionally Sensitive and Environmentally Sustainable Agriculture for India's Food and Nutrition Security: Challenges and Opportunities*' was held on August 23, 2014 at NAARM, Hyderabad. Dr. Mahtab S. Bamji was the Convener, and

Dr. Ch. Srinivas Rao and Dr. S.L. Goswami were the Co-conveners. Dr. S. Ayyappan, Secretary, DARE & Director General, ICAR & President, NAAS, presided over the inaugural function and highlighted the problems faced by the farming community and the opportunities for the scientific community to address those issues to keep up the momentum in agricultural performance. He exhorted the scientific community to work towards achieving 'The Tricolor Revolution' as envisaged by the Hon'ble Prime Minister of India. There were three technical sessions and papers were presented by eminent scientists. Based on discussions, nine major recommendations emerged that could be translated into appropriate action points by the stakeholders.

### **Indian Fisheries and Aquaculture: 25 Years of Achievements and Way Forward**

A two day Symposium on *'Indian Fisheries and Aquaculture: 25 Years of Achievements and Way Forward'* was organized by Dr. W.S. Lakra as Convener during October 21-22, 2014 at CIFE, Mumbai. The symposium was inaugurated by Dr. Sanjeev Kumar Balyan, Union Minister of State for Agriculture & Food Processing Industries. In the inaugural address, Dr. Balyan urged the scientists and students of the fisheries sector to critically evaluate the strength and weakness of the sector and focus on improving the rural livelihood through better technologies and innovations. He also underscored the importance of the sector in meeting the nutritional security of the country and highlighted the need for a 'Blue Revolution'. The Minister inaugurated the Aquarium and other facilities at CIFE on this occasion. Dr. S. Ayyappan, Secretary, DARE & Director General, ICAR & President, NAAS, highlighted the progress and achievements of fisheries and aquaculture sector and emphasized on the efforts required in future to sustain the growth. Dr. W.S. Lakra, presented an overview of the achievements of fishery sector during the last 25 years. The symposium came up with important recommendations on Freshwater and Brackish-water Aquaculture, Fisheries Education, Marine and Island Fisheries, Genetic Resources and their conservation, Inland Fisheries and Coldwater Fisheries, Harvest and Post-harvest technologies.

### **Enhancing and Sustaining Agricultural Productivity for Food and Nutrition Security**

A symposium on *'Enhancing and Sustaining Agricultural Productivity for Food and Nutrition Security'* was organized at the M.S. Swaminathan Research Foundation (MSSRF), Chennai on November 22, 2014. More than 200 delegates representing academia, students,



mass media and farmers representatives participated in the event. The symposium convened by Dr. Ajay Parida, Executive Director, MSSRF, was inaugurated by Prof. M.S. Swaminathan, Founder President, NAAS and Founder, MSSRF.

The deliberations highlighted the role of scientific advances in the field of genetics and plant breeding, agronomy, disease and pest management, participatory technology development and taking these advances to the farmer's field as the key factor in achieving food and nutrition security of the country. While impressive advances have been made in agriculture, but emerging challenges faced by the farming communities in relation to declining agriculture growth, expanding biotic and abiotic stresses, unfavorable climatic conditions, in appropriate market opportunities, calls for concerted and priority attention and action from both scientific community and policy makers for enhancing and sustaining agriculture productivity in the future. The symposium identified eight priority actions that need to be taken up for ensuring that agriculture growth remains central to the development trajectory of the country.

### **Strategic Approaches for Horticultural Research, Education and Development – Way Forward**

A Symposium on '*Strategic Approaches for Horticulture Research, Education and Development-Way Forward*' was held on December 26-27, 2014 at NAAS, New Delhi on the theme 'Innovative Horticulture for a Better Tomorrow'. The symposium was attended by delegates from all over the country, including research managers, directors, heads, scientists, entrepreneurs, industry, farmer's representatives and students. Dr. N.K. Krishna Kumar, DDG (Horticulture) in his welcome address briefed about the initiatives taken by the council to address the emerging problems in the horticulture sector. Prof. M.P. Yadav, Secretary, NAAS on this occasion mentioned the need for conducting conferences during the silver Jubilee year of NAAS. Dr. H.P. Singh Convener & Former DDG (Horticulture) in his remarks briefly enumerated the achievements of Horticulture in the last 25 years and said that production increased from 98 million tonnes to 280 million tonnes but the challenge ahead is to produce 670 million tonnes of produce by 2050. There has been lots of technological advancement, but challenges ahead are much greater than before as the production has to be increased more than 2.5 times with declining land and water in the scenario of climate change. He also informed about new technologies like nanotechnology, hydroponics which needs greater emphasis in the changing scenario. Dr. P.L. Gautam, Vice President NAAS and VC, CP University, H.P. in his remarks stated that horticulture sector is shining and needs focused research to address the emerging challenges. Dr. Kirti Singh, Chairman, WNRF, Chennai in his address emphasized on changes in approaches

for research, education and development to keep pace with emerging challenges. Prof. R.B. Singh, Immediate Past President, NAAS in his Presidential address dwelled upon the strategies and stated that the technology has to be developed as per the developmental needs since horticulture has arrays of the crops grown in different environments. The session ended with vote thanks by Dr. T. Janakiram, ADG (Hort. Sci) & Co-convener.

## **25 Years of Research on Insect Resistance to Toxins – the Way Forward**

The symposium on *‘25 Years of Research on Insect Resistance to Toxins - the Way Forward’* was organized at Central Institute for Cotton Research, Nagpur on December 27, 2014. It was inaugurated by Dr. S.N. Puri, Former Vice-Chancellor, Central Agricultural University, Imphal, Manipur. Dr. K.R. Kranthi, Convener, expressed concern over the recent reports of bollworm resistance to Bt cotton and the consequent sudden increase in the usage of insecticides on cotton and associated crops in the cropping system. Dr. Rishi Kumar presented world and Indian scenario of insect resistance to different group of insecticides and Bt toxins with different modes of actions. The symposium came up with important recommendations, namely establish National Referral laboratory for resistance management, standardizing new procedures for resistance monitoring and resistance detection techniques, promoting new technologies like RNAi for resistance management and public- private partnership in research and extension to combat resistance and effective implementable IRM strategies.

## **Technology-policy Integration for Pushing Livestock Growth and Productivity**

A two day symposium was held on *‘Technology-Policy Integration for Pushing Livestock Sector Growth & Productivity’* during January 12-13, 2015 at the Faculty of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati. Dr. K.M. Bujarbarua, Vice-Chancellor of AAU, Jorhat and Convener underlined the need of bridging technology – policy gap so as to put the sector on a technology led and policy supported growth path to achieve the production targets. The symposium was conducted under six technical sessions viz Dairy, Poultry, Sheep, goat, Piggery, Integrated Farming and livestock production. Each session was chaired by eminent experts of that field. The lead presentation was made under each session by Dr. A.K. Srivastava, Dr. Inderjeet Singh, Dr. R.N. Chatterjee, Dr. S.K. Singh, Dr. S.M. Deb, and Dr. M. Hazarika. The deliberations brought out significant implementable recommendations and policy imperatives for overall Technology-policy led development and growth of livestock sector.



## RECOGNISING EXCELLENCE

### Fellows Elected in 2015

#### Section I: Crop Sciences

**Dr. C.L.L. Gowda**

*Deputy Director General - Research, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Hyderabad (Telangana)*

**Dr. Arvind Kumar**

*Senior Plant Breeder, IRRI South Asia Hub, ICRISAT, Patancheru (Telangana)*

**Dr. (Ms) Shelly Praveen**

*Principal Scientist, Advanced Centre for Plant Virology, Division of Plant Pathology, Indian Agricultural Research Institute, New Delhi*

**Dr. G.P. Singh**

*Principal Scientist (Genetics), Division of Genetics, Indian Agricultural Research Institute, New Delhi*

**Dr. B.C. Viraktamath**

*Former Project Director, Directorate of Rice Research, Rajendranagar, Hyderabad (Telangana)*

**Dr. D.K. Yadava**

*Head, Division of Seed Science and Technology, Indian Agricultural Research Institute, New Delhi*

#### Section II: Horticulture Science

**Dr. T.K. Behera**

*Principal Scientist, Division of Vegetable Science, Indian Agricultural Research Institute, New Delhi*

**Prof. G.R. Rout**

*Professor & Head, Department of Agricultural Biotechnology, Orissa University of Agriculture & Technology, Bhubaneswar (Odisha)*

**Dr. Major Singh**

*Head, Crop Improvement Division, Indian Institute of Vegetable Research, Jakhni, Varanasi (U.P.)*

#### Section III: Animal Sciences

**Dr. R.N. Chatterjee**

*Director, Directorate of Poultry Research, Rajendranagar, Hyderabad (Telangana)*

**Dr. M.S. Chauhan**

*Principal Scientist, Animal Biotechnology Centre, National Dairy Research Institute, Karnal (Haryana)*

**Dr. A.K. Misra**

*Vice Chancellor, Maharashtra Animal & Fisheries Sciences University, Nagpur (Maharashtra)*

**Dr. Y.S. Rajput**

*Head, Animal Biochemistry Division, National Dairy Research Institute, Karnal (Haryana)*

#### Section IV: Fisheries Sciences

**Dr. J.K. Jena**

*Director, National Bureau of Fish Genetic Resources, Canal Ring Road, Dilkusha, Lucknow (U.P.)*

**Dr. C.N. Ravishankar**

*Director, Central Institute of Fisheries Technology,  
Matsyapuri, Willingdon Island, Cochin (Kerala)*

## **Section V: Natural Resource Management**

**Dr. S.S. Kukal**

*Professor of Soil Conservation, Department of  
Soil Science, Punjab Agricultural University,  
Ludhiana (Punjab)*

**Dr. M.C. Manna**

*Head, Division of Soil Biology, Indian Institute  
of Soil Science, Nabibagh, Berasia Road, Bhopal  
(M.P.)*

**Dr. A.K. Nayak**

*Principal Scientist & Head, Crop Production  
Division, Central Rice Research Institute, Cuttack  
(Odisha)*

**Dr. P.W. Ramteke**

*Dean, Post Graduate Studies, Sam Higginbottom  
Institute of Agriculture, Technology & Sciences  
(SHIATS), Allahabad (U.P.)*

**Dr. H.S. Thind**

*Head, Department of Soil Science, Punjab  
Agricultural University, Ludhiana (Punjab)*

## **Section VI: Plant Protection**

**Dr. J.S. Bentur**

*Subject Matter Specialist - Plant Biotechnology,  
Agri Biotech Foundation, Rajendranagar,  
Hyderabad (Telangana)*

**Dr. J.K. Dandona**

*Dean, College of Agriculture, G.B. Pant  
University of Agriculture & Technology,  
Pantnagar (Uttarakhand)*

**Dr. Jitendra Kumar**

*Director, Directorate of Medicinal and Aromatic  
Plants Research, Boriavi, Anand (Gujarat)*

**Dr. Rakesh Pandey**

*Principal Scientist & Head, Department of  
Microbial Technology & Nematology, CSIR-  
Central Institute of Medicinal and Aromatic  
Plants, P.O. CIMAP, Lucknow (U.P.)*

## **Section VII: Agricultural Engineering and Technology**

**Dr. T.K. Goswami**

*Professor, Agricultural & Food Engineering  
Department, Indian Institute of Technology,  
Kharagpur (W.B.)*

**Dr. Arun Kumar Sharma**

*Outstanding Scientist & Head, Food Technology  
Division, Bhabha Atomic Research Centre,  
Mumbai (Maharashtra)*

## **Section VIII: Social Sciences**

**Dr. K.M. Nair**

*Scientist-F, Micronutrient Research Group,  
Biophysics Department, National Institute of  
Nutrition, Hyderabad (Telangana)*

**Dr. K. Palanisami**

*Principal Researcher, International Water  
Management Institute, C/o ICRISAT Campus,  
Patancheru, Hyderabad (Telangana)*

## Foreign Fellows

### **Dr. K.H.M. Siddique**

*Hackett Professor of Agriculture Chair & Director, The UWA Institute of Agriculture, The University of Western Australia, Perth, Western Australia (Australia)*

### **Prof. Robert S. Zeigler**

*Director General, International Rice Research Institute, Los Banos, Laguna (Philippines)*

## NAAS Associateship

### **Dr. Anup Das**

*Senior Scientist (Agronomy), Division of Natural Resource Management, ICAR Research Complex for NEH Region, Umiam (Meghalaya)*

### **Dr. A. Kumaresan**

*Senior Scientist, Animal Reproduction, Gynaecology & Obstetrics, Livestock Research Centre, National Dairy Research Institute, Karnal (Haryana)*

### **Dr. N.K. Lenka**

*Senior Scientist, Indian Institute of Soil Science, Nabi Bagh, Berasia Road, Bhopal (M.P.)*

### **Dr. M. Senthil-Kumar**

*Staff Scientist-III & Ramalingaswami Fellow, National Institute of Plant Genome Research, Aruna Asaf Ali Marg, New Delhi*

## Awardees for the Biennium 2013-2014

### Memorial Awards

Dr. B.P. Pal Award

**Dr. B.S. Dhillon**, *Vice-Chancellor, Punjab Agricultural University, Ludhiana*

Dr. K. Ramiah Award

**Dr. N.K. Singh**, *National Professor B.P. Pal Chair, NRC PB, New Delhi*

Dr. K. C. Mehta Award

**Dr. P.B. Kirti**, *Professor, Department of Plant Sciences, University of Hyderabad, Hyderabad*

Dr. M.S. Randhawa Award

**Dr. Gurbachan Singh**, *Chairman, ASRB, New Delhi*

Dr. N.S. Randhawa Award

**Dr. J.C. Tarafdar**, *ICAR National Fellow, CAZRI, Jodhpur*

Dr. P. Bhattacharya Award **Dr. A.K. Misra**, *Vice Chancellor, Maharashtra Animal and Fisheries Science University, Nagpur*

## Recognition Awards

Plant Improvement	<b>Dr. T. Mohapatra</b> , <i>Director, CRRI, Cuttack</i>
Plant Protection	<b>Dr. S.R. Niranjana</b> , <i>Professor, University of Mysore</i>
Soil, Water & Environmental Sciences	<b>Dr. Ch. Srinivasa Rao</b> , <i>Director, CRIDA, Hyderabad</i>
Animal Sciences	<b>Dr. A.K. Verma</b> , <i>Head &amp; Director, CAFT in Animal Nutrition, IVRI, Izatnagar</i>
Agricultural Engineering & Technology	<b>Dr. Rajendra Singh</b> , <i>Dean &amp; Professor, IIT-K, Kharagpur</i>
Social Sciences	<b>Dr. P.S. BIRTHAL</b> , <i>Principal Scientist, NCAP, New Delhi</i>

## Young Scientists' Awards

Plant Improvement	<b>Dr. S.K. Parida</b> , <i>Staff Scientist II, NIPGR, New Delhi</i>
Animal Sciences	<b>Dr. G. Venkatesan</b> , <i>Scientist, IVRI, Mukteswar</i>

## Endowment Award

Shri L.C. Sikka Award **Dr. S.K. Chakrabarti**, *Director, CTCRI, Trivandrum*

## FOUNDATION DAY AND AGM

### *Presidential Address*

During the 21<sup>st</sup> AGM, Dr. S. Ayyappan, on June 5, 2014 delivered the Presidential Address on the theme '*Family Farms: Farm, Feed & Flourish*', and dwelt on a range of issues and challenges constraining the family farming and some possible steps for making family farms sustainable. He mentioned that there are over 400 million family farms, mostly small-scale farms, cultivating less than 2 hectares of land, producing nearly 70% of the world's food. Realizing its importance, the year 2014 has been declared as the '*International Year of Family Farming*' (IYFF) by the United Nations General Assembly. He said that diverse agricultural activities of family farms promote environmental sustainability, conserve biodiversity and contribute to healthier and balanced diets. For generations, family farmers have transmitted knowledge and skills, preserving and improving practices and technologies. He highlighted that the family farmers, besides enriching agro-biodiversity, are also custodians of rich genetic resources, and thus help in conservation efforts but are experiencing several challenges on account of natural resource degradation, climate change, biotic and abiotic stresses, weak market links, lack of credit facilities, besides globalization and trade liberalization.



In India, small and marginal holdings (below 2.0 ha) constitute 84.97% of the total holdings and 44.31% of the area. Continuously declining farm size gives rise to concerns for the very sustainability of the small farms. Dr. Ayyappan stressed that to ensure livelihood security of the marginal and small farmers, it is necessary to focus on their technological needs and infrastructure, including diversifying avenues for gainful employment in the non-farm sector. The estimates indicate that small and marginal farmers may account for more than 91% of farm holdings by 2030.

The family farming households require timely advice based on meteorological, marketing and management information for land-use decisions and investments to improve resource use efficiency. Timely availability of quality inputs, particularly the seed and planting

material, fertilisers, or the feed and fodder in case of livestock, has to be ensured. Similarly, for such farmers, low-cost, light-weight, multi-purpose farm equipments are needed. He pointed out that family farmers can be trained to undertake post-harvest processing and packaging of farm produce, preferably on a farm or near to the production site to promote entrepreneurship and enhance employment opportunities in rural areas. Moving from subsistence to more commercially oriented activities require increased capital and investment flow, which would focus on smallholder farmers.

Dr. Ayyappan concluded his lecture with underpinning the role of Family farming and the need to make it more attractive, exciting and rewarding so that self-employed workers in agriculture do not move out to non-agriculture under distress. The approach hence, for Family Farms is *'Farm, Feed & Flourish'*.

### *Foundation Day Lecture*

The foundation day lecture entitled *'Doing Science in India'* was delivered on June 5, 2014 by Bharat Ratna Prof. C.N.R. Rao, National Research Professor, Linus Pauling Research Professor and Honorary President, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru. Prof. Rao began with the mention of the state of Indian science in 1947 when the country got freedom. India was a poor country then faced with food crisis. At that time the Indian Institute of Science, Bangalore did not have even basic facilities for research. We somehow even managed to do work following the dictum of beg, borrow and steal. Today we have all the facilities available at IIS, Bengaluru, comparable to any US laboratory. Prof. Rao mentioned that he started his career working on solid material chemistry. He recalled Robert Frost's poem stating that I stood lonely in the woods and saw the roads split into two - one road that was highly crowded, everybody went by that, other was a lonely road which I took. It helped me a lot. He stated, I belong to a field of research where you create your own direction.



He posed the question to the audience where does India stand in science today? India contributes only 2.5% of world research which is stagnant. China on the other hand was also contributing only 2.5% 10-15 years back, but now its share is 14-15 per cent and it is going to overtake the United States within a few years. Quality of science is,

however evolutionary. China initially started with the synthesis of secondary drugs, but now very good papers are coming from China during the last 3-4 years. But India has not done that well. In the top cited work, India's contribution is only 1 per cent where as that of China's is 6%. He emphasized that science has got nothing to do with the grants received. He narrated the story of Srinivasa Ramanujan, with almost no formal training in pure mathematics, he made extraordinary contributions to mathematical analysis, number theory, infinite series, and continued fractions and Michael Faraday with no formal education could carry out front line research and made astonishing discoveries. He could achieve this due to his great love and interest in science. Prof. Rao was hopeful that India will be contributing 10% in world's science within next ten years. Prof. Rao concluded his thought provoking lecture with the message that we should work hard and make more contributions to the world's science.

### Excerpts from the Minutes of the 21<sup>st</sup> Meeting of General Body

The 21<sup>st</sup> AGM was convened under the chairmanship of the President of the Academy on June 5, 2014 in New Delhi, which was attended by 219 Fellows. The proceedings started with observing two minutes silence as a mark of respect to the departed souls of Drs. P.K. Mohanty, A. Appa Rao and B.P.N. Singh, the distinguished Fellows of the Academy. The recommendations of the EC for enhancing the maximum upper limit of Fellowships in different disciplines were deliberated in detail. The AGM unanimously approved for enhancing the maximum upper limit of the number of Fellowships in different disciplines as given below subject to minimum qualifying standards and competence of nominees. The new areas included, in particular sections are given in *italics*.



Sections	Number of Fellowship	
	Existing	Revised
<b>Crop Sciences</b> , covering Genetics and Plant Breeding, Plant Genetic Resources, Plant Biotechnology, Plant Physiology, Plant Biochemistry and Seed Technology	5	6



Sections	Number of Fellowship	
	Existing	Revised
<b>Horticultural Sciences</b> , covering Fruit Science, Vegetable Science, Ornamental Horticulture & Landscape Gardening, Plantation Crops and Spices, Medicinal and Aromatic Crops (improvement, production and biotechnology)	1	3
<b>Animal Sciences</b> , covering Animal Genetics & Breeding, Animal Nutrition, Animal Physiology, Animal Biochemistry and Biotechnology, Animal Production, Animal Health, Animal Products Technology, <i>Dairy Sciences and Poultry Sciences</i>	2	4
<b>Fisheries Sciences</b> , covering Fish Genetics & Breeding, Fish Nutrition, Fish Pathology, Fish Biotechnology, Fish Biosystematics, Fish Processing & Technology, <i>Fisheries Resource Management and Aquaculture</i>	1	2
<b>Natural Resource Management Sciences</b> , covering Agricultural Meteorology, Agronomy, Environmental Science, Forestry & Agroforestry, Soil Science, Water Management and <i>Agricultural Physics</i>	5	5
<b>Plant Protection Sciences</b> , covering Agricultural Chemicals, Agricultural Entomology, Plant Pathology, Nematology, Microbiology and <i>Organic Chemistry</i>	3	4
<b>Agricultural Engineering and Technology</b> , covering Farm Machinery & Power, Soil and Water Engineering, Agricultural Process Engineering, Textile Chemistry and Computer Application in Agriculture	1/2	2
<b>Social Sciences</b> , covering Agricultural Economics, Agricultural Statistics, Extension Education, Food Science & Nutrition, <i>Food Technology</i> , Home Science and <i>Bioinformatics</i>	1/2	2
<b>Total</b>	<b>20</b>	<b>28</b>
<b>Foreign Fellows</b>	<b>2</b>	<b>2</b>
<b>Pravasi Fellows</b>	<b>-</b>	<b>3</b>



## General Discussions

Dr. K.L. Chadha, Dr. M.L. Madan, Dr. A.N. Mukhopadhyay and Dr. Gopakumar congratulated the EC for rationalization and enhancement of a number of fellowships in different sections. Dr. D.P. Ray suggested inclusion of post-harvest management in horticulture section. Dr. J.C. Katyal suggested that in the disciplines where the number of nominees is not adequate, the applications may be considered in other sections. Dr. S.R. Singh and Dr. Gajendra Singh suggested for further enhancement of Fellowship in the Agricultural Engineering and Technology Section. Dr. Gajendra Singh also suggested changing Textile Chemistry to Textile Technology. Dr. S.K. Sanyal and Dr. S.R. Singh pleaded to enhance the number of Fellowship in NRM from five to six. Dr. C.D. Mayee suggested that Bioinformatics may be transferred to other sections like Crop Sciences or Horticulture Sciences or Animal Sciences as it has no relevance in Social Sciences. He also suggested that instead of enhancing the Fellowship of different sections, we should think of converging different disciplines and elect the Fellows from the competent pool of nominees. Dr. R.P. Singh advocated for increasing the Fellowship in Social Sciences. Dr. D.L.N. Rao suggested creating a separate section for new sciences such as biotechnology, bioinformatics, nanotechnology. Prof. Anupam Varma, Chairman of the Fellowship Committee, clarified the issues raised by the Fellowship. The Fellowship also appreciated the work done by Prof. Anupam Varma Committee and endorsed the decision of the EC.

Dr. Balram Sharma, Dr. Sushil Kumar and Dr. U.P. Singh presented their views on the use of GM technology and suggested for a Symposium on GM technology including biosafety and regulatory issues. Dr. R.K. Pathak suggested for organizing a Brainstorming on Organic Farming. Dr. C.L. Acharya expressed concern on dismal state of agricultural education in the country. He desired to organize a Brainstorming Session in this regard. The President informed that XI ASC has been organized on the theme '*Transforming Agricultural Education for Reshaping India's Future*', the proceedings of which are being released today. Besides '*A Road Map to Transform Agricultural Education to Reshape India's Future*' has already been published by the Academy and circulated to all concerned.

## Felicitations

On June 5, 2014 Academy felicitated its Fellows who have been conferred Padma Awards in Agriculture for the year 2014, namely Dr. M. Mahadevappa (Padma Bhushan), Dr. Brahma Singh (Padma Sri) and Dr. Ajay K. Parida. (Padma Sri).

## PUBLICATIONS

### i) Policy Papers:

Policy Paper 68: Efficient Utilization of Phosphorus

Policy Paper 69: Carbon Economy in Indian Agriculture

Policy Paper 70: MOOC for Capacity Building in Indian Agriculture: Opportunities and Challenges

Policy Paper 71: Role of Root Endophytes in Agricultural Productivity

Policy Paper 72: Bioinformatics in Agriculture: Way Forward

### ii) News letter

NAAS-News, Vol. 14, Nos. 2 to 4 and Vol. 15, No. 1 (quarterly)

### iii) Journal (published by Springer India Pvt Ltd.)

NAAS official Journal '*Agricultural Research*' Vol. 2, Nos. 2 to 4 and Vol. 3, No. 1 (quarterly)

### iv) Agricultural News (compendium based on newspaper clippings)

Agricultural News (bi-monthly)

### v) Other Publications

*A Roadmap to Transform Agricultural Education to Reshape India's Future* - an outcome of deliberations at XI Agriculture Science Congress

Proceedings of the XI Agricultural Science Congress on the theme *Transform Agricultural Education to Reshape India's Future*.

Presidential Address on *Family Farms: Farm, Feed & Flourish* delivered by Dr. S. Ayyappan at Foundation Day

*Transforming Agriculture to Reshape India's Future* – a compendium of previous Presidential Addresses delivered on NAAS Foundation Day

*NAAS Year Book and Planner 2015*

During the XII ASC, Hon'ble Governor of Haryana & Punjab released VCD depicting the activities of NAAS since its inception.

## EVENTS AND MEETINGS

### *New Year Get-together*

Academy organized a get together of Delhi based Fellows at NAAS on January 1, 2015 at 3.00 p.m. with Dr. R.S. Paroda, Former President of the Academy as the Chief Guest. Prof. M.P. Yadav, Secretary, extended a hearty welcome to all the distinguished fellowship and introduced the newly elected office bearers, Fellows and Associates present on this occasion.

Dr. S. Ayyappan, President, NAAS also welcomed the Fellowship and Dr. R.S. Paroda, Chief Guest on the occasion. Dr. Ayyappan highlighted the achievements of the Academy and new initiatives taken during 2014. He also briefed the house about the activities planned



during the Silver Jubilee year celebrations and the XII Agricultural Science Congress to be held at NDRI, Karnal from February 3-6, 2015 on the theme '*Sustainable Livelihood Security for Smallholder Farmers*'. On this occasion Academy's publications, including five policy papers, NAAS Yearbook 2015, NAAS News; October – December 2014 and NAAS Planner 2015 were released by the Chief Guest, Dr. R.S. Paroda. In his thought provoking address Dr. Paroda stressed the need for foresight, effective communication and policy advocacy as current priority needs and emphasized on the adoption of more aggressive approach by the Fellowship of the Academy on the important issues concerning the agricultural research and development in the country to meet the future challenges.

Several Fellows expressed their views in the open discussion session and gave valuable inputs on issues regarding policy papers, best practices in education, dissemination of knowledge, attracting private sector in agriculture and considering the Fellowship as a think tank on research for consideration.

The program ended with a vote of thanks proposed by Dr. K.V. Prabhu, Secretary to the Chief Guest, President, distinguished fellowship, members of the executive council, Executive Secretary and other staff of academy secretariat.

## *Executive Council Meetings*

During the year 2014-15, four Meetings were held (June 4, 2014, September 20, 2014 & November 29, 2014 at New Delhi and February 3, 2015 at NDRI, Karnal). Some important items considered and actions taken during the meetings are elaborated as under:

- ❖ **Foreign Fellows:** The guidelines for election of Foreign Fellows were revised. The nominee should be a foreign citizen and an internationally recognized leader in the area of his specialization. The nominee shall be proposed and seconded in the prescribed form by Fellows of the Academy.
- ❖ **Pravasi Fellows:** A new category of Pravasi Fellows with 3 slots was introduced. The Persons of Indian origin (PIO) or Overseas Citizens of India (OCI), holding foreign passport (residing within or outside territorial limits of India), who are eminent for their knowledge and contributions to agricultural science, and have contributed or can contribute to the progress of science in India, and persons holding Indian passport (residing outside the territorial limits of India) having done their work in foreign or international organizations shall be eligible for the Pravasi Fellowship of the Academy. The process of election of Pravasi Fellows will be same as for the national Fellows of the Academy.
- ❖ International Year of Family Farming (2014), International Year of Soil (2015), Indian Decade of Innovations and International Decade of Biodiversity to be highlighted in the XII ASC.
- ❖ Apart from ICAR and ASRB, other organizations like UPSC, AIAU, AIU, SAUs, and DRDO etc. should also be contacted for giving weightage to NAAS Fellowship in their selection process.
- ❖ The Executive Council approved the inclusion of one additional member in each Sectional Committee in order to facilitate 1/3<sup>rd</sup> retirement of Committee members each year. Sectional Committees for the year 2014 comprising 6 members in each section have been approved.
- ❖ Committees on Political Understanding of Science with Prof. M.S. Swaminathan as Chairman and Committee on Public Understanding of Science with Prof. Deepak Pental as Chairman were constituted to communicate with policy makers and the public for remunerative and sustainable agriculture in the country.
- ❖ MoU was signed between NAAS and M/s Springer India Pvt. Ltd. for continued publication of the Academy's journal '*Agricultural Research*' from 1.1.2015 with the stipulation that the Academy will have no financial obligations to M/s Springer India

Pvt Ltd except the payment of the actual printing cost of 220 hard copies of the journal along with the distribution cost among the Fellowship.

- ❖ Framed guidelines for '*Students' Elocution Competition*' organized each time as part of Agricultural Science Congress.

## *Journal Score Committee*

The rating of the scientific journals recommended by the NAAS Journal Score Committee under the Chairmanship of Dr. S.L. Mehta was presented to the EC and approved. It was also decided that a new NAAS Journal Score Committee may be constituted each time. However, a few members of the previous NAAS Journal Score Committee may continue in the new Committee so that the procedure in vogue in the scoring of journals is not deviated.

## *Institutional Members*

The Executive Council in its meeting held on September 20, 2014 instituted a new category of Institutional Membership. The Institutions having established reputation with clean record and have demonstrably involved or propose to involve itself in activities related to the objectives of the Academy and carrying out activities in conformity with the requirement of preserving human, ecological and environmental health and willing to make a contribution of Rs. 10 lakhs towards the NAAS Corpus Fund for supporting its activities needing sustained long term support are eligible to become Institutional Member of the Academy. The following 16 institutions have become the Institutional Member of the Academy during year 2014-15:



- ❖ **Bioversity International (Erstwhile IPGRI)**, NASC, DPS Marg, New Delhi.
- ❖ **Borlaug Institute for South Asia (BISA)**, CIMMYT, NASC, DPS Marg, New Delhi.
- ❖ **Dr. Y.S.R. Horticultural University**, Venkataramannagudem, West Godavari District, A.P.

- ❖ **Govind Ballabh Pant University of Agriculture & Technology**, Pantnagar, Uttarakhand.
- ❖ **International Center for Agricultural Research in the Dry Areas**, ICARDA South Asia & China Program, NASC, DPS Marg, New Delhi.
- ❖ **International Food Policy Research Institute**, IFPRI New Delhi Office, NASC, DPS Marg, New Delhi.
- ❖ **International Rice Research Institute**, IRRI-India Office, NASC, DPS Marg, New Delhi.
- ❖ **Kerala University of Fisheries & Ocean Studies**, Papangad, Kochi, Kerala.
- ❖ **Orissa University of Agriculture & Technology**, Bhubaneswar, Odisha.
- ❖ **Punjab Agricultural University**, Ludhiana, Punjab.
- ❖ **Rajasthan University of Veterinary & Animal Sciences**, Bikaner, Rajasthan.
- ❖ **Rajendra Agricultural University**, Pusa, Samastipur, Bihar.
- ❖ **Sri Venkateswara Veterinary University**, Dr. Y.S. Rajasekhara Reddy Bhavan, Tirupati, A.P.
- ❖ **University of Agricultural and Horticultural Sciences**, Shimoga, Karnataka
- ❖ **University of Agricultural Sciences**, Krishi Nagar, Dharwad, Karnataka.
- ❖ **World Agroforestry Centre (ICRAF)**, Regional Office for South Asia, NASC, DPS Marg, New Delhi.

### ***Meetings of Local Office Bearers (LOB)***

In the first week of every month, a meeting of the local office-bearers of EC was held. During the year under report 12 meetings of LOB were held, in which various decisions relating to implementation of scientific programmes and issues related to administrative matters at the secretariat were discussed, resolved and executed.

### ***NAAS Policy Papers-Impact analysis***

NAAS has published 72 policy papers over the last 20 years covering a wide range of policy issues in agriculture and allied fields. The NAAS as a part of its internal assessment, constituted a committee to examine these papers, assess their impact as measured by the extent of their internalization in policy actions by the Government and other stakeholders. The Committee opined that it is high time to revisit the policy papers and the issue may be examined in detail. It also recommended to develop a suitable survey schedule



with proper design by IASRI/NCAP/NAARM and a committee of NAAS fellowship may guide the survey, tabulation, analysis and report preparation and submission. As a follow-up, a committee of NAAS fellowship was constituted with Dr. I.P. Abrol as the Chairman. The survey schedule has been finalized and responses are being collected. The Report is expected to be available in 3-4 months.

## *PME Manual for NARS*

The ICAR has been trying hard to institutionalize more objective and systematic research prioritization, monitoring and evaluation (PME) system in NARS. In spite of the intensive and formal efforts during NATP, in constituting PME Cells, followed by NAIP, it is yet to be integrated with the decision making in NARS. Following the recommendations of the Dr. M.L. Madan Committee, ICAR has decided to develop an open, transparent, effective, user friendly and more acceptable PME Manual to facilitate the institutionalization and integration process. NAAS in collaboration with NAARM and IFPRI is involved in the preparation of the Manual. Since ICAR has also decided to extend the initiative to SAUs, a similar Manual is being prepared for use by State Agricultural Universities.

## *Programmes planned for 2015*

### **Brainstorming Sessions**

- ❖ *Augmenting Forage Resources in Rural India: Policy Issues and Strategies* (Convener : Dr. P.K. Ghosh)
- ❖ *Integration of Medicinal and Aromatic Crop Cultivation and Value Chain Management for Small Farmers* (Conveners: Prof. Anil K. Tripathi and Dr. E.V.S. Prakasa Rao)
- ❖ *Issues and Challenges in Shifting Cultivation and its Relevance in the Present Context* (Conveners: Dr. K.M. Bujarbaruah and Dr. U.C. Sharma).
- ❖ *Practical and Affordable Approaches in Implement Precision* (Convener: Dr. K.K. Singh and Co-conveners: Dr. S.R. Verma and Head, Farm Machinery & Power Engineering, PAU, Ludhiana).
- ❖ *Climate Resilient Livestock Production* (Convener: Dr. Khub Singh and Co-conveners: Dr. Kusumakar Sharma & Dr. C.S. Prasad).
- ❖ *Organic Farming* (Convener: Dr. B.S. Dwivedi and Co-conveners: Dr. P.K. Chhonkar & Dr. R.K. Pathak).
- ❖ *Symposium on GM Technology* (Convener: Dr. K.V. Prabhu).

## NAAS Silver Jubilee Celebrations

- ❖ Youth Convention (Elocution and Essay Competitions)
- ❖ Silver Jubilee Panel Discussion
- ❖ Inter-Academy meeting
- ❖ NAAS Silver Jubilee Lectures by Eminent Agricultural Scientists
- ❖ Panel Discussion on views of Young Scientists on Research Challenges in following areas:
  - Natural resource management/climate change
  - Crop improvement including horticulture
  - Livestock and fisheries
  - Farm mechanization and post-harvest technology
  - Crop protection
  - Social sciences
- ❖ Felicitation of Silver Jubilee Awardees (Farmers & Enterprenuer)

## FINANCIAL STATEMENT

The main source of funds for the Academy is Grant-in-Aid received from the Indian Council of Agricultural Research (Rs. 48 lakhs) and Department of Agricultural Research and Education (Rs. 101.99 lakhs), New Delhi during the year 2014-15. The Accounts of the Academy for the year 2014-15 have been audited by M/s Ashok Aggarwal & Co., Chartered Accountants appointed with the approval of the General Body. Utilization Certificates up to the year 2014-15 have been submitted to the ICAR/DARE. The Director General of Audit (Central Expenditure), New Delhi has also been requested for conducting audit of the Academy.

A brief Audited Statement of Accounts and Auditor's Report for 2014-15 is annexed to the report (Annexure I & II).

## *Acknowledgment*

The Academy gratefully acknowledges the Indian Council of Agricultural Research (ICAR) and Department of Agricultural Research and Education (DARE), New Delhi for their continuing support for its programmes, and for extending financial support since its inception. The Academy also places on record the cooperation and support in terms of logistics and grants received from other organizations.

The Academy's publication activities are largely due to the voluntary and honorary services of its Editor in Chief, Editors, Associate Editors, Advisory Board, NAAS Office Bearers and EC members, large number of reviewers who examine and comment on manuscripts sent to them for an opinion. Several Fellows also contributed their services to other activities of the Academy such as Annual General Body Meeting, Agricultural Science Congress, Brainstorming Sessions, Workshops, Symposia and conducting programmes on Public lectures, interaction meetings etc. The Academy gratefully acknowledges the services of each of them and staff involved in above activities during the year 2014-15.

## Auditor's Report



**Ashok Aggarwal & Co.**  
Chartered Accountants

Chamber No. 207-211, R.K. House,  
WP-504, Shiv Market,  
Ashok Vihar, Delhi-110052  
Tel. : 27224924, 47068900  
Telefax : 27466167,  
E-mail: info@caashokaggarwal.com

### AUDITOR'S REPORT

The Members,  
**National Academy of Agricultural Sciences,**  
NASC Complex, DPS Marg, Pusa  
New Delhi

We have audited the attached Balance Sheet of **NATIONAL ACADEMY OF AGRICULTURAL SCIENCES, NEW DELHI** as on 31<sup>st</sup> March, 2015 and the annexed Income and Expenditure Account for the year ended on that date. These financial statements are the responsibility of the management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with the auditing standards generally accepted in India. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatements. Our audit includes examining, on a test basis, evidence supporting the financial transactions and disclosures in the financial statements. Our audit also included assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

We further report that:

1. We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit.
2. In our opinion, proper books of account, as required by law have been kept by the Academy, so far as it appears from our examination of those books.
3. The Balance Sheet and the Income and Expenditure Account dealt with by this report are in agreement with the books of account of the Academy.
4. In our opinion, the Balance Sheet and the Income and Expenditure Account dealt with by this report, comply with the Accounting Standards, to the extent applicable.
5. In our opinion and to the best of our information and according to the explanations given to us, the said Statements of Accounts read together with notes thereon and document annexed thereto give a true and fair view:
  - (i) In the case of Balance Sheet, State of Affairs of the Academy as at 31<sup>st</sup> March 2015,
  - (ii) In the case of Income and Expenditure Account, of the excess of Income over Expenditure of the Academy for the period ended on that date.

For Ashok Aggarwal & Co.  
Chartered Accountants  
Regn. No. 005422N

**Sachin Aggarwal**  
Partner  
M. NO:-500156  
Place : New Delhi  
Dated : May 11, 2015



**NATIONAL ACADEMY OF AGRICULTURAL SCIENCES**  
**BALANCE SHEET AS ON 31.03.2015**

LIABILITIES	AMOUNT (Rs.)		ASSETS	AMOUNT (Rs.)	
<b>CAPITAL FUND</b>			<b>FIXED ASSETS</b>		
Opening Balance	12,49,06,798.43		Opening Balance	3,15,52,138.33	
Add: Transferred from Accumulated Fund	89,99,999.80		Addition during the year	1,34,095.00	
Add: Excess of Income over Expenditure during the year	1,43,16,409.22		Sale during the year	-	
Less: Funds transferred to Specific Reserve Fund	2,04,25,123.28	12,77,98,084.17	Depreciation w/o/ff	(34,45,256.70)	2,82,40,974.63
<b>SPECIFIC RESERVE FUND</b>			Deposits in Approved Securities		14,73,02,595.30
Opening Balance	5,08,37,906.58		<b>CURRENT ASSETS</b>		
Add: Addition during the year	2,04,25,123.28		Bank Balances	98,36,360.81	
Less: Utilized during the year	89,99,999.80	6,22,63,030.06	Cash Balances	52,748.00	
<b>CURRENT LIABILITIES</b>			<b>ADVANCES</b>		
TDS Payable		6,729.00	Advances with NAAS Regional Chapters/Silver Jubilee Symposiums	4,88,689.00	
			Advance to M/s RITES Limited for Digital PA systems	11,50,000.00	
			Other advances recoverable (TDS)	6,729.00	
			Tax Deducted at Source	29,89,748.49	
<b>TOTAL</b>		<b>19,00,87,843.23</b>	<b>TOTAL</b>		<b>19,00,87,843.23</b>

As per our report of even date attached

Ashok Aggarwal & Co.  
Chartered Accountants



Sachin Aggarwal  
Partner  
M.NO.-500156  
Place: New Delhi  
Dated: May 11, 2015

National Academy of Agricultural Sciences

Treasurer  
Secretary



# NATIONAL ACADEMY OF AGRICULTURAL SCIENCES

## INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED ON 31st MARCH, 2015

EXPENDITURE	AMOUNT (Rs.)	INCOME	AMOUNT (Rs.)
To Expenditure towards NAAS activities	2,37,65,197.77	By Grant-in-Aid from I.C.A.R.	48,00,000.00
To Depreciation	34,45,258.70	By Grant-in-Aid from D.A.R.E.	1,01,99,371.00
To Excess of Income over Expenditure transferred	1,43,16,408.22	By Interest on Investments	74,40,542.69
		By Contribution from Subscriptions, Publications and Other receipts	1,90,86,952.00
<b>Total:</b>	<b>4,15,26,865.69</b>	<b>Total:</b>	<b>4,15,26,865.69</b>

As per our report of even date attached

Ashok Aggarwal & Co.  
Chartered Accountants



Sachin Aggarwal  
Partner  
M.NO.-500156  
Place: New Delhi  
Dated: May 11, 2015

National Academy of Agricultural Sciences

*(Signature)*  
Treasurer



*(Signature)*  
Secretary



## LIST OF ACRONYMS

AASIO	Association of Agricultural Scientists of Indian Origin in US
IAUA	Indian Agricultural Universities Association
AIU	Association of Indian Universities
AREE4D	Agricultural Research, Education and Extension for Development
ASC	Agricultural Science Congress
ASRB	Agricultural Scientists Recruitment Board
BISA	Borlaug Institute for South Asia
BSS	Brainstorming Session
CAA	Coastal Aquaculture Authority of India
CARDS	Centre for Agricultural and Rural Development Studies
CGIAR	The Consultative Group for International Agricultural Research
CIMMYT	International Maize and Wheat Improvement Center
DAC	Department of Agriculture & Cooperation
DARE	Department of Agricultural Research and Education
DBT	Department of Biotechnology
DRDO	Defence Research and Development Organization
FAO	Food and Agriculture Organization of the United Nations
FRS	Fellow of the Royal Society
GDP	Gross Domestic Product
HPFP	Hydroponic Fodder Production
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IFPRI	International Food Policy Research Institute
IINRG	Indian Institute of Natural Resins and Gums
ILRI	International Livestock Research Institute
IPR	Intellectual Property Right
ISEC	Institute for Social and Economic Change
KVKs	Krishi Vigyan Kendras
LOB	Local Office Bearers
M.S.U	Michigan State University
MOEFCC	Ministry of Environment, Forests & Climate Change
MOOC	Massive Open Online Courses
MPEDA	Marine Products Export Development Authority
MSSRF	M.S. Swaminathan Research Foundation
NAIP	National Agricultural Innovation Project
NARES	National Agricultural Research and Education System
NCAP	National Centre for Agricultural Economics and Policy Research
NDRI	National Dairy Research Institute
NFDB	National Fisheries Development Board
NRM	Natural Resource Management
NRSA	National Remote Sensing Agency
OCI	Overseas Citizens of India
PAAS	Professional Societies of Agricultural Sciences
PIO	Persons of Indian Origin
PME	Project Monitoring & Evaluation
PPP	Public-Private Partnership
SAUs	State Agricultural Universities
SHG	Self Help Group
SWOT	Strengths, Weaknesses, Opportunities and Threats
WNRF	World Noni Research Foundation
ZPDs	Zonal Project Directorates

## NAAS Documents on Policy Issues\*

1. Agricultural Scientist's Perceptions on National Water Policy	- 1995
2. Fertilizer Policy Issues (2000-2025)	- 1997
3. Harnessing and Management of Water Resources for Enhancing Agricultural Production in the Eastern Region	- 1998
4. Conservation, Management and use of Agro-biodiversity	- 1998
5. Sustainable Agricultural Export	- 1999
6. Reorienting Land Grant System of Agricultural Education in India	- 1999
7. Diversification of Agriculture for Human Nutrition	- 2001
8. Sustainable Fisheries and Aquaculture for Nutritional Security	- 2001
9. Strategies for Agricultural Research in the North-East	- 2001
10. Globalization of Agriculture: R & D in India	- 2001
11. Empowerment of Women in Agriculture	- 2001
12. Sanitary and Phytosanitary Agreement of the World Trade Organization Advantage India	- 2001
13. Hi-Tech Horticulture in India	- 2001
14. Conservation and Management of Genetic Resources of Livestock	- 2001
15. Prioritization of Agricultural Research	- 2001
16. Agriculture-Industry Interface: Value Added Farm Products	- 2002
17. Scientists' Views on Good Governance of An Agricultural Research Organization	- 2002
18. Agricultural Policy: Redesigning R & D to Achieve It's Objectives	- 2002
19. Intellectual Property Rights in Agriculture	- 2003
20. Dichotomy Between Grain Surplus and Widespread Endemic Hunger	- 2003
21. Priorities of Research and Human Resource Development in Fisheries Biotechnology	- 2003
22. Seaweed Cultivation and Utilization	- 2003
23. Export Potential of Dairy Products	- 2003
24. Biosafety of Transgenic Rice	- 2003
25. Stakeholders' Perceptions On Employment Oriented Agricultural Education	- 2004
26. Peri-Urban Vegetable Cultivation in the NCR Delhi	- 2004
27. Disaster Management in Agriculture	- 2004
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