FAI Activities

Improving Professional and Personal Effectiveness

The Fertiliser Association of India - Northern Region (FAI-NR), New Delhi, organized a training program on **Improving Professional and Personal Effectiveness** during 12-15 February 2025 at Jaisalmer, Rajasthan. Sixty-nine participants from fifteen member companies attended the program. The training program was inaugurated by Mr. Sanjiv Kanwar, Chairman, FAI-NRC and Managing Director, Yara Fertilisers India Private Limited, Gurugram and Keynote Address was delivered by Dr. Suresh Kumar Chaudhari, Director General, FAI, New Delhi.

In his key-note address, Dr. Suresh Kumar Chaudhari stated that everyone has lot of energy. The basic objective of such training program is to channelize the potential energy for improving performance at the work place and reconnect those areas which remain out of sight. The components of effectiveness are effect and hidden potential. Effect can be created by artificial energy but is not permanent. However, hidden potential is a permanent mark with improved efficiency and becomes part of ones' integral day-to-day and personal life. As a professional, one should differentiate from others and should be embodied with wisdom. There are challenges in life and the same can be managed by proper preparedness with sound understanding and ability.

He then enumerated various areas of fertilisers from production/import to last mile delivery, where improving efficiency at every point is of vital importance. The topics to be covered by the resource persons are very pertinent. He requested the trainees to imbibe, practice and experience the same to improve the knowledge base.

Dr. Chaudhari gave an overview of use of new generation products such as specialty fertilisers; water soluble fertilisers (WSFs); application of WSFs through atomized drip irrigation system; customized fertilisers; new formulations; Nano fertilisers; commitment of India for net zero emissions by 2070, 30% reduction in greenhouse gases and land degradation neutrality by 2030 as per IPCC inter-governmental panel on climate change; use of unmanned aerial vehicle technology like drone in agriculture; etc. for the benefit of the trainees.

He also pointed out that era is of change, era is of knowledge, era is of competition and era is of opportunity. He underlined that professional and personal effectiveness are interlinked. The program will be an impetus to understand facets of both. For personal effectiveness, he discussed about team building; positive attitude; effective communication and inter-personal skills; leadership qualities; time and stress management; and devotion of 20 minutes daily for self. He concluded his address by saying that take positive memories, energies and lessons from the program and try to imbibe and practice, enabling to carry out the work with more ease and confidence, for success of the organization. He wished the program a success.

In his (on-line) address, Mr. Sanjiv Kanwar stated that he was pleased to hear the key-note address delivered by Dr. Suresh Kumar Chaudhari and his pertinent point to spare 20 minutes for self every



Dr. Suresh Kumar Chaudhari lighting the lamp at the inaugural session. Others seen in the picture from left to right are Mr. B.P.S. Mehta, Dr. Neeraj Awasthi, Mr. Manas Ranjan Behera, Mr. Dileep Singh, Dr. D.S. Yadav and Mr. Harinder Kaushik

day was very praise worthy. While enumerating an overview of considerable increase in fertiliser consumption and agriculture production in the country over the years, he mentioned that many challenges are cropping up such as deterioration of soil health due to imbalance in use of N, P and K; adverse effect of climate change and El Nino on agriculture; dwindling water resources; decline in crop response to fertilisers which used to be 12 kg grain kg⁻¹ NPK in 1960s to 5 kg grain kg⁻¹ NPK now; mining of nutrients from the soils due to less addition compared to removal by crops; adherence of farmers with same crops/cropping systems over the years; fragmentation of land holdings; nonadoption of mechanization; effect of international geo-political situation in securing fertilisers and raw materials from the international market; low average yields of crops compared to China and developed countries. Population is on rise. To meet the demand of growing population, requirement of foodgrain will be around 450 million MT from 332.3 million MT produced in 2023-24. The need of other crops will also be in the line with that. Use of fertilisers in terms of nutrients will have to be stepped up from 30 million MT now to 45 million MT in 2050. Therefore, need of the hour is to promote regenerative agriculture by all concerned for sustainable agriculture.

Mr. Sanjiv Kanwar pointed out that regenerative agriculture is the adoption of the best sustainable farming practices across the five themes such as climate, soil health, resource use, bio-diversity and prosperity and enlisted the key drivers of each theme with suggested measures.



Mr. Sanjiv Kanwar

He summarized his address by underlining that the emphasis should be on promotion of integrated nutrient management; application of WSFs with micro-irrigation system-fertigation; secondary and micronutrients; crop diversification; and collaborative efforts by all concerned towards mechanization and crop nutrition.

Earlier in his welcome address, Dr. D.S. Yadav, Director (Publications & Public Relations), FAI, New Delhi briefed about course content and topics to be covered by the learned faculties. He then gave an overview of FAI, its activities, training programs and four monthly journals in addition to adhoc publications brought out by the Association. He requested the participants to become professional and technical members of the FAI to get the benefits of the journals and activities of the Association. Mr. Harinder Kaushik, Officer, FAI-NR, New Delhi, proposed a vote of thanks.

The four-day training program inter alia covered topics, such as Changing Pattern of Pricing and Subsidy Policies for the Sector by Mr. S. Shivakumar, Executive Director (Finance), Rashtriya Chemicals & Fertilisers Limited (RCF), Mumbai; Salient Features of iFMS and DBT in Fertiliser Sector by Mr. Abhijit Mulik, Manager (MIS-DBT), RCF, Mumbai; An Overview of FCO 1985 and Recent Developments by Mr. Shyam Babu, Director, Central Fertiliser Quality Control & Training Institute, Faridabad; Precision Agriculture - Tech-based Solutions by Mr. Balaya Moharana, Chief Technology Officer, Zuari Bengaluru; FarmHub Limited, Fertiliser Marketing Strategies in the Changing Environment by Mr. Dileep Singh, Chief Marketing Officer, Indorama India Private Limited, New Delhi; Key Areas of Water Soluble Fertilisers and Micronutrients in Indian Agriculture by Dr. Neeraj Awasthi, Country Manager - Crop Nutrients, Anglo American Crop Nutrients India; Improving Productivity and Cost Optimization of Ammonia and Urea Plants by Mr. B.P.S. Mehta, General Manager (Technical), IFFCO, Kalol; Production Process of Phosphatic Plants by Mr. Manas Ranjan Behera, Deputy General Manager (Production), Paradeep Phosphates Limited, Paradeep; Improving Logistics Operations for Optimizing Cost by Mr. V.S. Chauhan, General Manager (Supply & Distribution), CFCL, Kota; Nano Fertilisers -Nano Technology based Revolutionary Agri-Input by Dr. A.P. Singh, Senior Manager (Agriculture Services), IFFCO, Jaipur; Fertiliser and Raw Material Scenario in India and Basics of Fertiliser Marketing and Effective Leadership, Time and Stress Management by Dr. D.S. Yadav; Giving Boost to Promotion of SSP in Indian Agriculture by Mr. Chiranji Lal Sharma, Area Sales Manager, Ostwal Group of Industries, Jaipur; Role of Organic-based Fertilisers, Biofertilisers and Bio-stimulants in Indian Agriculture by Dr. V.K. Tiwari, Joint General Manger (Marketing), KRIBHCO, Noida; Soft Skills for Success - Team Building & Positivity for Success by Mr. Harinder Kaushik; and International Trade and Effective Ways for Port Operations by Mr. Anil Motsara, Executive Director (IT), National Fertilisers Limited, Noida.

Mr. S.P. Mohanty, Managing Director, HURL, New Delhi was the Chief Guest at the valedictory session. In his address, he stated that he is delighted to be associated with this program and



DG, FAI with faculty, participants and FAI officials

to see the presence of young executives of the sector. Each topic covered has its own relevance. He referred about AI Action Summit held in Paris during 11-12 February 2025, co-chaired by our Hon'ble Prime Minister. PM highlighted the success in building a digital public infrastructure for its citizens. Therefore, Mr. Mohanty pointed out that use of AI will be instrumental to solve problems one encountered on day to day basis. He complimented the trainees to be a part of fertiliser companies and for their efforts. He emphasised on the need of inter-departmental postings of the personnel working in the sector. Towards this, inter-personal and interdepartmental communications are important. With computerization and digitalization, the task of performing by an individual in an organization becomes easy. The expertise of an individual will go a long way in improving the efficiency from production/import to end users.

While giving an overall scenario of the sector, he revealed about no addition in capacity of urea plant in last 20 years. However, with implementation of new investment policy in 2012 and modifications in 2014, commissioning of 6 urea plants have added 7.62 million MT capacity



Mr. S.P. Mohanty giving certificate to a participant

to produce urea. One more plant is in pipeline. However, there has been increase of about 2.5 million MT in consumption of urea in *rabi* 2025-26 over *rabi* 2024-25 upto January. Therefore, 2 new urea plants will be required to meet the demand, if such trend continues.

Mr. Mohanty then underlined that India is import dependent to meet its demand of fertilisers either in the form of finished products or raw materials. In order to meet the demand of P&K fertilisers, India should have set-up joint ventures in phosphate and muriate of potash rich countries before 2000 itself. Indian companies have set up joint ventures in phosphate rich countries such as Jordan, Senegal, South Africa, Tunisia and Morocco. The Government needs to support & facilitate more such ventures abroad for P&K fertilisers.

He discussed about the challenges in agriculture such as deterioration of soil health, use of more urea at the cost of P&K fertilisers thereby widening NPK use ratio, etc. The initiative of the Government of India is PM-PRANAM to promote balanced and sustainable use of fertilisers along with organic manures, alternative fertilisers, Nano fertilisers, bio-fertilisers, etc.

He requested the trainees to share the knowledge gained from this training program with their colleagues. This way, the purpose of the training program will be achieved. He wished every success in the endeavour of the participants.

Mr. Mohanty then distributed certificates to the participants. On behalf of participants, Mr. Suvendu Mohanty, Manager (S&D), PPL, Paradeep; Mr. Ashish Kiroriwal, Deputy Manager (Marketing), NFL, Hyderabad and Mr. Mohit Pandey, Manager, Zuari FarmHub Limited, Bengaluru shared their views and appreciated the course content and resource persons of the program. Mr. Harinder Kaushik proposed a formal vote of thanks at the end of program.

Fertiliser Management Development Program

The Fertiliser Association of India-Eastern Region (FAI-ER), Kolkata, organized a Fertiliser Management Development Program during 3-5 February 2025 at Puri, Odisha. Mr. Siba Prasad Mohanty, Managing Director, Hindustan Urvarak and Rasayan Limited (HURL), New Delhi, was the Chief Guest at the inaugural session. Mr. D. Ramakrishnan, Interim Head and Secretary, FAI, New Delhi; Mr. Basant Kumar Dey, Joint Director of Agriculture, Quality Control and Enforcement Government of Odisha, Bhubaneshwar; and Prof. Sushil Kothari, Dean, School of Agriculture and Allied Sciences, The Neotia University, Kolkata, graced the occasion as special guests. Mr. Mohanty inaugurated it by lighting the lamp. Forty-four executives representing the fertiliser companies participated in the program.

Mr. Siba Prasad Mohanty, in his address, stated that he was delighted to see the presence of young executives nominated by the companies to enrich their capability to learn about various facets of the sector. He mentioned that agriculture is vital sector of Indian economy and quite a large no. of population directly or indirectly attached to it. Ensuring food security has always been in the prime agenda of the Government. Country is not only self-sufficient in food grain production but also exporter of agricommodities. For increasing agricultural production, fertiliser has played a key role and will continue to be so. Giving an overview of the policy starting from retention price scheme for urea in 1977 and P&K fertilisers in 1979 and changes made from time to time, he apprised the trainees that fertiliser is a regulated sector. The Government of India reimburses subsidy to the industry. Subsidy is the difference in cost of production/import and the maximum retail price (MRP) of fertiliser. Fertilisers are made available to the farmers at affordable MRPs across the country. India has progressed well in enhancing agricultural production over the years. However, average yields of crops are considerably low compared to China and many developed countries. There are problems being witnessed in agriculture such as deterioration of soil health, decline in crop response to fertilisers, widening of NPK use ratio, low use of organic fertilisers, etc. in agriculture.

He emphasized on promotion of integrated nutrient management comprising of balanced use of fertiliser along with bio-fertilisers, organic fertilisers, secondary-and micro-nutrients, recycling of agriculture wastes, etc. to improve soil health for sustainable agriculture. He then dwelt upon the developments of new technology in the form of Nano urea and Nano DAP. Such fertilisers have better use efficiency and create minimum damage to the



Mr. S.P. Mohanty after lighting the lamp with other guests and executives

environment. Use of digital technology for precision agriculture and drones for application of fertilisers and pesticides will go a long way to enhance agricultural production in the country.

Mr, Mohanty made an appeal to the executives to be attentive in the presentations to be made by learned resource persons and participative in the discussions. Since representatives of every discipline are here as attendees, they should interact, share and discuss about the areas of their operations with each other. He opined that this program is very timely and will give impetus to the trainees to understand various areas of fertiliser and agriculture sectors and wished it a great success.

In his address, Mr. D. Ramakrishnan stated that fertiliser is a key component of agriculture development in any country of the world and so is the case with India. The testimony of the fact is that with increased use of fertilisers, production of food grain, oilseed, sugarcane, cotton, vegetable and fruit crops, etc. has shown substantial increase over the years. No doubt, problem of decline in crop response to fertiliser is cropping up. To overcome the same, it becomes our duty to educate the farmers to use fertilisers in balanced proportion on the basis of soil test-based recommendation along with organic sources in an integrated way. Further, Government of India is alive to the problem and has initiated schemes to promote balanced fertilization along with organic sources.

Fertiliser is totally a regulated sector. Realizing the importance of fertilisers in agriculture, the Government of India implemented retention price scheme for urea in 1977 and phosphatic fertilisers in 1979 to give boost to indigenous production. Government of India started reimbursing subsidy under the policy to the industry i.e. the difference in cost of production and maximum retail prices (MRPs). As the cost of production/import of fertilisers



Mr. D. Ramakrishnan handing over copies of FCO to Mr. Basant Kumar Dey

continued to increase and there was no increase in MRP, Government constituted a Joint Parliamentary Committee in 1991. On the basis of the recommendation of this committee, P&K fertilisers were decontrolled effective from 25 August, 1992. Later on, de-canalization also took place. As the cost of production/import of fertilisers to be charged from the market, MRPs of these fertilisers showed considerable increase. Realizing the adverse impact on sale of these fertilisers and deterioration of NPK use ratio, Government introduced concession and the same continued upto 2010.

He further pointed out that the industry was pleading for reform in the fertiliser sector. Therefore, Nutrient Based Subsidy on P&K fertilisers was implemented effective from 1 April 2010 and SSP was brought under the policy from 1 May 2010. Urea was kept out from ambit of NBS policy. In NBS policy, nutrient-wise subsidy on N, P, K and S is announced every year by the Government and the subsidy on products can be worked out on the basic of nutrients present in a product. The objective of the policy is fixed subsidy and market driven MRP. There is deviation from the basic tenant of the policy and the Government started indirectly fixing the MRP.

Regarding urea policy, Mr. Ramakrishnan revealed that Government implemented new Pricing Scheme for urea units 2003 and then New Investment Policy in 2012, amended in 2014 and New Urea Policy in 2015. In case of Urea, MRP in fixed and inter-unit variation is there in cost of production. Policy is cost plus. There has not been any increase in MRP of urea since long. MRP of 45 kg bag of urea is Rs.266.50. This is a depressed price and farmers make use of more urea at the cost of P&K fertilisers. Our suggestion to the Government is to bring urea under ambit of NBS policy, so long as subsidy is transferred directly in the bank account of the farmers. The steep is essential for balanced fertilization as the NPK use ratio is quite vitiated to 11.8:4.6:1 in 2022-23 and 10.9:4.4:1 in 2023-24.

He also gave an overview of FAI and its activities. In his concluding remarks, Mr. Ramakrishnan felt that the program will give an exposure of pertinent areas of fertiliser and agriculture sectors to the trainees. Further, in addition to improving professional effectiveness personal effectiveness is also important. Therefore, areas of soft skill developments are part of this program. It is hoped that after undergoing this program, the executives will be in a position to update their knowledge in both the areas enabling them to work with more ease and confidence in areas of their operations. He then handed over 5 copies of FCO (as amended upto October 2024) to Mr. Basant Kumar Dey for use by the Department of Agriculture, Government of Odisha

Mr. Basant Kumar Dey informed about the enforcement authorities and their roles and responsibilities. He briefed about the sampling procedures, provisions for laboratory analysis, time limits for analysis, communication of results, and legal action if samples are found to be non-standard. He thanked FAI-ER for organizing the program.

Prof. Sushil Kothari, in his address, stated that participation in the Management Development Program is a good opportunity for the executives to interact and share information with each other and learn many areas of professional and personal effectiveness. In view of changing environment and geopolitical situation, interaction becomes more meaningful and helpful to plan and execute strategy for amicable solutions.

Mr. Subodh Kumar Singh, Regional Executive, FAI-ER, Kolkata, welcomed the chief guest, special guests and the delegates .He briefed about the objective of the program and presentations to be made by the experts in their field. He stated that population of the country is on rise. To meet the growing need of the population, production of agricultural crops has to be in line with that. It was pointed out by Mr. Singh that the program will provide an effective and useful platform to share the knowledge and experiences amongst the participants and speakers to conceive new ideas and develop strategies for betterment of individual's companies.

At the end of the inaugural session, Mr. Satyajit Mishra, General Manager (Marketing), Brahmaputra Valley Corporation Limited (BVFCL), Namrup, Assam proposed a vote of thanks.

The presentations in the technical sessions made by the learned faculties during the 3 days comprised of (i) Government Initiatives for Promotion of Balanced and Efficient Fertiliser Use (PM PRANAM, PMKSK,



Some of the participants with certificate after receiving from the executives

GOBORDHAN scheme, etc.) and An overview of Fertiliser (Control) Order, 1985 by Mr. Basant Kumar Dey; (ii) Indian and Global Fertiliser Scenario – An overview by Mr. Satyajit Mishra; (iii) Fertiliser Marketing Strategy in the Changing Environments by Mr. U.C. Dixit, Chief Customer Officer, Indorama India Private Limited, Kolkata; (iv) Fertiliser Marketing Strategies of Specialty Fertilisers by Mr. Balwant Singh, Managing Director, MN Crop and Fertico Private Limited, Howrah; (v) Nano Fertilisers and Use of Drone in Indian Agriculture and Importance of Integrated Nutrient Management by Prof. Sushil Kothari; (vi) Fertiliser Policy – Key Initiatives and Desired Interventions by Mr. Hemant Dabak, Chief Manger (Coordination) HURL, New Delhi; (vii) Giving Boost of Promotion of Single Super Phosphates in Indian Agriculture by Mr. Biswarup Bose, Business Head, SAI Fertilisers Private Limited, Kolkata; (vii) Importance of Digital Technology in Agriculture by Dr. Sushanta Kishire Khuntia, Visiting Professor, Centre of Agriculture Management, Utkal University, Bhubaneswar and Managing Director of Dependable Agri Services Private Limited, Odisha (viii) Leadership Skills and Team Building by Mr. Sudip Roy, Leadership, Soft Skill Training Expert, Kolkata.

A yoga session in the morning of 4 February 2025 was also conducted by Mr. Subodh Kumar Singh.

At the valedictory session, open discussions were held and the participants freely participated in giving the feedback about the content and overall arrangement of the program. Certificates were distributed to the participants by Mr. Satyajit Mishra and Mr. Sudip Roy.

At the end, Mr. Subodh Kumar Singh thanked the faculties, participants, and member companies for nominating their executive, their active support and cooperation for overall success of the program.

The program ended with a formal vote of thanks by Ms. Priyanka Saikia, Assistant Manager - Corporation Communication, HURL, New Delhi.

Fertiliser Orientation Program for Industry Personnel

The Fertiliser Association of India, New Delhi organized a **Fertiliser Orientation Program for Industry Personnel** during 27-30 January, 2025 at Jaipur, Rajasthan. Fifty-eight participants from twenty organizations attended the program. Dr. Naresh Prasad, Director (Marketing), FAI, New Delhi, inaugurated the program by lighting the lamp.

In his address, Dr. Prasad cited that there was a time in India's history when fertiliser use was almost insignificant. During this period of farming, the natural fertility of the soil was exploited to grow the crops. The practice of shifting cultivation was very much prevalent, wherein farmers used to move from one place to another to take advantage of inherent soil fertility. Thus, the crop production was based on natural soil fertility and later with the use of organic manures. He gave an example of the Bengal Famine, which struck the nation in 1943, and many people could not survive due to starvation. Following independence, it became crucial for the Government of India to take vital decisions to ensure food security for the nation. Thus, introduction of high-yielding crop variety seeds sparked India's Green Revolution, and in 1968, the country achieved food grain selfsufficiency. Since HYV crops had a high demand for plant nutrients, organic fertilisers alone were unable to meet this demand. As a result, use of chemical



FAI officials and some of the participants during inaugural function

fertilisers in agriculture got the desired impetus. In today's context, where the population of our country is the highest in the world and increasing continuously, it is very important for us to go on producing the sufficient food to meet the growing nation's requirement. He explained the significance of maintaining good soil health as it provides food to us. It is an established fact that the role of fertiliser is very important in sustaining foodgrain productivity in the country. However, balanced use of fertiliser is vital to get the desired yield of better quality. He mentioned that the first fertiliser plant was

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Dr. Naresh Prasad and Dr. A.P. Singh giving certificate to a participant

commissioned in the country long back in 1906. Other fertiliser products such as ammonium sulphate, ammonium sulphate nitrate, urea, ammonium chloride, ammonium phosphate, calcium ammonium nitrate, nitrophosphate, DAP, TSP, and NP/NPKs came later on. As the requirement of fertiliser is much more than the indigenous production, our country is hugely dependent on the import of Urea, DAP and NP/NPKs to bridge the gap. The entire requirement of MOP is met through import as we do not have any commercial source to produce MOP in the country. During the year 2023-24, India imported about 17.7 million MT of finished fertiliser products to meet the demand for fertilisers. In addition to that, we are also importing raw materials/ intermediates for production of finished fertilisers. He also informed that the Government of India is providing a huge amount of subsidy to keep the retail prices of fertilisers affordable to the farmers. The present subsidy is routed through the fertiliser industry. The industry sells the material at the subsidized price and later on receives the subsidy payment from the government as per the policy. During the year 2022-23, due to spurt in the international prices of fertilisers, the subsidy on fertilisers crossed Rs. 2.50 lakh crore. Dr. Prasad concluded that this is a good platform for all the participants to interact with the faculty as well as with each other to update their knowledge and skills. He requested the participants to share their expectations and hoped that after going through the program, the participants would be able to perform their responsibilities more efficiently.

Earlier, Mr. Parag Saxena, Chief (Marketing), FAI, New Delhi, dwelt upon the objective of the program and topics to be covered by the speakers. At the conclusion of the inaugural session, Mr. Mustafiz Ul Hasan, Marketing Executive, FAI New Delhi proposed formal vote of thanks.

M/s. S.N. Mining Private Limited, Jaipur hosted the dinner on 27 January, 2025.

The first presentation on 'Types of Fertilisers and their Characteristics' was made by Dr. A.K. Gupta, Director, Apex University, Jaipur. He mentioned that the fertilisers are the food for plants. There exists a positive correlation between fertiliser consumption and crop production. The two most common categories of sources of plant nutrients are organic manures and inorganic fertilisers. Nutrients from organic products are gradually released upon decomposition over time, while inorganic products allow rapid release and consequent fast uptake of nutrients by plants. Dr. Gupta dwelt upon the classification of fertilisers in different categories as per FCO, 1985 and stated that each fertiliser has a different percentage of nutrients. For example, neem coated urea has 46% N, where as DAP has 18% N and 46% P_2O_{57} etc.

Mr. Manish Goswami, Chief (Technical), FAI, New Delhi made a presentation on Production Technologies for Ammonia and Urea Plants. Nitrogen is derived from a common intermediate *i.e.* ammonia for making all nitrogenous fertilisers and complex fertilisers. About 70% of world ammonia production is used for making fertilisers, and India ranks 3rd globally in terms of its ammonia capacity. He explained the manufacturing process of ammonia and urea in the country. All commercial production of ammonia is through the Haber-Bosch process. Ammonia is synthesized from hydrogen and nitrogen at high pressure and temperature. He apprised the trainees about the process and complexities in production of NH₃ and urea; leading technology suppliers; improvement in environmental performance; and production of green ammonia; etc.

In his second presentation on Manufacturing Technologies for Phosphatic Fertilisers. Mr. Goswami stated that the country is heavily dependent on the import of both raw materials and intermediates for production of phosphatic fertilisers. Therefore, most of such plants are located in coastal locations. India also imports DAP and NP/NPKs to meet the demand. He explained the process of manufacturing SSP, TSP, DAP and NP/ NPK complex fertilisers. Adequate safety measures are in place in production of sulphuric acid, phosphoric acid and finished products. Conversion efficiency is very important as raw materials account for major cost in production of phosphatic fertilisers.

Dr. Prasad made a presentation on An Overview of Fertiliser Industry in India. He mentioned that food security has always been a top priority for India. Use of fertiliser is a vital component of agricultural development. We would need about 60 million MT of plant nutrients to produce to meet the requirement of 400 million MT of foodgrains in India by 2050. India is the second largest consumer and producer of fertilisers in the world and also one of the largest importers of fertilisers. The higher imports by India tend to increase international prices. He described the various policies notified by the Department of Fertilisers with regard to urea and P&K fertilisers. He



A view of the participants with the faculties and FAI officials

gave an overview of number of fertiliser plants, production, import and consumption of finished fertilisers, import of raw materials, intermediates; subsidy on fertilisers; issues of the agriculture sector; India's import share in world trade for raw materials, intermediates and finished fertilisers; major fertiliser producing and importing companies; international price trend of fertilisers and raw materials; factors affecting the international prices; demand projection of fertiliser products and nutrients; challenges related to nitrogenous, phosphatic, and potassic fertilisers, etc. In view of import dependency, there is a need to explore possibilities of setting up joint ventures abroad for sourcing raw materials and finished products in resource-rich countries. There is a also need for concerted and collaborative efforts of all stakeholders to promote balanced and integrated use of fertilisers for sustainable agriculture.

Mr. R.K. Gupta, Chief Procurement Officer, PPL, Bengaluru, shared his experience with regard to Policy Environment for Urea and Decontrolled P&K Fertilisers. He gave an overview of fertiliser policy related to Central Fertiliser Pool In 1994; Fertiliser (Control) Order 1957; Fertiliser (Movement control) Order 1973; Retention Price Scheme for N fertilisers in 1977 and complexes in 1979; decontrol of P&K fertilisers in 1992 followed by concession scheme; New Pricing Scheme for urea in 2003; uniform freight subsidy policy in 2008; nutrient based subsidy policy for P&K fertilisers in 2010; pooling of gas in urea sector in 2015; new urea policy in 2015; direct benefit transfer in 2018, freight policy for P&K fertilisers under NBS; new investment policy in 2012 and amendment in 2014; neem coated policy for urea in 2015; GST; FMS, mFMS, iFMS; model fertiliser retail shop; reasonableness of MRP of P&K fertilisers; one nation one fertiliser; PMPRANAM; urea gold; etc.

In his presentation on Application of Digital Technologies in Fertiliser and Agriculture Sectors, Dr. Devraj Arya, Vice President (FS & RA), Agrostar, Pune described the need for use of digital application in agriculture sector. He informed that the farmers are now looking for immediate information on crops, pests/diseases, soil, fertigation, credible sources to address the issues, timely supply of products at the right prices, doorstep delivery of input/ products and services, access to market information, and market linkages. To comply with the emerging needs of the farmers, digital technology is the solution. Digital users are on rise in rural areas. He underlined that digital applications in agriculture include precision agriculture; data-driven decision making; mobile apps for farmers; supply chain digitization; monitoring & automation, and sustainable farming. Further, he discussed the way in which AgroStar is leveraging innovative technologies and market outreach to lead business in India.

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Dr. Soumitra Das, Director – Asia Pacific, International Zinc Association, New Delhi, made a presentation on Micronutrients for Food and Nutrition Security. He covered various areas such as the role of micronutrients in crops; deficiency symptoms of micronutrients in soils and human health; biofortification; policy; climate change; smart farming, consumption of different micronutrients in India, etc. Dr. Das concluded that micronutrient deficiency in crops and humans is a global challenge. There is a need to enhance use of such nutrients in balanced fertiliser use for ensuring soil health, food and nutrition, security.

Mr. Tom George Kallingal, Senior Executive Director (TpT), IFFCO, New Delhi made presentation on Port Operation - An Overview. He stated that fertilisers are imported mainly at 21 Indian ports, and there is complexity in the import process. India is having 7517 km long coastline and has 13 major ports and 205 non-major ports. He shared the data on traffic being handled at ports. The share of fertilisers in all commodities accounts for only 2.24%. Mr. Kallingal pointed out that it is important that port must have its own physical and logistics support infrastructure.

An efficient port should have better civil & mechanical facilities; cargo handling infrastructure like fixed & mobile cranes; rail sidings; berthing capacity; number of available berths and capacity of the port to receive ships and cargo; etc. The various factors in deciding a discharge port include the source of the fertiliser/ raw material, geographical location of the source country, vessel capacity, targeted market location, voyage time, physical location of the port, infrastructure, stevedoring options available, availability of labour and rail/ road transport network, distance from port to the market location, physical parameters of the ports, storage facilities, and other miscellaneous expenses involved at the port.

Dr. Soumitra Das also made a presentation on Specialty Fertilisers in Smart Nutrient Solutions. He covered various areas of specialty fertilisers, such as water-soluble fertilisers; liquid fertilisers; fortified fertilisers; customized fertilisers; slow and controlled release and stabilized nitrogen fertilisers; nano fertilisers; etc. The rise in demand for high-efficiency fertilisers, ease of application, adoption of sustainable farming practices, and higher environmental safety are some of the factors driving the market of specialty fertilisers. The government should bring in policy reforms for encouraging new innovative specialty fertilisers; research institutions should be encouraged to undertake research on innovative specialty products; fertiliser companies need to adopt a different marketing approach for new innovative specialty products; shift their focus from selling products to selling crop nutrition solutions; and ensuring availability of quality specialty fertilisers at the time of need of farmers.

Mr. R.S. Chhabra, Head (Business Development), Khaitan Chemicals & Fertilisers Limited, New Delhi, in his presentation on An Overview of SSP Industry in India, informed that Single Super Phosphate (SSP) was the first commercial fertiliser introduced in the country by EID Parry in Tamil Nadu in the year 1906, and now the plant is being operated by Coromandel International Limited. In our country, there are 102 SSP plants, of which at present, 95 plants are in operation. SSP is the 100% indigenous fertiliser with a fully annual production capacity of 12.8 million MT. Manufacturing of SSP is based on the simplest chemical reaction of rock phosphate with sulphuric acid. It is a straight phosphatic multi-nutrient fertiliser containing 16% available P₂O₅, 11% sulphur, 21% calcium, and some other essential micronutrients. Due to the availability of indigenous rock phosphate in Rajasthan, 75% of total production

capacity is available in the western region. Consumption of SSP improved significantly after implementation of the NBS scheme in 2010. It recorded a increase of 44.3% in 2010-11 over 2009-10 and further, 24.1% in 2011-12 over 2010-11. It touched an all-time high level of 5.65 million MT in 2021-22. It declined to 4.54 million MT in 2023-24 SSP industry in India is operating below 40% capacity utilization. The reason for such low capacity utilization needs to be ascertained, and remedial measures should be adopted to improve the same.

The matter on DBT in Fertilisers was dealt by Mr. Munish Bhatia, Senior Regional Manager, Chambal Fertilisers and Chemicals Limited, Udaipur. He informed that the Government of India has been routing the subsidy through the fertiliser industry for administrative reasons/purposes. To stream-line the process, the government introduced the Fertiliser Monitoring System (FMS) in 2007 and Mobile Fertiliser Monitoring System (mFMS) in 2012. Further, both FMS and mFMS were merged to Integrated Fertiliser Monitoring System (iFMS). The Direct Benefit Transfer (DBT) was initiated in 2016 and All-India roll out was completed in March 2018. He covered pertinent points related to payment of subsidy to the industry before pre – DBT regime. Under the present DBT framework, 100% payment of subsidy to the fertiliser companies is being reimbursed on actual sales of fertilisers by the retailers through point of sale (PoS) machines captured on- line in the iFMS. The claims are processed on a weekly basis, and the amount of subsidy is remitted to the company's bank account through electronic mode.

In his presentation on Fertiliser Distribution in India, Mr. Parag Saxena informed that due to seasonal demand and production round the year, it is necessary to move the material from plants/ ports to consumption areas by adopting meticulous planning of logistics operations. There are mainly two modes of transportation for the movement of fertilisers, *i.e.* rail and road. The third mode, *i.e.* coastal and inland waterways, is still in its infancy stage. The movement is being done from about 200 locations, i.e., manufacturing units and ports and to be transported to meet the demand of fertilisers across the country. At present, movement of fertilisers through railways is about 80%. He suggested deployment of sufficient labour and supervisory staff at the rake points to handle a rake; non-use of hooks in handling operations; coverage of thick polythene sheet or tarpaulin on the floor of a rake or truck, etc.

Dr. D.P. Singh, Joint Director, Department of Agriculture, Government of Rajasthan, Udaipur, shared his issues on fertiliser sampling procedure and the legal compliances. He stated that the vision of the Government of India is very clear that farmers should get fertilisers as per the specifications laid down in the FCO, 1985. To achieve this objective, Government of India as well as the officials of the States Department of Agriculture have been drawing the samples from the plants/ ports/ markets and these samples are analyzed in the quality control laboratories as per the methods of analyses outlined in FCO. He updated the trainees about the amendments issued by the Ministry of Agriculture and Farmers Welfare vide S.O. dated 13th December, 2024, regarding the sample drawn by the inspector and procedure to be followed under clause 28B.

Dr. A.K. Gupta, in his second presentation, on Efficient Fertiliser Use - The Way Forward stated that use efficiency of fertilisers is low. Therefore, it translates to environmental problems such as leaching of NO⁻₃ -N in ground water and emissions of GHGs in the environment. He enumerated ways and means to improve fertiliser use efficiency of different products being used in agriculture. Therefore, farmers should use fertilisers sensibly as per the need of the crop.

Dr. A.P. Singh, Senior Manager (Agriculture Services), IFFCO, Jaipur explained the Experiences of Nano Fertilisers in India. He specified that use of Nano fertilisers improves soil health; minimizes nutrient losses; supplements chemical fertilisers; saves subsidy; reduces pollution to soil, air, water and crop stress; minimizes crop lodging; provides resistance to pest & diseases, etc. He shared the experience of IFFCO in Rajasthan on the use of Nano fertilisers. There had been increase in yields in wheat, groundnut, moong, gram, barley, mustard, bajra, maize, cumin, isabgol, sesame, etc. in the use of Nano fertilisers. He also apprised the trainees about conduct more than 14,000 trials at farmers' fields by IFFCO. He briefed about some issues and challenges such as subsidy on traditional fertilisers; preference of high margin products by retailers/ dealers; no incentive to Nano fertilisers; lack of technical know-how; traditional mindset; of farmers; lack of recommendation by various agencies; constraint of spraying facility; management practices; etc.

Dr. Prasad made his second presentation on Fertiliser Use – Myth and Reality. He clarified the myths and misconceptions related to fertiliser use such as high use of fertiliser in India; subsidy given to the industry; plant nutrients present in fertilisers are different than those present in organic fertilisers; conventional fertilisers harmful to people, wildlife and the environment; when nutrients are already available in the land and in the air, then why add more; If nutrients are the same, why not go for organic only?; are the crop yields by using organic methods at par with conventional farming?; Is organically grown food safer, healthier and nutritious?; can we feed the world without conventional fertilisers?; Do the mineral fertilisers deplete soil organic matter?, etc.

At the conclusion, Dr. Naresh Prasad summarized the deliberations and requested the participants to clear their doubts, if any, or ask the question that they feel was unanswered during the deliberations. At the end of the program, Dr. Naresh Prasad and Dr. A.P. Singh distributed certificates to the participants.

HANDBOOK ON FERTILISER USAGE The handbook provides information on various aspects of fertiliser use and crop nutrition. The wide ranges of topics covered in the hand book are : 1. Fertilisers and Food Production 14. Other Fertiliser Materials HANDBOOK ON 2. Plant Nutrition **15. Secondary Nutrients** FERTILISER 3. Nature and Properties of Soils USAGE 16. Micronutrients 17. Nutrient Management in Degraded Soils 4. Soils of India and their Classification 18. Efficient Use of Manures and Fertilisers 5. Soil Testing and Fertiliser Recommendations 19. Water-Fertiliser Interactions 6. Organic Fertilisers 20. Fertigation 7. Bio-fertilisers 8. Nitrogenous Fertilisers 21. Integrated Plant Nutrition Systems and Sustainable Agriculture 9. Phosphatic Fertilisers **10. Potassic Fertilisers** 22. Fertiliser Use and Crop Quality **11. Complex Fertilisers** 23. Fertiliser Use, Climate Change and Environment 24. Economics of Fertiliser Use 12. Mixed Fertilisers 13. Specialty Fertilisers 25. Fertiliser Legislation and Quality Control Grossary of Terms are also given for the benefits of the readers. Agricultural planners; extension staff of central and state governments, fertiliser industry, KVKs; scientists of ICAR/SAUs; agriculture students; farmers and staff of agencies involved in development of fertiliser and agriculture will find this revised edition very informative and useful. Foreign US \$50 Price per copy Rs. 400/-For your copies please write to: THE FERTILISER ASSOCIATION OF INDIA FAI House, 10, Shaheed Jit Singh Marg, New Delhi-110067 Tel:011-46005211, 91-11-46005200/46005233/46005236 Email: acctt@faidelhi.org Website: www.faidelhi.org

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