



Indian Society of Agricultural Engineers

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A Professional non-profit organization established in 1960 aimed to promote and encourage the profession of Agricultural Engineering and to advance the standard of Agricultural Engineering in the areas of Research, Development and Education.

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Editors Column

Dear All

This is the first newsletter in 2013 and comes with many responsibilities for us. We wowed during 47th ISAE convention at Hyderabad that this year we will work for establishing department of agricultural engineering in all states and also work for having a department of agricultural and food engineering in every IIT and NITs. The chapters of ISAE need to take initiative for their respective states and of course the ISAE HQ will be there to support when ever needed. I can make myself available as far as possible for motivational lectures and also for presentations to convince authorities, political leaders and top bureaucracy.

We are all proud that for the first time in the history of ICAR, Dr. A. K. Sikka, an agricultural engineer is occupying the high office DDG (Natural Resource Management) and on behalf of ISAE family I congratulate Dr. Sikka for this feat. Another feather in our cap is our industry colleague M/s Captain Tractor getting “Innovations in Technology for New Product/Process Development -2011” award in Vibrant Gujarat Summit-2013.

We have lost Dr. Mohan Lal Taneja who was founder of once highly popular Agricultural Engineering Newsletter, which later evolved into the Agricultural Engineering Today. He also served United Nations from 1971 to 1984, and promoted farm power and machinery in several countries.

Gujarat Chapter showed vibrant beginning and we hope they will be the first to get the Department of Agricultural Engineering in the state. The Convention of ISAE and International Symposium on “Bio-Energy – Challenges and Opportunities” was very successfully organized by Dr. Reddy and his team and response from national and international speakers in the symposium was overwhelming. The august presence of Dr. Lalit Verma, President Elect ASABE, Dr. Toshinori Kimura, Secretary General, CIGR, brought richness to the deliberations during symposium and convention.

Good news is that now ICAR is on Face Book with its official FB page. There are several pages on FB using similar name hence I am giving the link here and request members to post agricultural engineering related items (<http://www.facebook.com/InAgrisearch?fref=ts>) and discussions so that plight of our profession in ICAR system can be improved and its pace of growth can be accelerated.

I am thankful to Dr. Saraswat for pre-release edit. We are starting a column named Members Speak and request members to contribute their experiences as Ag. Engineer in different fields.

Wishing you all a very happy and colourful HOLI.....

R.T. Patil

Message from President

The first undergraduate degree program in Agricultural Engineering in India began in 1942 at Allahabad Agricultural Institute, Naini, Allahabad. Next it was started with Bachelor of Technology (B.Tech.), Master of Technology (M.Tech.) and Doctor of Philosophy (Ph.D.) degree program in 1952, 1956, and 1962, respectively at the Indian Institute of Technology, Kharagpur. The decision by the Government of India to establish State Agricultural Universities (SAUs) on the pattern of Land Grant Universities in the United States led to the offering of agricultural engineering degree in 1962 by the Uttar Pradesh Agricultural University (now Govind Vallabh Pant University of Agriculture and Technology). Since then, degree courses in agricultural engineering are offered at many universities across India. Changing needs of Agriculture and Agro industries in the country has led to modification of course curriculum from time to time. Considerable efforts have also been invested by Indian Council of Agricultural Research (ICAR), Indian Society of Agricultural Engineers (ISAE), All India Council of Technical Education (AICTE), and academic council of various SAUs in modifying the curriculum as per needs of the modern times. The course requirements for an agricultural engineering degree typically range between 160-201 credit hours. Major courses cover farm machinery design and production, energy & power in agriculture, post harvest and process engineering, agriculture structures & environment control engineering, irrigation and drainage engineering, soil water conservation engineering, dairy engineering and aquaculture engineering.

It is over seven decades old journey of agricultural engineering education in India. Over the years many changes have taken place in agriculture pattern, development of agro-industry and allied sectors. Agricultural Engineering education has been by and large a component of state agricultural universities. New agriculture processes with changing needs of agriculture and allied sectors demand a prominent role for agricultural engineers to contribute towards sustainable growth of agriculture. Agricultural Engineering input has become an essential component of agriculture today. New type of agriculture is emerging with special engineering input demands like high-tech agriculture, precision agriculture, conservation agriculture, organic agriculture etc. In addition IT applications, automation, instrumentation, GIS, remote sensing, environment control, agriculture waste management, recycling of sewage water are some of the areas where specialized human resource in agri engineering is essential. Present strength of engineers is highly inadequate to deal with future challenges in this sector.

Therefore, agricultural engineering education primarily dealt by SAU's in India has to cross over to other Institutions and Universities. During the recently concluded 47th ISAE convention at Hyderabad, these needs were deliberated in a special session and it was recommended that all IIT's, NIT's, Central Universities, and Technological Universities in the country should start agricultural engineering degree courses to meet the wide spread demand for agricultural engineers. ISAE has appointed a committee Chaired by Prof. Gajendra Singh, past president of ISAE and co-opted members from senior faculty drawn from IIT, Kharagpur and other institutions to work on an action plan for expansion of agricultural engineering education in India. It is important to note that AICTE has also taken initiatives to approve degree courses in agricultural engineering.

I am sure that all fraternity in agriculture sector will appreciate and support the movement of expansion of agricultural engineering education initiated by ISAE.

V. M. Mayande
President

Members Speak

Er. Jitendra Mohan Singh (LM-9989)

I did Advanced Master Degree in “Sustainable Energy Systems and Management” from Internal Institute of Management, University of Flensburg, Germany under DAAD Scholarship in 2002. Prior to this, I did B. Tech. in Agricultural Engineering from Allahabad University in 1995.

After completion of Master degree in Germany, I returned to India in 2002 and started searching job. I appeared in several interviews for the post of assistant professor in state agricultural universities. Unfortunately, I was not selected due to bad recruitment systems in state agricultural universities. In this same line, my paper was also rejected by ISAE journal which was based on my research during Master degree.

After that I decided to leave the agricultural engineering profession and started working on real climate changes issues and GHGs emission reduction. I proud that I am one of the members who worked on estimation of grid emission factor of all regional grids in India which is now basis for calculation of emission reductions in UNCCC (Kyoto Protocol System). Thanks to Dr. Kirit Parikh who valued my education and provided opportunity to work in this area in Integrated Research and Actions for Development (IRADe).

In the year 2005, SMEC International Pty Limited, given opportunity to join SMEC and start the Carbon business consulting works. I joined SMEC in 2005 and started Carbon consulting business in India. In 2009, I started a new company called Perenia Carbon India Pvt. Ltd which is JV of SMEC International Pty Ltd and Pacific Hydro Pty, Australia. Since, then I am working for this company. In 2011, I was appointed as Director and included in the board of directors of this company.

Currently, I am involved in developing number of projects as CDM projects in India, PNG, Vietnam and Malasia. I am also working on WCD compliance reports for large hydro projects, Corporate Social Responsibility (CSR) & Sustainability reporting, Carbon disclosure projects in India. I am also an Expert of Clean Development Mechanism of Kyoto Protocol in Climate Change Secretariat, Germany.

In the context to have an agricultural engineering directorate, it is a god step and there should be a collective effort to bring the profession at the level where all Agril. Engineer must contribute the expertise towards the development and real actions.

In this context, I would like to remember our movement in Uttar Pradesh for entry of agricultural engineers in "Rural Engineering Service" when BSP Government was in power first time in UP. With the help of one PUSA scientist who has did B.Tech. from Allahabad University, we were able to meet with then Rural Engineering Services (RES) Minister. I personally met with few executive members of ISAE in 1997, unfortunately no one given significant support.

Further, I would like to mention that no such effort were made by the ISAE earlier to popularise the agricultural engineering profession and fight for opening in other areas such as civil services, rural engineering departments, irrigation department etc, except to work for personal advantage in research system which is still continuing. I hope new members of the executive body of ISAE will give new direction for this profession while working with the agricultural engineering students union.

I would also request to the professionals who are placed at decision making places, VCs in state agricultural universities to come forward and provide equal opportunity in recruitment process to the young agricultural engineers. So that we feel proud that at there is one sector where things are going well.

Lastly, I would suggest ISAE to take the further steps to encourage developing entrepreneurs through introducing incubator in Agricultural Systems. I have heard something about introducing incubator for entrepreneurs in ICAR two years back.

Member News

Dr. A. K. Sikka joins as DDG (NRM) ICAR



Dr Alok K. Sikka (LM- 10185) has taken over as Deputy Director General (NRM), ICAR. He is also holding additional charge of his previous position of Technical Expert (Watershed Development), National Rainfed Area Authority (NRAA), Planning Commission, Government of India, New Delhi. Before joining NRAA, he was Director of ICAR Research Complex for Eastern Region, Patna and Basin Coordinator for Indo-Gangetic Basin under the CGIAR Challenge Program on Water and Food. He did his Bachelor's degree from Allahabad University in 1976 in Agricultural Engineering and M. Tech from Indian Institute of Technology (IIT), Kharagpur in 1978. He is Ph. D. in Civil and Environmental Engineering with specialization in Hydrology and Water Resources Engineering from Utah State University, Logan, Utah, USA.

He started his career in the Indian Council of Agricultural Research (ICAR) in 1978 at Central Soil & Water Conservation Research and Training Institute (CSWCRTI), Dehradun. He has a rich and diverse experience of over 34 years in research, institutional and policy issues, teaching, training, extension and consultancy in the areas of soil & water conservation, watershed management, water harvesting, hydrologic modelling, drought studies, climate change, water management, water productivity and farming systems. Dr. Sikka worked in different capacities in India and abroad which include Head of the Centre; CSWCRTI Research Centre, Udhamandalam; Scientist In-charge, Drought Division at National Institute of Hydrology, Roorkee; visiting Professor at University of Arizona, Tucson, Graduate Assistant at Utah State University; Logan; Utah and as faculty at Oregon State University; Corvallis; Oregon; USA. He has been associated with many internationally supported projects including DFID, ACIAR, USAID, CGIAR, IFAD, World Bank, etc.

He has more than 250 publications in the form of research papers in the international and national Journals/Proceedings, book chapters, bulletins, reports and books to his credit. He is recipient of many national awards including Vasantrya Naik Award-2000 of ICAR for Research Application in Agriculture for outstanding contribution in the field of Water Conservation and Dryland Farming, ICAR Award for Team Research for the Biennium 2001-02, Dr. Rajendra Prasad Puruskar of ICAR for the year 2005-06, Hem Prabha – S.N. Gupta Medal (2000), Certificate of Merit (1989-90) of Institution of Engineers (India). He is Fellow of National Academy of Agricultural Sciences, Indian Association of Soil & Water

Conservationists and Soil Conservation Society of India. We are proud that he is the first agricultural engineer to become DDG (NRM).

Captain Tractor gets “Innovation in Technology Award” by Gujarat Government

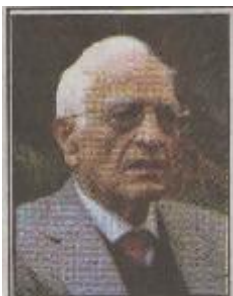


The Captain tractors' has been awarded for “Innovations in Technology for New Product/Process Development -2011” in Vibrant Gujarat Summit-2013. This award was given for their mini tractor concept. They have got a very good response to their product since it was launched in 1998.

The company has broad network of dealers in 11 states and have exported this tractor to 10 countries. Company today boasts of 8000 satisfied customers for this product. They have recently entered in to strategic alliance for small tractor series with TAFE.

Obituary

Mohan Lal Taneja (20-11-1924 to 23-02-2013) (As written by Prof. JS Bali)



It was a great shock to see the obituary reference of my close friend, Mohan Lal Taneja in the Hindustan Times of February 25. I had been away to a hospital since morning. In the late evening when I was going through the Hindustan Times, the photo of my dear friend suddenly came before me on the Obituaries page. My shock was mixed with remorse.

A couple of years back, I noticed a philosopher's saying: *Give me one rose and a kind word, while I am around, rather than a truck load of flowers after I am gone.* Following this idea, I decided to write a personal Note on Mohan Lal, my friend of 65 years standing, and send it to him as a surprise gift. His son Anmol became my cooperator in this venture and provided me quite a bit of biographical material. As often happens, man postpones, and regrets later when the opportunity is lost. This regret will remain with me till the end of my life.

In 1947, when I went to teach Physics and Mathematics at the Allahabad Agricultural Institute, I noticed a handsome and bright staff member doing research on bullock power. It was none other than our dear Mohan Lal. It was an unusual type of research work requiring the risky routine of measuring the size of various muscular parts of big and often naughty bullocks. I often accompanied Mohan Lal on this venture and created life-long memories.

Mohan Lal Taneja made his mark in the then new profession of agricultural engineering when he joined the newly created Central Tractor Organisation in the 1940s. Contrary to the fashion of white collar engineering by most of the then engineering degree holders, Mohan Lal made a name for himself by mastering the art and science of maintenance and overhauling of heavy earth moving machines. He loved to dirty his hands and put the out-of-order machines to work again. He became the idol of the agricultural engineering students and graduates of the decade of 1940s.

Our paths crossed again at Krishi Bhavan, New Delhi, which is the headquarters of Indian Agriculture. Those were the days when India lived from *ship to mouth* to feed herself by imported food grains. Backed by his rich field experience, he was sought by senior officers and the Minister himself for advice on shaping sound policies for making India self-sufficient in food. The result was the now-famous Green Revolution of the 1960s.

At Krishi Bhawan, Mohan Lal revived the sagging fortunes of the Indian Society of Agricultural Engineers, and put a new life into it. Besides the Research Journal, he started a highly popular Agricultural Engineering Newsletter, which later evolved into the *Agricultural Engineering Today*. He also promoted the Farm Machinery and Equipment Industry of India by pleading their case before the higher authorities for industry-friendly policies.

Because of Mohan Lal's brilliance, he was soon picked up by the United Nations where he served brilliantly from 1971 to 1984, and promoted farm power and machinery in several countries. He spent the last three decades of his life, basking in the well-deserved warmth of privileges of a UN pensioner.

Mohan Lal's life, from North West Frontier Province to the capital of India passed successfully through many stages, and many a stop in many a country. Mohan Lal Taneja's death is a great loss to the profession of agricultural engineering in India and the world. Mohan Lal was a faithful friend, good husband and a good father. He was King of a man. As they say of the King, let us say for him: *Mohan Lal Taneja is dead, long live Mohan Lal Taneja*

Chapter News

Annual General Body Meeting of Gujarat Chapter

The annual general body meeting of ISAE, Gujarat Chapter was held in the Seminar Hall of College of Agricultural Engineering and Technology, Junagadh Agricultural University (JAU), Junagadh on 28th February 2013 to discuss ongoing activities and future plans of the chapter.



The chairman, ISAE-Gujarat Chapter, Dr. P. M. Chauhan, Professor and Head, Department of Renewable Energy and Rural Engineering, College of Agricultural Engineering &

Technology (CAET), JAU welcomed all the members. Dr. N. C. Patel, Hon'ble Vice-Chancellor, gave valuable remarks and suggestions for the future activities of the chapter. He also gave his views and efforts being made on the establishment of the Directorate of Agricultural Engineering in Gujarat. A summary of activities and discussions are given below:

- Dr. N. C. Patel, Hon'ble Vice Chancellor, JAU, Junagadh felicitated Sh. P. T. Korvadia, Ex-Deputy Director, Gujrat State Land Development Corporation, Rajkot. and Prof. J. B. Savani, Ex. Principal & Dean, CAET, JAU, Junagadh for their valuable contributions in the development of profession of Agricultural Engineering in Gujarat.
- Er. H. Y. Maheta, Treasurer presented the accounts of ISAE Gujarat chapter for the year 2012-2013, which was unanimously approved by the house.
- House decided to provide grants covering registration and travelling expenses to four (4) UG/PG students per year for paper presentation during ISAE convention.
- House decided to organize various student activities. House also discussed to organize panel discussion or open house of ISAE Gujarat chapter Agricultural Engineers and use of Social Network for giving wide publicity to the activities of ISAE Gujarat Chapter.
- Efforts made by the university to establish Directorate of Agricultural Engineering in Gujarat were discussed. It was decided to submit a proposal for the establishment of Directorate of Agricultural Engineering in Gujarat to concerned state authorities through ISAE Gujarat Chapter.

Er. H. V. Parmar, Secretary, ISAE Gujarat Chapter proposed the vote of thanks.

ISAE Executive Council News

Proceedings and Recommendations of the 47th Annual Convention of ISAE and International Symposium on “Bio-Energy – Challenges and Opportunities”

Inaugural Session

The 47th Annual Convention of ISAE and International Symposium on Bio Energy: Challenges and opportunities was organized in association with Acharya N G Ranga Agricultural University and Central Research Institute for Dryland Agriculture, Hyderabad at DRR Auditorium during Jan 28-30, 2013. Issues related to agril.



engineering research, education, extension and industrial promotion with major theme on Bio Energy were discussed.

Smt. Dr. C. Suvarna, IFS, Special Commissioner (Watersheds), Department of Rural Development, Govt. of Andhra Pradesh was chief guest during the inaugural session. Prof. Toshinori Kimura, Secretary General, Commission Internationale du Genie Rural (CIGR), and Prof. Lalit Verma, President elect, American Society for Agricultural and Biological Engineers (ASABE)/Department Chair of Biological and Agricultural Engineering at the University of Arkansas, USA were the guests of honor. The inaugural session was presided over by Dr V.M. Mayande, President, ISAE, New Delhi.

Dr. K. S. Reddy, Organizing Secretary and Chairman of ISAE, AP Chapter welcomed the gathering and dignitaries from USA and India and participants, farmers, students, press media etc. who attended the International Symposium. Dr. Mayande, while delivering his presidential address, emphasized the need to establish department of agricultural engineering in each state by consolidating various relevant schemes operated under different state departments. Dr T V Satyanarayana, Dean, Faculty of Agricultural Engineering and Technology, Acharya NG Ranga Agricultural University (ANGRU), Hyderabad spoke about the spread of agricultural engineering profession across the state of Andhra Pradesh. Prof. Kimura explained the role of International Commission of agricultural engineering in promoting the research and technology across the globe. Prof. Lalit Verma emphasized promoting linkages with ASABE for more interaction on designing viable technologies as per to the needs of the stake holders. Dr B Venkateswarlu, Director, Central Research Institute on Dryland Agriculture (CRIDA), Hyderabad, emphasized the need for using watersheds for climate resilient research by designing suitable bio engineering measures for sustainable agriculture for protecting natural resources as well as the environment. Souvenir of the symposium and two bulletins on topics “Farm Pond Technology” and “Surface Water Yield Model User manual with software ver 1.0 of CRIDA” were released by Dr C Suvarna, IFS and Prof. Kimura respectively. In this session, the gold medals and fellows were facilitated by Dr A. P. Srivastava, Vice President (Activities), ISAE and awards were given away by the Chief Guest of the function and president of the ISAE. Dr. R. T. Patil while proposing the vote of thanks briefed about the objectives of ISAE in holding international symposiums on various important themes in each convention. He also reiterated the importance of having department of agricultural engineering to implement various state and central government schemes for rural development and farm mechanization.

Dr C Suvarna, IFS, Chief Guest of the inaugural function while delivering her address to the participating dignitaries, emphasized the need and recognition to the profession of agril. engineering as they promote special engineering skills which are essential to improve the productivity of any production system in agriculture or horticulture. She also told about the recruitment of about 35 agril. engineers as project officers in watershed management programs of the state govt. She emphasized the need for the scientists to contribute in the research on the different land use alternatives to make the rural India energy sufficient using bio mass generated from the watersheds, which can be taken as unit for all calculations along with water foot prints for climate resilience in the agriculture.

Plenary Session

In the afternoon, a plenary session on agricultural engineering was conducted by inviting renowned speakers on various subjects of agricultural engineering. Dr Gajendra Singh, Former DDG (Engg.), ICAR and Former Vice Chancellor, Doon University, Dehradun was Chairman of the session and Dr D Bhaskar Rao, Associate Dean, College of Agril. Engg., Bapatla was Co Chair of the session supported by two rapporteurs namely Dr Ch V V Satyanarayana, Associate Dean, College of Agril. Engineering, Madakasira and Dr K Yella Reddy, Director (Agril. Research), WALMTARI, Rajendranagar, Hyderabad.

The invited speakers from USA, Japan and India spoke on different subjects of Agricultural Engineering. Prof. Lalit Verma, President, American Society of Agricultural and Biological Engineering, USA spoke on Agricultural and Biological Engineering: Promoting Healthy Planet and Healthy People, Prof. Toshinori Kimura, Secretary General, CIGR, Sopporo University, Japan spoke on CIGR- Global mandate and India participation and Dr V Venkateswarlu, Head, Water Resource Division, National Remote Sensing Centre (ISRO), Hyderabad spoke on National Research Priorities and Frontier Technologies for Water in Agriculture. Dr B Venkateswarlu, Director, CRIDA spoke on Climate Change in Rainfed Agriculture and Role of Agricultural Engineers.

Technical Recommendations

Theme Session

1. Dedicated energy crops suiting to Indian climate and cropping system need to be encouraged to augment the biofuel requirements of the country.
2. Second generation cellulose based bio-ethanol production using various agricultural and forestry residues need to be encouraged.
3. The social and environmental impacts of biofuel technology and its uses need to be assessed.
4. Different biofuel stocks need to be evaluated for their energy efficiency and the extent of mitigation of green house gases.
5. The establishment of a gene bank and molecular breeding programme for biofuel crops having high photosynthesis and metabolism and low lignin with easy break down for biofuel conversion, need to be taken up.
6. The technology for post harvest management, biofuel processing and byproduct utilization of dedicated energy crops need to be worked out.
7. Production of perennial crops having biofuel potential should be encouraged as it would significantly reduce soil erosion and loss of nutrient.

8. With the emerging nexus of bioenergy production and water, there is a need to develop an assessment framework that can be used to evaluate the sustainability of energy, water and other natural resources. This is especially important for water limited regions in India and Pacific Northwestern US.

Biomass, Crop Residue and Biogas Energy and Biofuels, Wind and Solar energy

1. Bio energy production using second generation cellulosic material and non edible oils should be used.
2. Enhance the efficiency of Trans-esterification system through continuous process for the production of biodiesel.
3. Technology need to be upgraded and refined for an economic utilization of the cake and other by-products of Jatropha and other tree borne oil seed based biodiesel production.
4. Solar and wind based gadgets with higher efficiency of conversion need to be developed and popularized.
5. Biomass based decentralized power generation need to be encouraged in the rural areas.
6. International cooperation in bioenergy development and utilization need to be taken up on priority with USA, Japan, Brazil and other relevant countries.

Farm Machinery and Power

1. As the machines developed for agricultural operations deals with bio-logical materials and living systems, the scientists from various disciplines of engineering, crop sciences, environment and social science should be engaged while planning the mechanization research projects to have fruitful and adoptable results
2. There is a need to diversify the research activities of agricultural engineering disciplines not only in cereals but also in horticulture, floriculture and medicinal plants with emphasis on mechanization of critical farm operations.
3. Rotary tilling of soil in dry and wet land, seed bed preparation, interculture in wet/dry land conditions, orchard management is being evaluated/adapted at various locations in the country. The design of soil cutting element and their selection for various soil conditions need to be worked out and recommended.
4. The specialized machinery beyond the reach of individual farmer be made available through establishment of farm machinery banks, entrepreneurship development for custom hiring as well as tractor manufacturers by upgrading their dealership in a single window agricultural inputs delivery outlets.

5. Emphasis to be given on use of electronic devices and ICT applications in development /up-gradation of agricultural machinery systems and assessment of its performance.
6. In non-motorized transport systems in rural areas safety concern need to be addressed.
7. In reducing human drudgery critical operations like banana harvesting, coconut tree climbing etc be given due importance for its commercialization.
8. Stress needs to be given on development of new mechanisms for refinement and improvement in the existing farm machinery for better performance with multi location trials for different soil /crop rotation systems.
9. In SRI system of rice cultivation agronomic practices needs to be standardized for optimum crop geometry to intensify applications of agricultural machinery for different agricultural operations.
10. Conservation agriculture mechanization should be given more focus to reduce green house gases emission and maintain soil health with integrated coordination from the engineering and crop science technologists.
11. Sugarcane bud chipping and seedling transplanting package needs to be promoted for sugarcane cultivation practices.
12. Plant protection techniques be used involving air assisted spraying system to increase bio efficacy of application with due focus on protection of environment and surrounding biological health.
13. Precision sowing /planting will give 25-30% higher overall productivity. Automation in agricultural machinery is must which helps for more precision by reducing drudgery in various crop production operations besides reducing handling losses.
14. For large scale mechanization on sustainable base, custom hiring practices of various agricultural machinery be promoted on public private partnership mode. For this program tractor and various agricultural machinery manufacturing industries need to be roped in through their dealership network.

Processing, Dairy and Food Engineering

1. Good structures have been developed using evaporative cooling principles for pre-cooling, storage, transportation, distribution and retail vending of perishable commodities. These structures should be integrated with necessary refinements into a low cost and effective cool chain system for large scale popularization.
2. A novel concept of post harvest activity hut for on- farm PH handling including intermediate storage as developed at Anand could be taken up in rural production catchments so as to minimize the PH losses, particularly of horticultural produce.

3. The eco-friendly and health enhancing concept of utilizing bio-preservation techniques should be preferred over thermal and chemical modes of extending shelf life of agro-produce and processed food products.
4. A set of operations and machines which have been developed for PH handling of sugarcane buds as bulk planting material and jaggery & its value added products should be taken up for field evaluation and adoption.
5. Special attention is required to equip the Island zone & Goa with suitable PH gadgets and machinery for sustainable food supply chain.
6. Considering the recent trend of consumer demand, the health & convenience food products using sprouted cereals, minor millets and multi grain concept are required to be developed and popularized.

Soil and Water Conservation Engineering

1. Integration of remote sensing data in GIS environment in hydrologic studies and geo-hydro informatics need to be expedited.
2. Real time water balance studies should be promoted to enhance water use efficiency.
3. In the climate change scenario the sensitivity analysis of models and standard protocol for soil-plant-water relationship need to be developed under various agro-eco regions
4. The micro irrigation applications and fertigation in different agro-eco region has shown very encouraging result it need to be promoted in watersheds with local processing horticultural crops.
5. Micro irrigation system be promoted with waste water and studies be conducted for its effects on clogging and soil crop system.
6. Studies on groundwater recharge be undertaken under different agro-eco region along with appropriate design of filters.
7. Emphasis be given for simulation modeling, its testing in field with real data as well as when hydrological studies are being used to predict long term conclusions the uncertainty analysis must be carried out for better confidence.
8. Watershed treatment studies be undertaken with more scientific skills to deal with issues of water harvesting, recharge and cropping pattern for its long term sustainability.
9. Long term studies should be undertaken to deal with the waste water for its use in agriculture in respective to its contamination its effect on soil – plant and groundwater contamination

List of International Delegates for 47th ISAE Convention

Sl. No.	Name	Designation
1	Prof. Lalit Verma	President, ASABE, USA
2	Dr. Toshinori Kimura	Secretary General, CIGR, Hokkaido University, Sapporo, Japan
3	Dr. Danielle Julie Carrier	Professor, University of Arkansas, USA
4	Dr. Dharmendra Saraswat	Asso. Prof, Arkansas University, USA
5	Dr. G.S.Murthy	Asst. Prof, Arkansas University, USA
6	Dr. Indrajeet Chubey	Professor, Purudu University, USA

Farm Machine for the Month

Millet dehusker



A continuous millet mill has been designed Central Institute of Agricultural Engineering, Nabibagh, Bhopal. It consists of a pair of abrasive stones mounted over a rotor (operated by 1 hp, single phase electric motor) having a suction arrangement and cyclone separator. The required clearance for dehusking of minor millets can be maintained with coarse and fine adjustments. The dehusker has a capacity of 100 kg/h with over 95 per cent efficiency. The dehusker has been successfully tested for kodo and kutki millets.

Farmer Innovator

Modified Pulverizing Roller



Shri Avtar Singh of VPO Kangrod, District S.B.S. Nagar, Nawashahar, Punjab while observing pulverizing roller attachment to cultivator attached to the tractor having cage wheel fixed to tyres, conceptualized that big size pulverising roller could be attached directly to tractor for better puddling and ease of operation. Accordingly, mild steel angle were welded in four different sections on circular mild steel rectangular section with 50 mm mild steel axial shaft. Wooden bearings were used and mild steel frame was made for tractor hitching.

It was found that original pulverizing roller takes more time for cultivation operation and planking compared his machine. Modified machine with larger diameter roller are convenient to operate as its depth of penetration is less and there is more area for churning of puddle. Thus, it takes less time and consumes less diesel in puddling operation. He has



sold more than 55 machines and is earning Rs 15000 per machine.

Upcoming Events

Tractor and Agricultural Machinery Manufacturers Meet (TAMM -2014) at IISR Lucknow during Feb. 15-16, 2014

The All India Agricultural Machinery Manufacturers' Association (AMMA-India) and Indian Institute of Sugarcane Research, Lucknow are planning to organize a two-day Tractor & Agricultural Machinery Manufacturers' Meet (TAMM-2014) during February 15-16, 2014 at IISR Lucknow. The purpose of this meet is to discuss the problems faced by the tractor, power tiller, combine and agricultural machinery manufacturers, testing of farm equipment, financing, credit policies and subsidy related issues etc for farm equipment. This Meet would be attended by the Tractors, Power Tillers, Combines and Agricultural Machinery Manufacturers from all over the country, government and semi-government officials from the State and Central Governments, Scientists from Institutions, representative from Banks, NABARD, Insurance Sectors and farmers.

New Life members

LM No.	Name	City	State
2013 January			
LM – 10824	Er. P. Sudhakar Reddy	Hyderabad	Andhra Pradesh
LM – 10825	Er. Sreenatha A	Kolar	Karnataka
LM – 10826	Er. Ravindra Babu Dhulipalla	Prakasam	Andhra Pradesh
LM – 10827	Dr. Ganti Suryanarayana Murthy	Corvallis	United States
LM – 10828	Dr. Debandya Mohaptra	Bhopal	Madhya Pradesh
LM – 10829	Er. Narendra Singh Chandel	Bhopal	Madhya Pradesh
2013 February			
LM – 10830	Er. Amarjeet Kalra	Hisar	Haryana
LM – 10831	Er. M Manikandan	Tirunelveli	Tamil Nadu
LM – 10832	Dr. Lalit Mohan Bal	Tikamgarh	Madhya Pradesh
LM – 10833	Dr. Bikash Sarkar	Bhubaneswar	Odisha
LM – 10834	Er. Drisya J	Thrissur	Kerala
LM – 10835	Er. Manjula	Chickabalarapur	Karnataka
LM – 10836	Er. Kaveri G	Pudukkottai	Tamil Nadu
LM – 10837	Er. T. Chandrashekhar Padgilwar	Nagpur	Maharashtra
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