

# ANNUAL REPORT

2017-18



**National Academy of Agricultural Sciences**  
NAS, DPS Marg, New Delhi - 110 012, India



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June 2018



## PREFACE

Ever since its inception in 1990 the National Academy of Agricultural Sciences (NAAS), has established itself as a “Think tank” to provide views on a broad spectrum of issues related to agriculture research development and over the years has emerged as a vibrant organization. In keeping with its mandate, the Academy carried out its various programmes and through this report, it is my privilege to place before its Fellowship an account of activities executed during 2017-18.



Dr Panjab Singh

During the period under report, the Academy organized six brainstorming sessions/strategy workshops/national level consultations on very important issues related to agriculture in the country that focussed on *Soil-Water Erosion; Oilseed Economy; Stubble Burning in Rice-Wheat Systems; Policy Brief on Soils; Conservation of Mahseer and Hilsa Fish and Accelerating the Seed Delivery Systems*. The NAAS was an active partner with IFPRI in organizing Policy dialogue on *Innovations in Ensuring Remunerative Prices (MSPs)* on 23 March, 2018. On this occasion, Global Food Policy Report-2018 of IFPRI was released by Dr Rajiv Kumar, Vice-Chairman, NITI Ayaog.

The Foundation Day Lecture was delivered on June 5, 2017 by Dr Arvind Subramanian Chief Economic Adviser, Government of India on “*Transforming Indian Agriculture: By Loving Some Agriculture Less and the Rest More*”. A Press Conference was held in the evening of 5 June, 2017 to present the views of Academy on GM Mustard developed by Indian scientists. There were about 20 journalists representing leading press and electronic media organizations. Having successfully organized the XIII Agricultural Science Congress at Bengaluru from Feb 21-24, 2017, the Academy is now preparing for the XIV-ASC on Innovations for Agricultural Transformation during 20-23 February, 2019 at New Delhi, in collaboration with ICAR and IARI.

On the publication front, the Academy has been active and several publications were brought out and released at different events organized during the year under report. The PMO had expressed concern about the burning of crop residue, especially rice straw in Northern States causing air pollution in Delhi and adjoining states. The NAAS brought out a Policy Brief on Innovative Viable Solution to Rice Residue Burning in Rice-Wheat Cropping System through Concurrent Use of Super Straw Management System-fitted Combines and Turbo Happy Seeder, was widely appreciated, even at the highest national level.

In a new initiative to generate resources, Academy approached several Ministries/ Departments to use the expertise of NAAS Fellowship and in response NAAS has

been engaged to develop proforma for rating ICAR institutions by ICAR and by DAC, for preparing National Soil and Land Use Policy.

Recognizing the excellence, the Academy during the year elected eminent scientists as Fellows, under different categories *viz*, National, Foreign, Pravasi and also selected NAAS Associates.

I place on record my gratitude to the NAAS Executive Council, especially, Prof. Anupam Varma, Vice President, Dr K.V. Prabhu, Secretary, Dr K.K. Vass, Editor, Prof. S.P. Adhikary, Dr C.S. Prasad, Dr N.H. Rao, and Dr B. Venkateswarlu, Members on completion of their three year tenure and for their significant contributions. I am grateful to the Conveners and Members of various committees for effectively organizing consultations, valuable inputs in election of Fellowship, rating of Journals. My sincere thanks are due to colleagues in NAAS Secretariat, Dr A.K. Bawa, Shri Miraj Uddin, Ms Minu Tiwari, Shri P. Krishna, Shri Umesh Rai, Shri Jai Singh, Shri Banwari Lal Yadav and Shri Kamal Singh for effectively managing the day to day activities of the secretariat. The financial and logistics support of DARE and ICAR is gratefully acknowledged.



**(Panjab Singh)**  
President

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## ABOUT THE ACADEMY

Inspired by the vision of late 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.

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

## 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.

## Structure of the Academy

- The General Body: The General Body of the Academy comprises of its Fellows.
- The Executive Council (EC): EC is the main policy and decision making body. It is assisted by different Committees to deal with various aspects of governance and activities of the Academy.
- Regional Chapters: Fourteen Regional Chapters of the Academy are functioning at Bengaluru, Bhubaneswar, Chennai, Hyderabad, Jodhpur, Karnal, Kochi, Kolkata, Lucknow, Ludhiana, Mumbai, Nagpur, NEH Region and Patna. A new Chapter at Varanasi was approved in the 103<sup>rd</sup> meeting the NAAS Executive Council.

## SCIENTIFIC ACTIVITIES

### *Brainstorming Sessions/Strategy Workshops/Consultation Meetings*

During the year 2017-18, following brainstorming sessions/strategy workshops/consultation meetings were organized:

S. No.	Title	Convener	Date
1.	Brainstorming Session on Mitigating Land Degradation Due to Water Erosion	Dr V.N. Sharda	June 20, 2017
2.	Strategic Workshop on Vegetable Oil Economy and Production Problems in India	Dr C.D. Mayee	July 3, 2017
3.	Expert's Consultation to finalize Policy Brief on Crop Residue Burning	Dr Yadvinder Singh	July 12, 2017
4.	Expert's Meeting on Policy Brief on Soils	Dr C.L. Acharya	Aug 9, 2017
5.	Strategy Workshop on Conservation Policies for Hilsa and Mahseer	Dr K.K. Vass	Nov 7, 2017
6.	Strategy Workshop on Accelerating Seed Delivery Systems	Dr K.V. Prabhu	Dec 27, 2017

## **Brainstorming Session on Mitigating Land Degradation Due to Water Erosion (Convener: Dr V.N. Sharda, Chairman, ASRB)**



**Brainstorming Session on Mitigating Land Degradation Due to Water Erosion, in progress**

The BSS was held at NAAS Secretariat on 20<sup>th</sup> June, 2017. The session was chaired by Prof Panjab Singh, President of the Academy and attended by 17 senior level scientists from different disciplines representing nodal ministries, development departments, ICAR, SAUs, IWMI, and NAAS. The purpose of this BSS was to discuss in detail various issues and concepts of water erosion in mitigating land degradation. The theme of the topic was comprehensively presented by the Convener, Dr V.N. Sharda, that dealt on all issues related to soil erosion, land degradation, climate and ecological aspects of soil erosion, indicators for identification of hot spots and bright spots and mitigating strategies for minimising production and economic losses. This was followed by two more presentations on Sedimentation in Reservoirs and Sediment Yield from River Basins and Erosion Risk Areas and Production Losses due to Water Erosion, by the scientists of IISWC, Dehradun. There was a detailed discussion among the participants and very useful recommendations emerged, *viz.*, effective implementation of national programmes like PMKSY, MGNERGA, and watershed development; watershed approach to control the threats of climate change; best management practices to bring the erosion within permissible limits, scientifically developed soil maps may be made available to concerned departments for their conservation planning. NAAS Policy Paper No: 88 on Mitigation and Land Degradation Due to Water Erosion was prepared based on the discussions.

## **Strategic Workshop on Vegetable Oil Economy and Production Problems in India (Convener: Dr C.D. Mayee)**

The Workshop was organized on July 3, 2017 at NAAS, New Delhi. Prof R.B. Singh, Past President, NAAS chaired the workshop, and participants represented NAAS, SAUs, ICAR Institutes, Vegetable Oil Industry and other officials. The workshop aimed to discuss stagnating productivity of oilseed crops, widening gap between demand and



**Strategic Workshop on Vegetable Oil Economy and Production Problems in India, in progress**

supply and continued reliance on import of edible oils, thus mounting burden on foreign exchange of the country. Dr C.D. Mayee made a comprehensive presentation on the current vegetable oil economy, future requirement and production problems. He also presented the alternate sources of vegetable oil and what could be done to reduce the imports by increasing the domestic supply of oil. Special mention of current stalemate of GM-Mustard was mentioned by him as a strategic policy decision taken by NAAS to release the GM-Mustard to benefit growers, consumers and the nation.

#### **Highlights of the discussions were:**

1. Nearly two third of the current demand of 21 million tonnes (mt) of edible oil is met through imports of soya oil, canola oil, sunflower oil and mainly palm oil. The entire soya and canola oil used are derived from GM-Seed and hence, the domestic supply of mustard oil from the present level of 2.2 mt can be increased to 3.0 mt by adopting the GM - Mustard technology. With the adoption of Bt cotton in the country in the last 15 years the cotton seed oil availability has increased to 1.5 mt annually. Thus of the total 21 mt oil consumption, the public is already consuming nearly 22.5% of GM oil from Bt Cotton, Soya and Canola. Therefore, a clear policy on GM mustard cultivation will go a long way in reducing the reliance on import of edible oils.
2. It is estimated that by 2050, nearly 25.91 mt of edible oil and 10.61 mt of vegetable oil for non edible uses will be required and hence it is necessary to enhance productivity of the nine oilseed crops and also to brighten the prospects of supplementary sources. Rice bran appears to be a potential source untapped as yet.
3. In each of nine oilseed crops, immediate interventions such as, use of high yielding cultivars, SRR improvement, enhancing irrigated area, IPM and INM practices and simultaneously better returns over cost are necessary to increase domestic

availability of oilseeds. Increasing area under oilseed crops by extending the cultivation to the rice fallows will be helpful in this regard.

4. Some immediate policy interventions such as; creating 'Oilseeds Development Fund', reducing 20% gap in custom duty between crude and refined oil and focusing on high oil bearing crops like mustard will go a long way to stabilize the availability of edible oil in India.
5. Minimum Support Price (MSP) with special bonus for some oil bearing crops will also attract farmers to invest in such crop cultivation

The stakeholder discussions resulted in bringing out NAAS Strategy Paper No: 7 Vegetable Oil Economy and Production Problems in India.

### **Expert's Consultation to finalize *Policy Brief on Crop Residue Burning* (Convener: Dr Yadvinder Singh)**



**Expert's Consultation to finalize Policy Brief on Crop Residue Burning, in progress**

An expert consultation was organized to finalize the Policy Brief on **Crop Residue Burning** on July 12, 2017 at NAAS, New Delhi. Prof Panjab Singh, President, NAAS chaired the session and participants were invited from different ICAR institutes, SAUs, NAAS and other national and international organizations. The main objectives of this session were to discuss different issues relating to impacts, management and tackling the problems faced by rice crop residue burning. During the course of discussion, the problem of crop residue burning, its impact on environment, soil health and human health was highlighted. The current practices employed for rice residue management were deliberated alongwith their problems. In order to explore the viable solutions to these problems, innovative methods involving use of super Straw Management System (SMS)-fitted combines and Turbo Happy Seeder were advocated. This innovative method was illustrated through a success story on wheat crop sowing on 120 ha at



the Borlaug Institute for South Asia (BISA) at Ladhowal and in over 100 ha in the climate smart villages under CIMMYT-CCAFS program on climate smart agriculture (CSA). This combination facilitated easy operation of the Turbo Happy Seeder with about 20-25% increase in its capacity and less wear and tear of cutting flails. The various components of cost involved in its manufacturing and usage were also discussed.

Major advantages of this innovative system include, increase in average crop yield, economy in cost of production, improved in nutrient use efficiency, production with SMS with more crop per drop of water, reduced risk of biotic and abiotic stresses, improvement in soil health, reduced environmental risk, improvement in the health of on-farm and off-farm workers, saving in depletion of N, P, K and S in soil and increase in the income from adoption of turbo happy seeder technology package.

Finally the business models for fast adoption of the technology along with the policy needs were emphasised during discussion. The session concluded with recommendations to encourage adoption of the proposed technology as a practical and viable alternative to farmer's practice of crop residue burning.

The Academy published NAAS Policy Brief 2: Innovative Viable Solution to Rice Residue Burning in Rice-Wheat Cropping System through Concurrent Use of Super Straw Management System-fitted Combines and Turbo Happy Seeder.

### **Expert's Meeting on Policy Brief on Soils (Convener: Dr C.L. Acharya)**

An expert consultation convened by Dr C. L. Acharya to develop a "Policy Brief on Soils" was held at NAAS on August 09, 2017. The meeting was chaired by Prof Panjab Singh, President NAAS, who in his opening remarks mentioned that soil health, has become very serious issue and NAAS needs to frame a policy brief for the authorities so that they take knowledge-based decisions to restore the soil health in the country. In



the meeting an overview on the topic was presented by Dr Acharya and was followed by active discussion resulting in many valuable suggestions to improve the draft policy brief. It was decided in the meeting that this policy brief after incorporating the suggestions will be finalized by core group of experts and final document will be processed by the Academy. The major recommendations decided in the meeting were, ensuring the authenticity and monitoring of data generated for the soil health card; urgent need to improve the inputs of organics and BNF in Indian agriculture; incentive to farmers for adoption of conservation agriculture practices; reforms in Nutrient Based Subsidy (NBS) to correct some aberrations; the fertilizer subsidy to be audited for NUE and long-term impact on environment; a transparent regulatory authority for supply of soil specific fertilizer to farmers; safe disposal of municipal waste; national level soil protection policy; availability of heavy machinery for soil shaping to farmers on cooperative basis; and use of alternate source of energy for farming.

### **Strategy Workshop on Conservation Policies for Hilsa and Mahseer (Convener: Dr K.K. Vass)**



Strategy Workshop on 'Conservation Policies for Hilsa and Mahseer' was organized on November 7, 2017 at NAAS, New Delhi. Prof Panjab Singh, President NAAS Chaired the workshop, and participants representing NAAS, SAUs, traditional universities, ICAR Institutes, WWF (India), NGOs, anglers association and other officials attended the workshop. The workshop aimed to look at the effectiveness of existing fish conservation policies in respect of these two important species, impediments/constraints in their implementations in the perspective of National Water, Environmental, Fishery policies, and Wildlife Protection act with a focus on Hilsa and Mahseer.

Dr K.K. Vass, Convener made a comprehensive presentation on the objectives, status of inland fisheries, importance and conservation issues related to Hilsa and Mahseer, with critical analysis of existing policy instruments, proposed recommendations

and strategy. Further, two detailed presentations on Mahseer with regard to culture technology were presented by Dr Debajit Sarma of ICAR-DCFR and another related to its migration and population dynamics by Prof Prakash Nautiyal, of Garhwal Central University. A presentation on Hilsa with a focus on population structure and culture possibilities was made by Dr V.R. Suresh of ICAR-CIFRI. The experts participated in discussion and presented their views on the conservation related issues on respective species. It was decided that based on the discussions and suggestions the revised document be submitted to NAAS by the Convener.

### **Strategy Workshop on Accelerating Seed Delivery Systems (Convener: Dr K.V. Prabhu)**



Strategy Workshop on 'Accelerating Seed Delivery Systems' was organized on December 27, 2017 at NAAS, New Delhi. Prof Panjab Singh, President NAAS Chaired the workshop. Prof R.B. Singh, Co-chair made opening remarks. The participants represented SAUs, ICAR Institutes, ICAR Hq., private seed sector, and other experts. At the outset Dr Prabhu, Convener and Secretary NAAS briefed the house about the importance of the topic including its economic implications on Indian Agriculture. Apart from Dr Prabhu, 11 technical presentations were made by the other experts. Dr Prabhu mentioned that presently the public sector comprises of one national level corporation viz. National Seed Corporation (NSC), 15 State Seed Corporations (SSCs), 22 Seed Certification Agencies (SCAs), two Central Seed Testing and 122 State Seed Testing Laboratories (3 ISTA accredited and 20 have ISTA membership) which is providing requisite strength in serving the seed industry and farmers. The research and development in the public sector is dependent on public research under the aegis of the ICAR institutes and SAUs. SAUs and ICAR Institutes are also engaged in breeder seed production and also in production of foundation and certified/truthfully labelled seed of their varieties. Besides, seed is also produced by the farmers under Farmers' Participatory Programme of several Institutes and under Seed Village Programme of the Government of India. Following, 34 agricultural universities and



22 ICAR institutes across the country are engaged in seed production activities. State Agricultural Universities are taking up breeder seed production involving its KVKs to bring seed revolution in the country. Private sector has more than 600 players (including domestic and multinational companies) and the top 10 seed producers account for more than two-third of domestic market. Over the past two decades, private sector seed companies have collected germplasm and also built their R & D capabilities. Some of these have realised the importance of R & D and now spend about 5-10% of their sales on it. These players have developed many hybrids based on the local needs of the farmers and have been able to gain significant market shares. In this background the workshop discussed very important issues related to; seed / variety replacement rate, genetically modified crops, use of molecular tools for varietal identity and genetic purity, seed bill, poor conversion ratio, public sector seed corporations, global seed trade, climate smart seed production and storage facilities. The experts provided many useful suggestions and based on those appropriate recommendations were made at the end of workshop.

#### *XIV Agricultural Science Congress – “Innovations for Agricultural Transformation”*

The NAAS in collaboration with the ICAR and IARI will be organizing XIV Agricultural Science Congress (ASC) at New Delhi from February 20-23, 2019 on the theme “Innovations in Agricultural Transformation”. The four-day event will include technical sessions, plenary sessions, public lectures, farmers sessions, poster presentations, inter-university student elocution contest, panel discussions and number of satellite meetings. Moreover, ASC- AgriTech-2019 will be a major associated event. A large number of participants cutting across the disciplines of researchers, faculty, policy makers, farmers, entrepreneurs, development departments, corporate and private sector leaders, NGOs, and students shall be attending this biennial congress of the Academy.

The theme of the Congress, “Innovations for Agricultural Transformation”, is central to the national complementary pledge of building a New India and ‘Doubling Farmers Income by 2022’. The New India must be free from hunger, undernutrition, poverty, and glaring inequities. And, Agriculture is the foremost sector to free the nation of these persisting maladies. The Congress will provide an intellectually rich multi-stakeholder platform for discussing and critically analyzing veritable disruptive innovations for transforming agriculture and food systems to reshape India. The Congress will showcase agriculture not only as the main source of employment and livelihood security for nearly 50 percent of India’s population, bulging to be the largest

in the world by 2025, but also as a business opportunity, service provider, industry, and ecosystem protector.

## PROGRAMME LAYOUT & DAILY SCHEDULE

Date & Day	09.30-15.30					15.30-16.00	16.00-18.00	18.00-19.30	19.30-21.00
20.2.2019 Wed	Registration					High Tea	Inauguration	Cultural Program	Dinner
Date & Day	09.30-10.30	10.30-11.00	11.00-13.00	13.00-14.00	14.00-16.00	16.00-17.00	17.00-18.00	18.00-19.00	19.00-21.00
21.2.2019 Thu	Plenary Lecture 1	Tea	Technical Sessions	Lunch	Technical Sessions	Tea/Poster/Expo	Panel Discussions	Plenary Lecture 2	Poster & Dinner
22.2.2019 Friday	Plenary Lecture 3	Tea	Technical Sessions	Lunch	Technical Sessions	Tea/Poster/Expo	Panel Discussions & Student Elocution Contest	Plenary Lecture 4	Poster & Dinner
23.2.2019 Saturday	Plenary Lecture 5	Tea	Technical Sessions	Lunch	Technical Sessions	Tea	Valedictory Function		

Reflecting on the journey from the Green Revolution to the Gene Revolution, the Congress will underpin the need for innovations to drive congruent acceleration of productivity, profitability, sustainability, and inclusivity. Besides leaps in genetic enhancement, innovations in precision agriculture, natural resource management, climate smart agriculture, mechanization, micro-irrigation (per drop more crop), ICT, digital technology, farmer-market linkage, value chain and post-harvest management, renewable energy, price realization, and, of course, farmers' net income will be duly discussed.

## TECHNICAL SESSIONS

S.No.	Theme Area Theme	Coordinator	Sessions
1.	Plant Sciences (Field Crops)	Dr K.V. Prabhu, Chairman, PPV&FRA, New Delhi	04
2.	Plant Sciences (Hort Crops)	Dr Anand K. Singh, DDG (Hort & CS), ICAR, New Delhi	03
3.	Natural Resource Management	Dr Anil K. Singh, Secretary, NAAS, New Delhi	05
4.	Plant Protection	Dr C.D. Mayee, President, SABC, New Delhi	04
5.	Food Science & Value Addition	Dr V. Prakash, Former Director, CFTRI, Mysore	01
6.	Animal Sciences-Livestock, Dairy & Poultry	Dr A.K. Srivastava, Chairman, ASRB, ICAR, New Delhi	04
7.	Fisheries	Dr J.K. Jena, DDG (Fisheries), ICAR, New Delhi	02
8.	Engineering & IT	Dr Gajendra Singh, Ex. DDG (AE), ICAR, New Delhi	03
9.	Social Sciences	Dr P.K. Joshi, Director - South Asia, IFPRI, New Delhi	03
10.	Agricultural Education	Dr N.S. Rathore, DDG (Edn), ICAR, New Delhi	02
11.	Panel Discussion	Dr Suresh Pal, Director, NIAP, Pusa, New Delhi	05
12.	Students' elocution contest	Dr R.K. Jain, Dean, IARI, New Delhi	01
13.	Posters	Dr. P.K. Gosh, NC, NAHEP, ICAR, New Delhi	2 days

Alongwith innovative technologies, the Congress will examine and identify the uncommon synergistic transformative policies, strategies, institutions, partnerships,

processes, products, investments, business models, trade, group dynamics (FPOs, cooperatives), and human resources development. Further, in this fast changing globalized world, and keeping in mind the increasing appreciation of local-global interdependence, increasing volatilities of climate change, achieving the SDGs by 2030, the Zero Hunger Challenge and the Paris Declaration, the Congress will analyze the scope of international partnership toward creating Evergreen Revolution for Evergreen Economy.

## REGIONAL CHAPTERS

Chapter	Event	Date & Venue
Bhubaneswar	National Seminar on <i>Climate Change: Impact on Aquatic Environment and Fish Health</i> in collaboration with ICAR-CIFA and Association of Aquaculturists (AoA), Bhubaneswar	6 <sup>th</sup> September 2017,
Hyderabad	Quiz, Elocution and Painting Competitions for VIII to IX standard school children	6 <sup>th</sup> April 2017 at CRIDA, Hyderabad
	An interactive meeting of NAAS Hyderabad Chapter	12 <sup>th</sup> January 2018 at NAARM, Hyderabad
Karnal	A Meeting of regional Fellowship and Associates including scientists from NDRI and IIWBR	6 <sup>th</sup> May 2017 at NDRI, Karnal
Kolkata	National Seminar entitled <i>Nutrients and pollutants in soil-plant-animal-human continuum for sustaining soil, food and nutritional security - way forward</i>	9-10 <sup>th</sup> June, 2017 at Kalyani
Lucknow	Training program on <i>Development of soft skills for attaining excellence in science</i>	12 <sup>th</sup> September, 2017 at ICAR-IISR, Lucknow
Ludhiana	Special Lecture on <i>Managing Climatic Risks in Agriculture: Big Data Provide New Opportunities</i> by Dr P.K. Aggarwal, FNAAS, Regional Program Leader (CCAFS), IWMI	9 <sup>th</sup> August, 2017 at PAU, Ludhiana
Nagpur	Guest Lecture on <i>‘What prevents public sector organizations from successfully commercializing their GM crop developments?’</i> by Dr Derek Russell, Hon. Prof, Faculty of Veterinary and Agricultural Sciences, University of Melbourne, Australia	18 <sup>th</sup> September 2017 at ICAR-CICR, Nagpur

## Bhubaneswar Chapter

The NAAS Bhubaneswar Chapter organized a National Seminar on “Climate Change: Impact on Aquatic Environment and Fish Health” on 06 September 2017, in collaboration with ICAR-Central Institute of Freshwater Aquaculture (ICAR-CIFA) and Association of Aquaculturists (AoA), Bhubaneswar. The programme was chaired by Dr K. Pradhan, Former VC, OUAT, Bhubaneswar. There were 12 NAAS Fellows from the region and the scientists of ICAR-CIFA, Bhubaneswar. Dr K. Pradhan, in his remarks raised the concern of greenhouse gases, effect of climate change on fisheries, impact on fish and its availability and reproduction and other important behavioural changes.



In this Seminar, five lead papers were presented by eminent speakers. Dr H. Pathak, NAAS Fellow & Director, ICAR-NRRI, Cuttack presented impacts on agriculture due to climate change; Dr A.K. Pal, NAAS Fellow

& Former JD, ICAR-CIFE, Mumbai in his presentation concluded that stresses like temperature and hypoxic conditions have various roles in modulating the fish physiological responses; Dr S. Adhikari, Principal Scientist, ICAR-CIFA highlighted the issue of water stress and future of freshwater aquaculture; Dr M.K. Das, Former Head, FREM Division, ICAR-CIFRI, Kolkata presented the research carried out with regard to fish habitat modifications in the Ganges river system and Dr K.V. Rajendran, Head, AEH Division, ICAR-CIFE, Mumbai narrated the effect of temperature on the pathogen development, life cycle and other aspects of some of the common fish and molluscan parasites.

Based on the detailed deliberations, the house made following recommendations/suggestions.

- More investment required on developing climate-smart technologies and climate resilient aquaculture species and capacity development;
- Develop integrated land use and crop planning policy to integrate farming, as adaptation and mitigation strategy;
- Study on picoplankton and cyanobacteria in relation to climate vulnerability to be encouraged;

- Detailed database compilation on different culture systems under different climatic conditions is essentially needed to develop base-line bench mark;
- More studies on fish physiology, hypoxia, temperature, stress/tolerance limit and introduction of neutraceuticals as mitigation measures to be taken up;
- Study on emerging pathogens in the present context of climate change is emphasized;
- Climate change should be differentiated with local phenomenon/pollution to give more clarity on the long and short term trends.

## Hyderabad Chapter



The Chapter organized **Quiz, Elocution and Painting competitions for VIII to IX standard students** from different schools on 6<sup>th</sup> April 2017 at CRIDA, Hyderabad. The main purpose of this programme was to create awareness and consciousness about agricultural sciences among the school children. The topic for elocution was “How to make farming a lucrative profession” and theme selected for painting was Swatchh Bharat. Students from four Kendriya Vidyalaya Schools and Ekalavya High School, Jillelaguda, Hyderabad participated in these events. The winners of the competitions received certificates and mementos on 12th April, 2017 the CRIDA Foundation Day, from the Chief Guest Dr David Bergvinson, DG, ICRISAT, Hyderabad.

An **interactive meeting** of National Academy of Agricultural Sciences (NAAS), Hyderabad Chapter was conducted at ICAR-National Academy of Agricultural Research Management, Hyderabad on 12th January 2018. The meeting was Chaired by Prof Panjab Singh, President, NAAS and several





Hyderabad based Fellows attended the meeting. The event was coordinated by Dr S.K. Soam, Joint Director (I/c), NAARM. Dr Sammi Reddy, Director, CRIDA presented the activities undertaken by Hyderabad Chapter.

**Salient recommendations are as follows:**

- More visibility to NAAS through collaborations with local ICAR institutions and other organizations.
- Localized policy level research studies may be conducted by NAAS Fellows.
- Contribution to national level planning and policy activities, which are of current national requirement.
- Expertise of the retired NAAS Fellows to be harnessed to the maximum level.
- The Regional Chapter to be more proactive in conducting several activities related to local farming/farmers needs.

## Karnal Chapter

A meeting of Karnal Chapter was held on 6th May 2017 at NDRI, Karnal and was attended by regional fellowship and associates including scientists from NDRI and IIWBR. Dr M. L. Madan, Convener in his opening remarks mentioned that NAAS has a major role of fulfilling the societal responsibilities on number of concurrent issues for overall



awareness on agriculture as a whole among various stakeholders. He emphasized the need to sensitize civil society about NAAS achievements. It was decided that farmer's representatives from the region would be invited to NAAS meetings to seek suggestions from them on field oriented research issues.

**During the discussion following action points emerged:**

Fellowship of Karnal Chapter would visit selected institutes and schools of Haryana and Chandigarh region to sensitize the students and teachers on the prospect of Science education as a whole including Agricultural Science, and contribution of agriculture to country and to the state of Haryana. Eminent scientists, educationists and distinguished personalities associated with agriculture, who visit Karnal would be invited for special talk on public platform on behalf of the Chapter. To make best

use of NAAS policy papers the recommendations from specific papers relevant to the state of Haryana and Chandigarh would be compiled. It was decided that Dr S. K. Karma, Fellow, NAAS would prepare 1-2 page note on implementable areas. After completion of the report the same would be communicated to higher authorities of State of Haryana (Chief Minister, Chief Secretary, Governor etc.) for their attention and consideration.

Some of the recommendations on Prospects and Challenges on Milk Production in Haryana; Feed and Fodder for Gaushalas; Decline in R&D investment in Agriculture and its effect on Agriculture Research; Privatization in Agricultural Research; How to attract youth into Agriculture etc. may be prepared on priority after expert consultations for onward transmission to NAAS and State Government. A press note on 'Surgical strike on plant and animal diseases' may be prepared by the Chapter for publication in local newspapers.

Dr Madan urged the NAAS Fellows and members of Karnal Chapter for active cooperation from everyone to make the activities of the Chapter visible in the region.

## Kolkata Chapter

A two-day National Seminar entitled "Nutrients and pollutants in soil-plant-animal-human continuum for sustaining soil, food and nutritional security-way forward" was organized by BCKV in collaboration with the National Academy of Agricultural



Sciences, New Delhi during June 9-10, 2017 at Kalyani. Prof Panjab Singh, President, NAAS was the Chief Guest and Dr D.D. Patra, Vice-Chancellor, BCKV presided over the inaugural function. Prof L.N. Mandal, Former Vice-Chancellor of BCKV was felicitated. Micronutrient maps for 14 districts of West Bengal and several other publications were released on this occasion. More than 200 researchers, students, and industry-personnel from all over India and Bangladesh participated in the seminar.

In the seminar 40 invited lectures were presented by different experts under six technical sessions i) improving micronutrients availability in soils for nutrition of crops, ii) mitigating toxicity of heavy metals and organic pollutants in soil, water



and plant systems, iii) value addition to crops, iv) up-keeping soils for posterity, v) rehabilitation of degraded soils – progress, pitfalls and promises, and vi) translating science of soil into practice and policy. All presentations evinced keen discussion among the participants and many important recommendations emerged during the discussion.

## Lucknow Chapter

NAAS Lucknow Chapter organized a one day training program on “Development of Soft Skills for Attaining Excellence in Science” at ICAR-IISR, Lucknow on September 12, 2017. More than 50 Scientists from different ICAR institutes in the region participated.

Dr P.K. Chhonkar, FNAAS delivered the interactive talk spread in three sessions. The programme was convened by Dr P.S. Pathak, Convener of Lucknow Chapter. The programme was graced by Dr A.D. Pathak, Director ICAR-IISR, Lucknow, Dr K.K. Lal, Director, ICAR-



NBFGF, Lucknow and Dr D.K. Sharma, Former Director ICAR-CSSRI, Karnal. Dr P.K. Chhonkar, in his lecture cum practical exercise based on questionnaires provoked the scientists and staff to improve their soft skills to benefit the organizations in terms of meaningful output and outcome. The interactive lectures highlighted the importance of soft skills in improving work culture, interpersonal relationship, communication skills, importance of EQ and physical and mental fitness in research and development.

## Ludhiana Chapter

Dr Pramod Aggarwal, NAAS Fellow and Regional Program Leader (CCAFS), IWMI, India, New Delhi, delivered special lecture on ‘Managing Climatic Risks in Agriculture: Big Data Provide New Opportunities’, organized by Ludhiana Chapter at Punjab Agricultural University (PAU), Ludhiana on 9th August, 2017. The event was presided over by Dr B.S. Dhillon, Vice-Chancellor, PAU, Ludhiana.

Dr Aggarwal in his lecture spoke that globally, climate related risks have increased, such as flood being the major weather-related disaster affecting 56 per cent population (2.3 billion) followed by drought affecting 26 per cent people (1.1 billion), storms

affecting 16 per cent people (660 million), extreme temperature affecting around 2 per cent (94 million) and the landslides and wildfires affecting 8 million people. India, he said is in medium range of vulnerability to food insecurity; however, in 2050, it will move towards higher ranges of vulnerability with respect to food insecurity. Dr Aggarwal in his talk introduced a newly developing term 'Big Data' that includes information from diverse sources, including increased usage of mobile phones with camera, digital images by farmers, microsatellite images, high resolution satellite data, data from more than one million crop cutting experiments, 30 million soil samples, large multi-location trials, genomics and social media such as 'WhatsApp'.

He suggested that the 'Big Data' can be used for agriculture related activities such as crop insurance, ICT based agro-advisories, precision agronomy, early warning systems and for research on crop-weather relations and crop breeding. Informing that in CIMMYT, 'Big Data' is being used for assessing the global seed distribution network of wheat and maize. In conclusion he advocated that the goal to use Big Data should be to 'harness the capabilities of Big Data to accelerate and enhance the impact of international agricultural research and solve development problems both faster and better and at greater scale'. Dr V.K. Arora, NAAS Fellow & Treasurer of the Chapter, presented the vote of thanks.



## Nagpur Chapter

NAAS Nagpur Chapter organized a guest lecture on 'What Prevents Public Sector Organizations from Successfully Commercializing their GM Crop Developments?' on 18 September 2017 at ICAR-Central Institute for Cotton Research, Nagpur. Dr Derek Russell, Hon. Prof, Faculty of Veterinary and Agricultural Sciences, University of



Melbourne, Australia delivered the lecture that was attended by nearly 80 Scientists and Researchers from ICAR Institutes, SAUs and the Private Sector. The session was chaired by Dr K.P. Viswanatha, Vice Chancellor, MPKV, Rahuri. Dr K.R. Kranthi, Head, Technical Information, ICAC, Washington DC, USA introduced the speaker to the audience.

In his lecture, Dr Russell deliberated about the various factors which are hindering the success of full commercialization of GM crop developments. He explained in detail how various technical, commercial, organizational and social uncertainties associated with the GM inventions of public sector organizations affected the commercialization around the globe. He also suggested how to overcome these problems for successful commercialization. There was an active discussion after the talk in which several participants interacted with the speaker.

Dr K.P. Viswanatha, Vice Chancellor, MPKV, Rahuri in his concluding remarks informed that some groups mislead public about GM technology without being fully aware of its potential benefits. They need to be convinced about the GM crops for successful commercialization. He also felt that farmers are the best judges and the Bt cotton is an example.

## LINKAGES

### Policy Dialogue on Innovations in Ensuring Remunerative Prices (MSP) to Farmers: Challenges and Strategies

Ensuring remunerative prices to the farmers is one of the several pathways to achieve the objective set by the Government of India a Doubling the Farmers' income by the year 2022. The Government of India has accepted long awaited demand of the farmers



Release of IFPRI Global Food Policy Report

regarding the new minimum support price (MSP) at 1.5 times more than the cost of production in the Union Budget 2018. It appears that Cost A2 + FL to be paid as MSP covers the cost of production, interest on working capital, and imputed value of unpaid family labour. The Government has also announced the development of mechanisms to ensure that farmers receive at least MSPs of their produce. To make the proposed policy effective, the Government proposes to develop and up-grade 22,000 agricultural markets (Grameen Markets), to link these with the APMC (Agriculture Produce and Market Committee) mandis, and e-NAM (electronic-National Agriculture Market) so that the benefits of the new price policy penetrate to the last mile.

The NAAS in collaboration with IFPRI and ICAR organized a policy dialogue on “Innovations in Ensuring Remunerative Prices (MSP) to Farmers: Challenges and Strategies” on 23<sup>rd</sup> March 2018 to enlist possible ways of ensuring remunerative prices, and explore feasible solutions of improving the existing institutional and market arrangements. Dr Rajiv Kumar, Vice Chairman, NITI Aayog was the Chief Guest in the inaugural session, which was chaired by Dr T. Mohapatra, Secretary, DARE & DG, ICAR. The keynote address on Global Food Policy Report-2018 was given by Dr Shenggen Fan, DG, IFPRI after its release. It was attended by progressive farmers, policy makers, scientists, NAAS Fellowship and other stakeholders. The policy dialogue deliberated on various issues related to minimum support prices and alternative ways of ensuring remunerative prices to the farmers. Based on the Panel Discussion on MSP to Farmers: Challenges & Strategies, and presentations/deliberations on the New MSP and its Implications, New Institutional Arrangements, Market Instruments and Collective Action for Ensuring Remunerative Prices, the following suggestions emerged to strengthen the government policies to assure better realization of remunerative prices to farmers include:

1. Ensure procurement of agricultural commodities at MSPs through a strong network of collection centers for different commodities. The procurement can be done either by the public or private sector. Deficiency price model can also be tried to compensate farmers when farm harvest prices fall below MSPs.
2. Engaging private sector will be important but appropriate and transparent mechanisms are to be evolved to check leakages.
3. There is a need to reduce market inefficiencies. Consumers are already paying much higher prices than the MSP. This is an indication of huge inefficiencies in marketing system. More institutional reforms are needed to contract supply chains so that farmers get larger share in retail prices.
4. There is a need to transform marketing arrangements for improving market efficiency by strengthening existing institutions, like FPOs, contract farming, cooperatives, and self-help groups (SHGs). These institutional arrangements

will help in aggregating farmers' produce to reduce transactions costs and access remunerative markets.

5. Significant investment in agri-infrastructure is needed to make markets accessible to the farmers. Investment in developing agricultural markets, warehouses, cold storage, cold chains and transport will integrate farmers with the remunerative markets.
6. Universal price policy will not solve the problem of price volatility. There is a need to classify commodities according to their status. These may be classified as: (1) commodities required for social safety net program (e.g., rice and wheat), (2) surplus but not needed by the government (e.g., maize, coarse cereals), (3) deficit commodities but available in the global markets (e.g., edible oil), (4) deficit commodities and not available in the global markets (e.g., pulses), and (5) perishable commodities (e.g., fruits and vegetables). For each group, different price and trade policy will be needed.
7. Pro-farmer trade policies need to be implemented for better price realization. Farmers need to be integrated with the global markets for commodities where country has comparative advantage. There is a need to identify commodities and niche markets for tapping the global opportunities.
8. Role of artificial intelligence (AI) will be helpful in effectively monitoring and forecasting the prices of agri-food commodities. Establishing monitoring and forecasting units at state and national level will help in taking informed decision well in advance.

It was concluded that higher MSP will be important in raising farmers' income in the short-run, but price-driven growth may not be sustainable in the long-run. In future, technology will play key role to drive farmers' incomes. Technology-led income growth will make agriculture more efficient, competitive and sustainable.



## RECOGNISING EXCELLENCE (2018)

### *Fellows Elected in 2018*

#### Section I: Crop Sciences

##### **Dr Girdhar Kumar Pandey**

Professor, Department of Plant Molecular Biology, University of Delhi South Campus, New Delhi

##### **Dr Sharat Kumar Pradhan**

Principal Scientist, Crop Improvement Division, ICAR-National Rice Research Institute, Cuttack

##### **Dr Sakuru Venkata Sai Prasad**

Principal Scientist & Head, ICAR-Indian Agricultural Research Institute Regional Station, Indore

##### **Dr Brij Bhuwan Singh**

Ex ADG, Indian Council of Agricultural Research, New Delhi

##### **Dr Vinod**

Principal Scientist & Professor, Division of Genetics, ICAR-Indian Agricultural Research Institute, New Delhi

##### **Dr Chinnusamy Viswanathan**

Principal Scientist and Head, Division of Plant Physiology, ICAR-Indian Agricultural Research Institute, New Delhi

#### Section II: Horticulture Sciences

##### **Dr Sudhakar Pandey**

Principal Scientist, ICAR-Indian Institute of Vegetable Research, Varanasi

##### **Dr Avverahally Thammanna Sadashiva**

Principal Scientist & Head, Division of Vegetable Crops, ICAR-Indian Institute of Horticultural Research, Bengaluru

##### **Dr Sanjay Kumar Singh**

Head, Division of Fruits & Horticultural Technology, ICAR-Indian Agricultural Research Institute, New Delhi

#### Section III: Animal Sciences

##### **Dr Samit Kumar Nandi**

Professor, Department of Veterinary Surgery & Radiology, West Bengal University of Animal & Fishery Sciences, Kolkata

##### **Dr Rajan Sharma**

Principal Scientist, Dairy Chemistry Division, ICAR-National Dairy Research Institute, Karnal

##### **Dr Ram Ran Bijoy Singh**

Joint Director (Academic) & Director, ICAR-National Dairy Research Institute, Karnal

**Dr Putan Singh**

Principal Scientist, Animal Nutrition Division, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly

**Section IV: Fisheries Sciences****Dr Kajal Chakraborty**

Senior Scientist (ARS), ICAR-Central Marine Fisheries Research Institute, Cochin

**Dr Joseph Selvin**

Associate Professor and Coordinator, Department of Microbiology, Pondicherry University (Central University), Puducherry

**Section V: Natural Resource Management Sciences****Dr Purushothaman Chirakkuzhyil Abhilash**

Assistant Professor (Stage II), Institute of Environment & Sustainable Development, Banaras Hindu University, Varanasi

**Dr Siba Prasad Datta**

Principal Scientist, Division of Soil Science and Agril. Chemistry, ICAR-Indian Agricultural Research Institute, New Delhi

**Dr R. Dinesh**

Principal Scientist, ICAR-Indian Institute of Spices Research, Kozhikode

**Dr Vinod Kumar Singh**

Head, Division of Agronomy, ICAR-Indian Agricultural Research Institute, New Delhi

**Prof Indu Shekhar Thakur**

Professor & Former Dean, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi

**Section VI: Plant Protection Sciences****Dr Dharam Pal Abrol**

Dean, Faculty of Agriculture, Sher-e-Kashmir University of Agricultural Sciences & Technology, Jammu

**Dr Subhash Chander Bhardwaj**

Principal Scientist and In-charge, ICAR-Indian Institute of Wheat & Barley Research, Regional Station, Shimla

**Dr Nawal Kishore Dubey**

Professor, Department of Botany, Banaras Hindu University, Varanasi

**Dr Pagadala Damodaram Kamala Jayanthi**

ICAR National Fellow, Division of Entomology & Nematology, Indian Institute of Horticultural Research, Bangalore

**Section VII: Agricultural Engineering and Technology****Dr Navin Kumar Rastogi**

Senior Principal Scientist, Department of Food Engineering, CSIR-Central Food Technological Research Institute, Mysore

**Prof Virendra Kumar Tewari**

Professor and Former Head, Agricultural and Food Engineering Department, Indian Institute of Technology, Kharagpur

## Section VIII: Social Sciences

### **Dr (Ms) Seema Jaggi**

Principal Scientist, Division of Design Experiments, ICAR-Indian Agricultural Statistics Research Institute, New Delhi

### **Dr Ranjit Kumar Paul**

Scientist, ICAR-Indian Agricultural Statistics Research Institute, Library Avenue, New Delhi

## *Pravasi Fellows*

### **Dr Suresh Chandra Babu**

Senior Research Fellow and, Head of Capacity Strengthening, DGO, IFPRI, USA

### **Dr Govindjee**

Professor Emeritus, University of Illinois at Urbana-Champaign, USA

### **Dr Rakesh Kumar Singh**

Senior Scientist - II / Senior Rice Breeder, Plant Breeding Division, International Rice Research Institute, Laguna

## *Foreign Fellow*

### **Dr Andreas Graner**

Executive Director, Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Germany

## *Associateship*

### **Dr P.V. Behare**

Scientist (SS), Dairy Microbiology Division, ICAR-National Dairy Research Institute, Karnal

### **Dr Vishnu Kumar**

Scientist (Sr. Scale), ICAR-Indian Institute of Wheat & Barley Research, Karnal

### **Dr G.P. Mishra**

Senior Scientist, ICAR-Indian Institute

of Vegetable Research, Shahanshahpur, Varanasi

### **Dr S.K. Upadhyay**

Assistant Professor, Department of Botany, Panjab University, Chandigarh

### **Dr J.K. Tiwari**

Scientist (Senior Scale), Division of Crop Improvement, ICAR-Central Potato Research Institute, Shimla

### **Dr V.K. Vikas**

Scientist (Senior Scale), ICAR-Indian Agricultural Research Institute, Regional Station, Wellington

## *Academy Awards for the Biennium 2017-18*

The Academy has instituted the following awards to recognize scientists for excellence in research in Agricultural and Allied Sciences. From the year 2018, Dr N.G.P. Rao Endowment Award for outstanding research in area of Crop Sciences is instituted, thus raising the number of Endowment awards to three. The nominations for the following Academy's Awards for the biennium 2017-2018 have been invited:

- (i) Memorial Award (6 Nos.)
- (ii) Endowment Award (3 Nos.)
- (iii) Recognition Award (6 Nos.)
- (iv) Young Scientists Award (6 Nos.)

The Judging Committees of the Academy will consider all the valid nominations in September 2018, and awards will be presented at XIV Agricultural Science Congress scheduled to be held at Indian Agricultural Research Institute, New Delhi in February 2019.



## FOUNDATION DAY AND AGM

### *(i) Presentations by Newly Elected Fellows*



On June 4, 2017 in the afternoon, presentations were made by newly elected Fellows in two sessions before the full house of Academy Fellowship. The Session-I was chaired by Prof Anupam Varma, Vice-President and co-chaired by Dr J.K. Jena, Secretary. In this session 13 Fellows belonging to disciplines of Crop, Horticulture, Animal, and Fisheries Sciences, made presentations on their work which generated very useful discussions among the Fellowship present in the house. The Session-II was chaired by Dr C.D. Mayee, Vice-President and co-chaired

by Dr K.V. Prabhu, Secretary, in which 11 Fellows under the discipline of NRM, Plant Protection, Agricultural Engineering & Technology, and Social Sciences, presented their work and one presentation was also made by Paravasi Fellow. All the presentations generated lot of discussions and many valuable inputs were given by the house to the presenters. All these Fellows were admitted to the Academy at AGM ceremony held on June 5, 2017 and presented with Fellowship by the President.



### *(ii) Presidential Address*



Prof Panjab Singh, President, NAAS delivered the Presidential address on *Reforms in Agricultural Research and Development*. He stated that the achievements in the agricultural sector are attributed in large part to technology led improvements in productivity and investments in agricultural R&D and allied sectors. He mentioned that our agriculture witnessed three distinct phases of growth, first, the sustenance agriculture till 60's later through the decades of 1970s to 1990's, in the second phase we saw the technology and input driven agriculture, which led to significant increase in production of important crops, especially of rice and wheat, that led to the 'Green Revolution' in the country. During the third phase, the emphasis was given towards diversification with inclusion of non-cereal crops including fruits and vegetables, livestock and fisheries. The efforts resulted in White Revolution in milk production and Blue revolution in fish production. This resulted in further acceleration in growth of agricultural output. Referring to Climate change, now globally accepted threat and a serious concern for all the countries, he advocated for a collective approach cutting across disciplines, to effectively counter the threat of climate change. In this connection he mentioned that application of biotechnology for sustainable agricultural production is well established and could be used for evolving coping strategy for climate change issues as well. Concern of the Academy was expressed in delays occurring at various levels in grant of permission in the testing / release of GM technology specifically of Mustard. He was of the view that Fellowship should also firm up their opinion on this important issue.

He expressed concern about quality of higher agricultural education in the country and stressed the need for periodic review and revision of curriculum consistent with national and global scenario. He talked about how Academy could get involved in government initiative of "Doubling Farmers Income by 2022". At the same time he mentioned that strategy for future growth should not be a "Food First" or a "Food Self Sufficiency" that quests to increase food production alone at all cost, at the exclusion of other ecological concerns. While concluding, he emphasized that we have reached a stage where we must address 'second generation problems' relating to organizational rigidities, inefficiencies, and difficulties in sustaining funding. In the rapidly evolving scenario of agricultural research for development, NAAS must carve a niche for itself and play a more proactive advocacy role. He hoped that our Fellowship spread across the country will be forthcoming to make NAAS an important partner in the national development.

### *(iii) Foundation Day Lecture*

Dr Arvind Subramanian, Chief Economic Adviser, Ministry of Finance, Govt. of India delivered the Foundation Day Lecture entitled "Transforming Indian Agriculture: By



**Dr Arvind Subramanian, Chief Economic Adviser, delivering Foundation Day Lecture**

Loving Some Agriculture Less and the Rest More". In his lecture, he mentioned that the Government has made doubling farm incomes as one of its top policy priorities. To this end, it has taken a number of policy actions to boost agriculture: instituting soil health cards, emphasizing efficient irrigation, strengthening of procurement of pulses, introduction of neem-coated urea, building more assets under MGNREGA, expanding crop insurance for farmers, and building a common agricultural e-market via e-NAM.

He mentioned that while these developments were taking place in agriculture sector, but still farmer is projected as pure, unsullied, hard-working, in harmony with nature yet poor, vulnerable and the victim, first of imperial masters during pre-independence and of indigenous landlords and middlemen in post independence era. He questioned that whether this kind of approach, in the present day, is really helping the farmer's cause for betterment? In his lecture he dealt on several critical issues.

He mentioned that while supporting cereals more is understandable but we should also pay adequate attention to pulses, dairy, livestock, fruits, vegetables and oilseeds. He pointed out that the benefits of technology are very important for pulses, oilseeds and dairy. While concluding, he stressed that time has come to do hardnosed realism to transform Indian agriculture. The full text of the lecture is available on Academy's website.

#### *(iv) Excerpts from the Minutes of the 24<sup>th</sup> AGM*

The 24<sup>th</sup> Annual General Body Meeting (AGM) of the Academy was held on June 05, 2017 at A.P. Shinde Symposium Hall, NASC Complex, New Delhi under the Chairmanship of Prof Panjab Singh, the President of the Academy. It was attended by 195 esteemed Fellowship including two Past Presidents, Prof V.L. Chopra and Prof R.B. Singh, EC members, New Fellows and Associates.



Prior to start of deliberations, a 2-Minute silence was observed by the entire house as a mark of respect in the memory of 11 Fellowships, namely Dr Amrik Singh Sidhu, Dr Ravender Singh, Dr N.G.P. Rao, Dr Bharat Chattoo, Dr Swadesh Kumar Handa, Dr S. Nagarajan, Dr P.S. Ahuja, Dr K. Devadasan, Dr S. Robin, Dr N.A. Chaudhury, and Dr D.S. Athwal, who passed away since the last AGM.

The President welcomed the distinguished Fellowship assembled for AGM and shared felicitations of the World Environment Day and mentioned that he is looking forward for today's deliberations so that house apart from transecting the routine business also gives serious thought as to how NAAS can give re-orientation to its activities for contributing as a think tank to meet the new challenges being faced by our agricultural research, education, extension for development. The President also referred to successful conduct of XIII Agricultural Science Congress held at UAS, Bengaluru, during February 21-24, 2017. He observed that as per the decision of Government of India, recently NAAS has been reviewed by a high level committee of experts and very good report has been given by the team. He mentioned that NAAS will take appropriate follow-up actions, as per specific suggestions in the report.



**Dr K.V. Prabhu, Secretary; Dr B.S. Dwivedi, Treasurer; Dr K.K. Vass, Editor; Dr P.K. Joshi, Foreign Secretary, presenting their reports during the Annual General Body meeting**

Dr K.V. Prabhu, Secretary, NAAS presented a detailed report on various activities carried out by the Academy during the year 2016-17. He informed about the conduct of various EC meetings, their decisions, organizing technical programmes and regional chapter activities. Dr B.S. Dwivedi, Treasurer, presented the statement of accounts of the Academy including the audited report for the year 2016-17, that was duly approved by the house. Dr K.K. Vass, Editor, presented his report and informed the house the details of special publications brought out by the Academy since last AGM apart from quarterly NAAS-NEWS. He requested the Conveners of Regional Chapters and all Fellowship to contribute/ send their material for inclusion in NAAS-NEWS. Dr P.K. Joshi, Foreign Secretary, presented his report and outlined various initiatives to improve the international linkages of NAAS. The Annual Report for 2016-17 of

the Academy was presented by Dr K.V. Prabhu, Secretary, and was approved by the house.



**Admission to Fellowship**

and it was approved after an elaborate discussion in the house with an overwhelming support of the Fellowship.

All agenda items listed for the business was deliberated upon, and accorded approval by the Fellowship. Some of the important decisions in the AGM include appointment of new auditors, revised guidelines for Institution of Endowment Awards and organisation of XIV Agricultural Science Congress at Delhi in 2019. Further, during the AGM, as a separate agenda item, a **Resolution on Release of GM Mustard** was moved

### *(v) General Discussion*

The esteemed Fellowship participated in general discussion and made suggestions pertaining to: (i) Seed being very important component of agricultural production and as such a “Brain Storming Session on Seed Sector” may be organised by NAAS; (ii) the Foreign Secretary, may conceptualise a Project on “Agri-Business in SAARC Countries” (iii) Nutritional component of food crops may be included in the syllabus of course curriculum of different courses in State Agricultural Universities. (iv) Guidelines may be prepared for the newly inducted Fellowship so that they only confine to their own achievements rather than of their institutions. (v) For enhancing the visibility of NAAS, Regional Chapters may organise quizzes/essay competitions among school and college students. (vi) Feed is a very important component for increasing the milk production in the country, so NAAS may organise a “Brain Storming Session on Feed for the Livestock Sector”. (vii) Fellowship desired that only the specific changes in new procedure for the Election of Office Bearers and Members of the Council may be highlighted to bring in more clarity. The President remarked that all points made above will be examined at NAAS Secretariat and appropriate action wherever required will be initiated.



## RESOLUTION ON COMMERCIALIZATION OF GM MUSTARD

Whereas, The National Academy of Agricultural Sciences (NAAS), presently comprising nearly 625 Fellows, is the national think-tank for analyzing technological, socio-economic, and eco-environmental aspects of agricultural and food systems transformation and for suggesting holistic solutions for sustained, inclusive and accelerated agriculture-led development; Whereas, The best bet for alleviating the stubbornly high incidences of hunger, under nutrition, and poverty in an agriculturally important country like India, and that efficacy of such an agriculture will be underpinned by the development of ever-improving technologies and technological innovations as well as their effective adoption to produce More from Less for More (MLM); Whereas, despite ushering in the Green Revolution during the past 50 years and achieving food self-sufficiency and Right to Food based on home-grown food and becoming a formidable exporter of rice, cotton and other commodities, the situation of edible oilseeds remains gloomy; Whereas, India meets 60% of its demand for edible oils through imports, costing nearly Rs. 80,000 crore annually, let alone the opportunity lost for the farmers to enhance their agricultural productivity and income, and national average yield of oilseed crops is low and sluggish; Whereas, Brassica/rapeseed mustard is an important oilseed crop of India, occupying 6.6 million hectares of the 33 m ha global area, of which 8.5 m ha in Australia, Canada, and USA is under GE Mustard, and farmers in these countries have been reaping socio-economic and environmental benefits from GM canola since 1996, rendering Canada as the foremost exporter to India; Whereas, In order to enable India also to benefit from GM mustard, our scientists have toiled hard during the past 20 years to develop promising biotech mustard varieties, such as mustard hybrid DMH-11, using barnase-barstar system to produce stable male sterile and fertility restorer lines for hybrid seed production; Whereas, In field trials, DMH-11 has out-yielded the national and zonal checks by 20 to 30%, and future breeding using these two transgenic events will provide mustard hybrids with canola quality and better yield through mustering extensive diversity available in mustard in the country for creating progressively higher yielding superior multi-trait hybrids; Whereas, appreciating that regulatory approval is an essential requirement for commercialization of GE crops, India has developed a multi-tier regulatory system, which is one of the most robust regulatory systems in the world to address the biosafety and environmental concerns; Whereas, The DMH-11 hybrid and its parental lines were rigorously tested for biosafety as per the guidelines and procedures, and all the biosafety studies conducted were submitted to GEAC in September 2015, and clearance from GEAC has been accorded on May 11, 2017, after thorough analyses by the expert

committees; Whereas we have apprised ourselves of all the conducted studies and unequivocally state that this technology is as safe as the non-GE mustard and will help the farmers and the country in improving its edible oils economy; Whereas, The scientific and regulatory authorities around the world have consistently and repeatedly refuted the unfounded concerns of the activists, the Academy is deeply concerned about unscientific and ill-motivated attacks on the use of the GM mustard hybrid for improving the edible oil economy in India; Therefore, towards greening the edible oil economy and connecting the people to nature on this World Environment Day, June 05, 2017, now, we the Fellowship (nearly 200 at this AGM) of the National Academy of Agricultural Science (NAAS), New Delhi, resolve that:

- The Central and State Governments should immediately endorse the recommendations of the GEAC so that the coming growing season can be fully utilised for the multiplication of parental lines and production of hybrid seed, which will hasten the environmental release of the two mustard parental transgenic events and hybrid DMH-11, thus allowing this technology to be available to farmers soon at a low-cost, and to breeders, to develop better and better hybrids in future;
- Having fully met the regulatory, biosafety, and performance requirements, a biotech product must not be denied to the farmers, who should have options to make informed choices, and empowered to become globally competitive in the fast changing world;
- All stakeholders must have full faith in the power of science & technology and the national regulatory & scientific agencies to improve our agricultural and food system productivity, profitability, and sustainability in perpetuity so that we not only help the farmers in improving their income and help the country in reducing the burgeoning edible oil deficit, but also ensure that science is not denied the opportunity to serve the society; and
- Finally, the government should proactively support the agricultural scientists to pursue frontier sciences and to take new developments in science and technology to the farmers, as delays in decision making will only dishearten and de-motivate the scientific community, particularly young scientists

## PUBLICATIONS

### *Policy Papers*

- (i) Policy Paper 85: Hydroponic Fodder Production in India
- (ii) Policy Paper 86: Mismatch between Policies and Development Priorities in Agriculture
- (iii) Policy Paper 87: Abiotic Stress Management with Focus on Drought, Food and Hailstorm
- (iv) Policy Paper 88: Mitigation Land Degradation Due to Water Erosion

### *Status/Strategy Papers:*

- (i) Strategy Paper 6: Strategy on Utilization of Glaucinite Mineral as Source of Potassium
- (ii) Strategy Paper 7: Vegetable Oil Economy and Production Problems in India

### *Policy Brief:*

- (i) Policy Brief 2: Innovative and Viable Solution to Rice Residue Burning in Rice-Wheat Cropping System through Concurrent use of Super Straw Management System-fitted Combines and Turbo happy Seeder

### *News letter*

NAAS-News, Vol. 17, Nos. 2 to 4 and Vol. 18, No. 1 (quarterly)

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

NAAS official Journal 'Agricultural Research' Vol. 5, Nos. 2 to 4 and Vol. 6, No. 1 (quarterly)

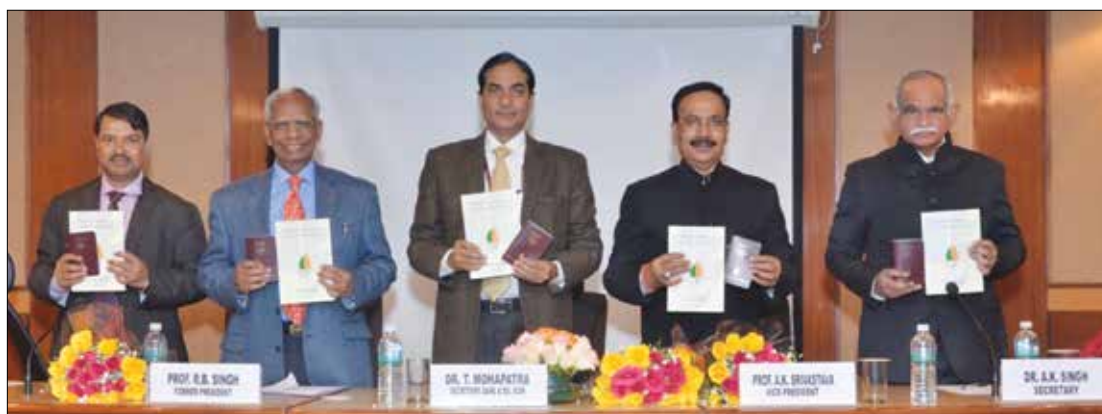
### *Other Publications*

- (i) Presidential Address on 'Reforms in Agricultural Research and Development' delivered by Prof Panjab Singh during 24th AGM 2017
- (ii) Abstracts of Presentation by Fellows elected (2018)
- (iii) NAAS Year Book and Planner 2018



## EVENTS AND MEETINGS

### New Year Get-together



**NAAS Publications are being released**

The Academy organized a get-together of Delhi based Fellowship at NAAS complex on January 1, 2018 with Prof R. B. Singh, Past President as the Chief Guest. Dr J.K. Jena, Secretary, extended a very warm floral welcome to all the dignitaries on the dais and introduced the newly elected members of EC, Fellowship and Associates present in the house. NAAS Executive Council office bearers, Prof Anupam Varma, Vice President; Dr K.V. Prabhu, Secretary; and Dr KK Vass, Editor completed their respective term and were given a warm send off and were given certificates as token of appreciation of their valuable services for development of the Academy.

Prof R.B. Singh, Past President of the Academy also welcomed the Fellowship and greeted them with best wishes for the New Year, which gives the Academy a perfect chance to start something new and fresh in an innovative manner so as to achieve sustainable growth of agriculture in the country. He further stressed the need to prepare NAAS Fellowship as think tank to address food security, equitable access of food resources, enhancing livelihood opportunities and contributing to economic stability of the people at the end. He lauded the recent initiatives of the Government to resolve the farmers' plight. He exhorted the Fellowship to serve as a strong arm to the Government, especially for the Policy Makers and contribute in developing strategic framework for an active involvement of youth in the development of agriculture on scientific lines.

Dr A. K. Srivastava, Vice President emphasised that the academy must play a role for dissemination of scientific knowledge to public at large. In this context, he referred to the ongoing debate about the nutritional value of both A1 and A2 milk. He highlighted the structural difference in the amino acid chain number 67 of Beta- casein between A1 and A2 milk that features histidine and proline, respectively. The claim that consumption of A1 milk produced by exotic breeds produces harmful health effects is yet to be conclusively proved, he asserted. Dr Srivastava was of the view that there is also lack of ample proof that switching to A2 milk intake can make a huge beneficial impact on health and wellness.

Dr T. Mohapatra extended his warm greetings and best wishes to all dignitaries, and NAAS Fellowship for participation in this important New Year get-together event. He also congratulated incoming Vice President, Secretary, Editor, Fellows and Associates. He lauded the role of NAAS in providing continued guidance to the Government, ICAR and various scientific bodies. He recalled the achievements and significant contributions of ICAR in the areas of food, pulses, oilseeds, milk and horticulture production. He highlighted prevailing malnutrition in the country as a serious concern despite impressive progress in agricultural production and subsidized availability of food to the target population. He also mentioned that the mechanism of fixing minimum support price (MSP) and procurement of major crops at MSP need to be strengthened to ensure that farmers get the benefit of the support prices. Dr Mohapatra pointed out that ICAR is continuously working to tackle the challenges faced by the agriculture sector in a holistic manner through its research programmes. In this context, he appreciated the valuable contribution of the scientific community despite financial constraints.



Several fellows expressed their views in the open discussion and gave valuable inputs on the various issues related to Rating of the journals, Distress of farmers, General IPR policy, Farmer guided policies, Impact of

Policy Papers, Concept of seed hub, Threats of bio-safety, Post-harvest Management and Integration of Production value chain, Projecting the independent view of Academy in print media, Doubling farmers' income and Marketing of new crops. On this occasion, Academy's Strategy/Policy Papers, NAAS Yearbook 2018, NAAS-NEWS October-December 2017, and NAAS Planner 2018 were also released. The programme ended with a vote of thanks by Dr Anil K. Singh, Secretary, NAAS.

## Press Meet

In order to put forward the viewpoints of NAAS Fellowship effectively and for their wider dissemination, a **Press Conference on GM Mustard** was held in the afternoon of 5th June, 2017 in NAAS Secretariat. NAAS was represented by Prof Panjab Singh, President, Prof R.B. Singh, Former President, NAAS, Dr T. Mohapatra, Secretary DARE & Director General, ICAR, Prof Deepak Pental, Former VC, Delhi University, Prof Sudhir Sopory, Former VC, JNU, Dr Swapan Kumar Datta, Former DDG (Crops), ICAR, Dr C.D. Mayee, Vice-President, NAAS, Prof Anupam Varma, Vice-President, NAAS, Dr K.V. Prabhu, Jt. Director (Res), IARI & Secretary NAAS and other internationally known experts in the field of GM technology. These experts and President NAAS interacted with members of press on various issues raised by them on GM technology. There were more than twenty journalists representing Press and Electronic Media. For the information to press, the resolution adopted by NAAS Fellowship in their AGM strongly recommending the release of GM Mustard was circulated. It was informed that a letter has been written to the Hon'ble Prime Minister of India from NAAS, requesting his indulgence in the matter and asking the Ministry of Environment, Forest & Climate Change (GoI) to give early approval on the recommendation of GEAC on GM Mustard.

## Executive Council Meetings

During the year 2017-18, four meetings were held on June 4, 2017, September 16, 2017, November 27, 2017, and February 20, 2018 at New Delhi. Some important items considered and actions taken during the meetings are elaborated as under:

### *100<sup>th</sup> Meeting*

The meeting was held on June 4, 2017 in the Academy Secretariat. The Executive Council approved the minutes of 99th meeting and action taken report was deliberated, the progress noted with satisfaction. The EC accorded approval to place the Annual Report 2016-17 of the Academy and the audited statement of accounts for the year 2016-17 before AGM. The revised guidelines for Institution of Endowment Awards of the Academy were accepted and the endowment amount was raised to Rs. 20 lakhs from the existing Rs. 10 lakhs. It was also decided that the XIV Agricultural Science Congress (ASC) will be organised at Delhi in collaboration with IARI, New Delhi. The EC approved to extend 25% discount on NAAS publications to private publishers as well. All other listed agenda items were deliberated and accorded approval wherever required.

### *101<sup>st</sup> Meeting*

The 101<sup>st</sup> meeting of the Executive Council was held on September 16, 2017. Some of the important decisions include; approving the guidelines for the mentoring scheme, expediting process of revising the guidelines for scoring of journals, and reducing the contents of the NAAS Year Book 2018 in print version. The approval of date and theme was accorded for XIV ASC 2019 to be held at New Delhi in collaboration with IARI during February 20-22, 2019. After examination of suggestions received from Fellowships for various vacant positions in EC w.e.f. 1.1.2018, a detailed discussion was held and EC accorded consent to shortlisted names and for seeking votes from the entire Fellowship of the Academy for the proposed names as per NAAS guidelines.

### *102<sup>nd</sup> Meeting*

The 102<sup>nd</sup> meeting of the Executive Council was held on November 27, 2017. Some of the important decisions were: approval of the recommendations of programme committee; the recommendations of Journal Score Committee; approval to reduce the information of Fellows in print version of NAAS-YEAR BOOK 2018 on the line of INSA Year Book.

### *103<sup>rd</sup> Meeting*

The 103<sup>rd</sup> meeting of the Executive Council (EC) of the Academy was held on February 20, 2018. The decisions taken by the Executive Council were: Approval to the constitution of Sectional Committees for election of Fellows/selection of Associates for the year 2019, Constitution of Judging Committees for selection of Awardees for the biennium 2017-18, Approval of the proposed programme for AGM and Approval for establishment of a new NAAS Regional Chapter at Varanasi.

### *Journal Score Committee*

The NAAS Journal Score Committee met in the Academy's Secretariat on December 13-14, 2017 under the chairmanship of Dr P.L. Gautam with Dr Himanshu Pathak as Member Secretary for evaluation and finalization of NAAS Scores of non-impact factor journals received in the Academy during 2017. The Committee *inter alia* deliberated and finalized the score of non-impact factor journals. The complete list of NAAS scored journals effective from January 1, 2018 have been uploaded on NAAS website.

### *Review of NAAS by the DARE Committee*

The Department of Agricultural Research and Education,(DARE), constituted a Committee under the Chairmanship of Dr C.R. Bhatia, Ex-Secretary, DBT with

Dr Sudhir Sopory, Ex-Vice Chancellor, JNU; Professor Krishan Lal, Ex-President, INSA; Dr Mruthyunjaya, Ex-Director, National Agricultural Innovation Project; Dr Jitendra P. Khurana, JC Bose National Fellow (DST), Director, DUSC and Dr A.K. Vashist, ADG (PIM), ICAR.

The Committee met on 20<sup>th</sup> March, 2017 at NAAS Secretariat, NASC, Pusa, New Delhi. The Committee took note of the information provided by NAAS secretariat with regard to the journey of the Academy from its foundation in 1990 onwards, its growth in terms of infrastructure, manpower, financial resources and most importantly the increasing fellowship, S&T programmes and its activities relating to the topical issues/challenges facing the agricultural sector.

The salient observations/recommendations of the Committee are:

- Expand its activities particularly to address emerging challenges of climate change, dwindling natural resources, economic shocks, etc.
- While appreciating the induction of young scientists as Associates of NAAS, the committee recommended increasing their number as being done in INSA and other Science Academies.
- Regarding, the scoring pattern of Indian Research Journals evolved by Academy, the Committee is of the view that Rating of journals by NAAS should be made more stringent to discourage publication of 'predatory journals' in the country.
- The Committee observed that the Academy must have a pro-active and positive approach for recognition of scientists contributing significantly to the area of 'Social Science' and having an impact on agriculture.
- In view of the rapid advances and increasing application of ICTs in the day-to-day working, the NAAS should have more scientific and IT personnel on board and the existing staff can be trained in the ICT applications.
- In view of its mandate, Committee feels that NAAS has limited scope to generate resources on its own. Therefore DARE/ICAR should continue to its support to NAAS as done previously and also enlarge the same for covering inflation and expansion of activities suggested here.
- DARE should also consider making an adequate one-time contribution to NAAS in order to create a corpus to cover all the yearly expenses. Committee viewed that world-over most scientific societies with large corpus and independent of annual support from the government have delivered more than others dependent on the Government support.

The Committee in the point 11 of the report has specifically given the following recommendations:

“The activity canvas should be enlarged with inclusion of suggested niche areas for NAAS such as:

- i. Promote ecologically sustainable and socio-economically rewarding agriculture,
- ii. Recognize and support excellence in scientific research in the field of agriculture performed by individual scientists and by interdisciplinary teams
- iii. Provide promising scientists with more conducive environment and support necessary for the advancement of their work,
- iv. Promote scientific deliberations and contact among research workers in different institutions and organizations within the country and with the world scientific community,
- v. Secure and manage funds, consultancy on proactive basis in the areas of competence of Fellows and endowments for the promotion of agricultural sciences,
- vi. Strengthen policy advocacy, publish documents and undertake specific studies including those intended for policy-makers for the advancement of agricultural research for development (AR4D) and
- vii. Carry out other activities relevant to the accomplishment of the above mission in the interest of the science for development of the country.”

Prof. Panjab Singh, President, NAAS also made a presentation about the Report, NAAS mandate and past activities; financial support to the Academy in comparison to other science academies in the country supported by the DST.

### *Press & Media Involvement in Enhancing Academy's Visibility*

In an effort to enhance the visibility, the Academy has opened a Facebook and Twitter accounts to post the activities of NAAS.

### *Consultancy Services by NAAS*

#### *To develop proforma for Ranking of ICAR institutions*

The National Academy of Agricultural Sciences in the past had developed a proforma for rating of Agricultural Universities in the country and the same is being used by the Education Division of the ICAR. DARE-ICAR has desired to have ranking



of the Agriculture Research Centres of the ICAR done on the lines of Agricultural Universities. The ICAR has requested the Academy to develop a suitable proforma for ranking its research institutions. Accordingly, a proposal was submitted from NAAS to the ICAR and it has been approved. Hon'ble MoS while directing to initiate action in this regard desired that during such ranking, among other parameters, due emphasis may be given to:

- I. The type of research technology which can generate farm output significantly
- II. The research work which can be transmitted quickly and easily.
- III. The research work which is less input-cost intensive and
- IV. Customised research work according to future agriculture market potential etc.

It has also been suggested that apart from ranking, outperformer Research Centres of ICAR may be duly rewarded/promoted, including through extending extra financial aid/benefit for such Centre and its officials and suitable advisories/ corrective steps or action may be taken in case of underperforming Centres.

The NAAS has constituted a Core Group of NAAS Fellows to prepare a suitable proforma. The Core Group members are as follows:

1. Dr J.C. Katyal, Ex-DDG (Edn), ICAR and Ex-VC, HAU (Convenor)
2. Dr B.S. Dhillon, VC, PAU
3. Dr Arvind Kumar, VC, RLBCAU
4. Dr B. Venkatesvarlu, VC, VNMKV and
5. Dr R. K. Jain, Dean, IARI
6. Dr Rajender Parsad, Principal scientist, IASRI
7. Dr (Ms) Usha R. Ahuja, Principal Scientist, NIAP
8. Dr Anil K Singh, Secretary, NAAS

The proforma is likely to be finalised by May, 2018.

### ***Policy Document on National Land Use and Soils***

The President, NAAS had sent letter to several related Departments informing them about the programmes and activities of the Academy, its intellectual strength in

form of expertise and experience and how the services of NAAS could be availed in the programmes of the concerned Department. In response NAAS has received an assignment request from Department of Agriculture Cooperation and Farmers' Welfare to formulate a National Soil and Land Use Policy. The Academy has accepted the assignment and has submitted the details of the financial requirements.

### *Programmes Planned for 2018*

#### **Brainstorming Sessions / Workshops/ Discussions**

No.	Title of BSS	Convener/Co-convener	Proposed date
<b>Strategy Papers</b>			
1.	Strategies for Harnessing Full Potential of A1 and A2 Milk in India	Dr A.K. Srivastava	19 May, 2018
2.	Microbiome of the Rumen and Mitigation of Methane Production;	Dr D.N. Kamra	25 June, 2018
3.	Management of Transboundary Movement of Pathogens and Pests	Dr R.K. Jain Co-convener: Dr R.K. Singh	6-7 July, 2018
4.	Saving the Harvest	Prof Anupam Varma	13 July, 2018
5.	Development and Adoption of Novel Fertilizer Materials	Dr C. Varadachari	5 October, 2018
<b>Policy briefs</b>			
6.	Renewable Energy : A new Paradigm for Growth in Agriculture	Dr O.P. Yadav	24 September, 2018
7.	Need for Uniform Policy on Fish Disease Diagnosis and Quarantine;	Dr P.K. Sahoo	9 November, 2018

## FINANCIAL STATEMENT

The main source of generating funds for the Academy is Grant-in-Aid received from the Department of Agricultural Research and Education (DARE), New Delhi. During the year 2017-18, Grant-in-Aid of Rs. 121.0 lakh was received. The Accounts of the Academy are audited by Chartered Accountants appointed with the approval of the General Body. The Utilization Certificate for the year 2017-18 has been submitted to the DARE.

A brief Audited Statement of Accounts and Auditor's Report for 2017-18 is annexed with the report as Annexure I and II.

## ACKNOWLEDGMENT

The Academy gratefully acknowledges the Department of Agricultural Research and Education and the Indian Council of Agricultural Research (ICAR), Delhi for their continuing support to the programmes, and for extending the financial support. The Academy also places on record the cooperation and support in terms of logistics provided by other organizations.

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 provide comments and suggestions on the manuscripts sent to them for review. Our esteemed Fellows also contributed their services to other activities of the Academy such as Annual General Body Meeting, Scoring of Research Journals, critically examining the nominations for new Fellowship and Academy Awards, Agricultural Science Congress, Brainstorming Sessions, Strategy Workshops, Symposia and conducting Programmes on Public Lectures, Interaction Meetings, etc. The Academy gratefully acknowledges the services of each Academy Fellow and other staff involved in above activities during the year 2017-18.

## Saluja & Associates

Chartered Accountants

Head Office : 69-Desh Bandhu Gupta Road, Jolly Building, Pahar Ganj, New Delhi-110055

Tel. : 011-23617870-23628613 Fax : 011-23520631

URL : Web www.salujaandassociates.com email : saluja@salujaandassociates.com



### AUDITOR'S REPORT

The Members,  
National Academy of Agricultural Sciences,  
NASC Complex, DPS Marg, Pusa  
New Delhi-110012

We have audited the attached Balance Sheet of NATIONAL ACADEMY OF AGRICULTURAL SCIENCES, NEW DELHI as on 31<sup>st</sup> March, 2018 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 the accounts 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 documents 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 2018,
- (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 arrived on the basis of cash/receipt basis of accounting as disclosed in the method of Accounting followed by National Academy of Agricultural Sciences.

For Saluja & Associates  
Chartered Accountants



(V.K.Verma)  
Partner  
M.No. 017742



Place: New Delhi  
Dated 21/05/2018

## NATIONAL ACADEMY OF AGRICULTURAL SCIENCES

### Accounting Policies and Notes to Accounts Forming Part of the Balance Sheet as on March 31, 2018

#### 1. Method of Accounting

The Academy is following cash basis of accounting. Income and Expenditure is therefore recognized on cash/receipt basis.

#### 2. Investments

(a) The Academy has made investments as required to be invested under section 11(5) of the Income Tax Act, 1961 and value of the investments are shown at cost.

(b) Income from investments has been recognized on cash/receipt basis.

#### 3. Fixed Assets and Depreciation

(a) Fixed Assets are stated at written down value less Depreciation calculated as per the rates of Depreciation provided in the Income Tax Act 1961, read with Rules made thereunder.

(b) Items of fixed assets having written down value of less than Rs. 2,000/- have been written off during the year.

#### 4. Income tax Provision and contingent Liabilities:

(a) During the year under consideration a sum of Rs. 2,76,23,774/- is proposed to be accumulated u/s 11(2) of the Income Tax Act, 1961.

(b) Provision for Taxation has not been considered necessary in view of the acceptance of the claim for exemption U/s 11 of the Income Tax Act, 1961 by the Income Tax Department.

#### 5. Payments of Auditors

	<u>31/03/2018</u>	<u>31/03/2017</u>
Audit Fee/GST Fee and expenses	44084/-	38667/-

#### 6. Others

- The cost of Publications has been charged off in the year in which such expenditure is incurred.
- The income from contribution from fellowship fee has been accounted for on cash basis.
- During the financial year 2017-18, the Academy has received the Grant-in-Aid of Rs. 1,21,00,000/- from D.A.R.E. and the same has been utilized.
- The necessary action to reconcile the defaults of Rs. 24,090/- as appearing on the Income Tax Website is still pending.

**For Saluja & Associates**  
Chartered Accountants


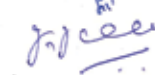
  
(V.K. Verma)  
Partner  
M.No.017742

Place : New Delhi  
Dated : May 21, 2018



**National Academy of Agriculture Sciences**



  
Treasurer  
  
Secretary



## NATIONAL ACADEMY OF AGRICULTURAL SCIENCES

## BALANCE SHEET AS ON 31.03.2018

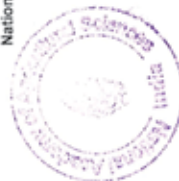
LIABILITIES	AMOUNT (Rs.)	ASSETS	AMOUNT (Rs.)
<b>CAPITAL FUND</b>		<b>FIXED ASSETS</b>	
Opening Balance	13,88,19,425.06	Opening Balance	2,40,39,418.77
Add: Transferred from Accumulated Fund	1,64,39,904.87	Additions during the year	16,22,608.00
Add: Excess of Income over Expenditure during the year	1,52,38,000.38	Write off during the year	(12,639.04)
Less: Funds transferred to Specific Reserve Fund	2,76,23,773.62	Depreciation for the year written off	(30,37,772.03)
		Deposits in Approved Securities	2,26,11,615.70
<b>SPECIFIC RESERVE FUND</b>			23,04,44,253.46
Opening Balance	10,69,43,800.59	<b>CURRENT ASSETS</b>	
Add: Addition during the year	2,76,23,773.62	Bank Balances	15,50,792.66
Less: Utilized during the year	1,64,39,904.87	Cash Balances	-
<b>ENDOWMENT FUND</b>			
Opening Balance	20,00,000.00	<b>ADVANCES</b>	
Received during the year	-	Advances with NAAS Regional Chapters	3,65,352.40
<b>CURRENT LIABILITIES</b>		Tax Deducted at Source	81,26,147.61
Tratina (TCI)			
Performance Security			
Misc Liability			
<b>TOTAL</b>	<b>26,30,98,202.03</b>	<b>TOTAL</b>	<b>26,30,98,202.03</b>

As per our report of even date attached

For Saluja & Associates  
Chartered Accountants
  
(V.K. Verma)  
Partner
M.NO.-017742  
Place: New Delhi

Dated: May 21, 2018

National Academy of Agricultural Sciences


  
Treasurer  
  
Secretary


# NATIONAL ACADEMY OF AGRICULTURAL SCIENCES

## INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED ON 31<sup>ST</sup> MARCH, 2018

EXPENDITURE	AMOUNT (Rs.)	INCOME	
To Expenditure towards NAAS activities	1,81,86,198.63	By Grant-in-Aid from D.A.R.E.	1,21,00,000.00
To Depreciation	30,37,772.03	By Interest on Investments	1,48,99,196.84
To Excess of Income over Expenditure transferred	1,52,38,000.38	By Contribution from Subscriptions, Publications and Other receipts	96,62,774.20
<b>Total:</b>	<b>3,64,61,971.04</b>	<b>Total:</b>	<b>3,64,61,971.04</b>

As per our report of even date attached

For Saluja & Associates  
Chartered Accountants

*V.K. Verma*

(V.K. Verma)

Partner

M.NO -017742

Place: New Delhi

Dated: May 21, 2018



*[Signature]*  
Treasurer

*[Signature]*  
Secretary

## EXECUTIVE COUNCIL

Position	2017	2018
President	Prof Panjab Singh	Prof Panjab Singh
Immediate Past President	Dr S. Ayyappan	Dr S. Ayyappan
Vice-President	Dr C.D. Mayee	Dr C.D. Mayee
Vice-President	Prof Anupam Varma	Prof A.K. Srivastava
Secretary	Dr J.K. Jena	Dr J.K. Jena
Secretary	Dr K.V. Prabhu	Dr Anil K. Singh
Foreign Secretary	Dr P.K. Joshi	Dr P.K. Joshi
Editor	Dr V.K. Bhatia	Dr V.K. Bhatia
Editor	Dr K.K. Vass	Dr Kusumakar Sharma
Treasurer	Dr B.S. Dwivedi	Dr B.S. Dwivedi
Member	Dr K.C. Bansal	Dr K.C. Bansal
Member	Dr K.N. Ganeshaiah	Dr K.N. Ganeshaiah
Member	Prof S.P. Adhikary	Dr R.K. Jain
Member	Dr S.N. Jha	Dr S.N. Jha
Member	Dr Arvind Kumar	Dr Arvind Kumar
Member	Dr N.H. Rao	Dr Ashwani Kumar
Member	Dr T. Mohapatra	Dr T. Mohapatra
Member	Dr C.S. Prasad	Dr V. Prakash
Member	Dr D.P. Ray	Dr D.P. Ray
Member	Dr B. Venkateswarlu	Dr S.K. Sanyal
Member	Dr R.K. Singh	Dr R.K. Singh
Member	Dr Chandrika Varadachari	Dr Chandrika Varadachari
ICAR Nominee	Shri Chhabilendra Roul	Shri Chhabilendra Roul

## SECRETARIAT

Dr Anil K Bawa, Executive Director

Shri Miraj Uddin, Budget & Accounts Executive

Ms. Minu Tiwari, Programme Executive

Shri P. Krishna, Programme Executive

Shri Umesh Rai, Programme Executive

Shri Jai Singh, Office Management Jr. Executive

Shri B.L. Yadav, Driver cum Office Assistant

Shri Kamal Singh, General Office Assistant

## LIST OF ACRONYMS

AI	Artificial Intelligence
AoA	Association of Aquaculturists
APMC	Agriculture Produce and Market Committee
ASC	Agricultural Science Congress
ASRB	<i>Agricultural Scientists Recruitment Board</i>
BCKV	Bidhan Chandra Krishi Viswavidyalaya
CACP	Commission for Agricultural Costs and Prices
CCAFS	Climate Change, Agriculture and Food Security
CICR	Central Institute for Cotton Research
CIFA	<i>Central Institute of Freshwater Aquaculture</i>
CIFE	<i>Central Institute of Fisheries Education</i>
CIFRI	Central Inland Fisheries Research Institute
CRIDA	Central Research Institute for Dryland Agriculture
CSA	climate smart agriculture
CSSRI	Central Soil Salinity Research Institute
DAHF&D	Department of Animal Husbandry, Dairying & Fisheries
DARE	Department of Agricultural Research and Education
DCFR	Directorate of Cold Water Fisheries
DoF	<i>Department of Finance</i>
DUVASU	UP Pt. Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sanssthan, Mathura
e-NAM	electronic-National Agriculture Market
FPOs	Farmer Producer Companies
GADVASU	Guru Angad Dev Veterinary and Animal Sciences University
GEAC	<i>Genetic Engineering Appraisal Committee</i>
IARI	<i>Indian Agricultural Research Institute</i>
ICAC	International Cotton Advisory Committee
ICT	Information and Communication Technology
IFPRI	International Food Policy Research Institute

IISR	Indian Institute of Sugarcane Research
IISWC	Indian Institute of Soil and Water Conservation
IWBR	Indian Institute of Wheat And Barley Research
INM	<i>Integrated Nutrient Management</i>
IPM	Integrated Pest Management
ISTA	International Seed Testing Association
IWMI	International Water Management Institute
JNU	<i>Jawaharlal Nehru University</i>
KVKs	Krishi Vigyan Kendras
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MLM	More from Less for More
MoA&FW	Ministry of Agriculture
MoEF	Ministry of Environment, Forest and Climate Change
MoWR	Ministry of Water Resources
MSP	<i>Minimum Support Price</i>
NAARM	<i>National Academy of Agricultural Research Management</i>
NASF	National Agricultural Science Fund
NBS	Nutrient Based Subsidy
NDRI	National Dairy Research Institute
NSC	National Seed Corporation
NUE	Nutrient Use Efficiency
OUAT	Orissa University of Agriculture and Technology
PES	Payment for Ecosystem Services
SAU	State Agricultural University
SCAs	Seed Certification Agencies
SDGs	Sustainable Development Goals
SHGs	Self-Help Groups
SMS	Straw Management System
SRR	Seed Replacement Rate
WDRA	Warehouse Development and Regulatory Authority
WWF	<i>World Wildlife Fund</i>



56.	Sustaining Agricultural Productivity through Integrated Soil Management	- 2012
57.	Value Added Fertilizers and Site Specific Nutrient Management (SSNM)	- 2012
58.	Management of Crop Residues in the Context of Conservation Agriculture	- 2012
59.	Livestock Infertility and its Management	- 2013
60.	Water Use Potential of Flood-affected and Drought-prone Areas of Eastern India	- 2013
61.	Mastitis Management in Dairy Animals	- 2013
62.	Biopesticides – Quality Assurance	- 2014
63.	Nanotechnology in Agriculture: Scope and Current Relevance	- 2014
64.	Improving Productivity of Rice Fallows	- 2014
65.	Climate Resilient Agriculture in India	- 2014
66.	Role of Millets in Nutritional Security of India	- 2014
67.	Urban and Peri-urban Agriculture	- 2014
68.	Efficient Utilization of Phosphorus	- 2014
69.	Carbon Economy in Indian Agriculture	- 2014
70.	MOOC for Capacity Building in Indian Agriculture: Opportunities and Challenges	- 2014
71.	Role of Root Endophytes in Agricultural Productivity	- 2014
72.	Bioinformatics in Agriculture: Way Forward	- 2014
73.	Monitoring and Evaluation of Agricultural Research, Education and Extension for Development [AREE4D]	- 2015
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