

**e-NEWSLETTER**  
**INDIAN SOCIETY OF**  
**AGRICULTURAL ENGINEERS**  
 .... Connecting Engineers in Agriculture

Nov.-Dec., 2023



5600 + Life Members

36 Chapters

2 Scientific Journals

Published by  
**INDIAN SOCIETY OF AGRICULTURAL ENGINEERS**

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## Message From The President



***My Dear ISAEians!** The current executive committee has completed its two years in December 2023. I hope performance and their ability to perform better have been exhibited considerably and all members of the society must be highly satisfied. We were mostly successful to keep you glued with ISAE throughout this period. I am happy to inform you that our e-newsletter is now so pupolar that it has also started getting advertisements and announcements.*

***My Dear Agrineers!** The 57<sup>th</sup> ISAE Convention and International Symposium was huge success like last year's Coimbatore convention. Despite being little difficult to reach Raichur more than 350 delegates attended the convention. Thanks and big congratulations to Team Raichur. The convention has become historical by declaring Directorate of Agricultural Engineers in the state of Karnataka by its Agriculture Minister and eligibility of Agrineers in Minor Irrigation by Hon'ble Minister of Minor Irrigation, Govt. of Karnataka. Several stalwarts of the society from India and abroad attended the convention. This year almost all types of awards were won by our members. Congratulations to all of them. You must have had observed that now there are no controversies in any award since two years. The book "The Impression: Treatise of ISAE Growth and impact" on history of ISAE and Wall calendar 2024, on technologies for makhana from its Cultivation to consumption, was released and you all might have received or seen its impactful design and contents.*

***My dear friends!** During two months, two EC meetings, one ISAE Council meeting and Annual GBM were held. Major decisions in this meeting were to change of Auditors of the society after about 18 years, Change of Editor-in-Chief after about 16 years, Change of bank for partial amount of society deposit first time in its history. For enhancement of work efficiency on-line membership certification approval and certificate issue was ordered, decided to have legal registered MoU with M/s Cyberlative IT Solution Ltd (the website provider) for complete maintenance, management and operation of our website etc. We are successfully able to get back a committee room (big hall) adjacent to ISAE office) from ICAR without any extra cost. The editorial board has also applied for inclusion of our JAEI in UGC care list for benefits of society's members. **Friends**, you must have observed that each and every month we decided some new initiatives and implemented them as much as possible. We also celebrated Deepawali this time and shared sweets with our employees at headquarter to make better and motivated working environment. The financial position of the society has improved in geometric progression.*

## Message From The President

*Dear readers! I request to read the history book of ISAE as mentioned above and available at ISAE website. It is the most important contribution of this year. I am sure you all will know many unknown facts, figures and sacrifices of our ancestors to grow our society to this level. It will certainly educate and also entertain you. There are numerous initiatives for achievements during the year 2023. Our many chapters also organized several programmes including iPAAS by the Delhi Chapter. At least now 14 chapters are having its own bank accounts and others are in progress. Complete state-of art online journal managements system, MoU with EBSCOhost which are now operational as well, MoU with ASABE, applications to Scopus, web of science, engineering village, COP, UGC, indexing by google scholar and many other organizations, three industry-academia meet, deans' meeting, training programme for writing good research papers etc. are few important achievements in 2023. The society during this period has got so much impetus and impact that many organizations now are approaching us for collaborations and signing MoU. I think all EC members and many other members as well are trying to contribute and make our society in all activities much better than any other one's in the country. Your participations in any form is strengthening the society in many forms. Participate and make this an **INCREDABLE** Scientific society. This e-newsletter will be in your hand in new year 2024 and thus I on behalf of ISAE and on my own behalf wish you all a **Very Happy, Healthy, Prosperous and Contributing Year 2024. Jai Hind!***

*S N Jha  
President, ISAE*



## From the Editor-in-Chief's Desk



*It is pleasing to note that The Indian Society of Agricultural Engineers (ISAE) has moved to a new phase of its development, with several steps taken by the EC for betterment of the Society and expanded the activities. The Indian Society of Agricultural Engineers (ISAE) worked hard in year 2023, and will continuously work hard for betterment of this society and towards a growing reputation and reach to Agricultural Engineering professionals/ Agrineers in the coming year.*

*The society and the members are working actively, to reach maximum number of Agrineers and professionals in the agriculture sector through its publications, training session and activities across the country through ISAE chapters. This newsletter is featured with glimpses of efforts made through activities and advancement in the field of agricultural engineering conducted during this period of Nov.–Dec. 2023, especially the glimpse of 57<sup>th</sup> Annual Convention and International Symposium are presented in this newsletter highlighting the grand success of the event.*

*Your suggestions, feedback are also solicited for further improvement of this mouthpiece of ISAE.*

*With our best wishes for a constructive and fruitful New Year 2024.*

**Chandra Shekhar**  
Chief Editor



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## ISAE Happenings

### The 23<sup>rd</sup> Executive Committee Meetings Held on Dated 27.10.2023

The 23<sup>rd</sup> ISAE Executive Committee meeting was held on 27.10.2023 in Zoom platform at 4.00 PM and the following points were discussed/ decisions were taken:

- ❖ The invited members Dr. Nemichandrappa and Dr. Nidoni briefed about the progress made about the preparation of 57<sup>th</sup> ISAE convention. The executive members interacted with the organizing secretary and other committee members on various arrangements. The program schedule of the inaugural, valedictory and other technical sessions were finalized after through deliberation. The Chief Guests, Guest of Honors and other dignitaries for the inaugural and valedictory functions of the convention were also finalized. The list of dignitaries to be on the Dias during inaugural and valedictory functions will be finalized after consultation of President, ISAE.
- ❖ It was also suggested that chairperson(s), lead speaker, and rapporteurs for different technical sessions of the convention will be decided by the Vice President (Technical council) in consultation with Directors of different disciplines and organizing committee. It must be ensured that selected persons are participating in the convention to avoid any TAIDA claim.
- ❖ It was informed that no TA and registration fee waive off will be allowed to any member as per the constitution of ISAE. Only registration fee waive off may be permitted to ISAE Fellows.
- ❖ It was deliberated that TAFE student's awards will not be awarded this time due to eligibility criteria mentioned in the revised constitution. However, for next year it will be duly mentioned in the notification to attract more number of participations.
- ❖ To engage an English editor of the journal and other articles of the ISAE also discussed. The matter may be discussed in the GB or next meeting after EC and modalities may be finalized.
- ❖ Engaging the foreign review in the ISAE journals is within the purview of the editor- chief of the journal therefore, the chief editor may add the concerned person in the reviewer list.
- ❖ It was also discussed to engage a technical person to maintain the website and other activities of the ISAE HQ. The matter may be taken up in next GB and modalities may be finalized accordingly.
- ❖ The signing of MoU with MIS i-Managers Publications will be taken up after convention

## ISAE Happenings

### The 24<sup>th</sup> Executive Committee Meetings Held on Dated 02.12.2023

The 24<sup>th</sup> ISAE Executive Committee meeting was held on 02.12.2023 in Zoom platform at 11.00 am in which the following points were discussed.

- ❖ It was advised to Raichur Chapter to hand over the software developed for organizing the convention to ISAE HQ so that it could be integrated with ISAE website for using in future convention. It was also advised that organizers to wrap up all financial matters and remit back the balance amount to ISAE HQ as per the by-laws of the revised constitution. The Chartered Accountant (CA) has to audit the ISAE convention account, and the audited account has to be closed. The proceedings and recommendations of the convention need to be submitted
- ❖ The President informed that the present Executive Committee had completed its two years of its tenure, and many promises have been accomplished and many needs further action and all members were urged to put in extra efforts to accelerate and expedite activities.
- ❖ The revamping of the editorial board of JAE(I) was discussed, as the request of Dr. De to relive from his duties of editor in chief was accepted. He was appreciated for exemplary services. The request of Dr. Kaladhonkar associate editor of SWE was also accepted. Further, it was proposed to issue an appreciation letter and certificate from the office of the ISAE President to Dr. De for his exemplary services to the society. Thereafter it was unanimously decided that Dr. Adlul Islam will be the next editor-in-chief of JAE(I) for the remaining period of this EC. He was authorized to nominate his team members comprising of editors and associate editors based on their performance and experience. The approval for the editorial board will be accorded in the next ISAE Council meeting
- ❖ The matter related to the renewal of the MoU with Indianjournal.com was discussed. It was suggested that no additional charges would be paid for the repository of research papers to Indianjournal.com, as the DG (ICAR) and Secretary DARE agreed to provide a repository for all societal journals with nominal charges. Indianjournal.com was to handle the marketing of the journals and share revenue with ISAE
- ❖ Details of the members of the constituted committee for the CIGR event needed to be provided in the format to the bidding party at the earliest. The bidding party also required endorsement from ICAR and the Department of Farmers Welfare.
- ❖ A committee of Secretary general, Treasurer and Secretary-II was constituted for renovation of the ISAE extension office (Hall given by ICAR), including aspects such as paneling, furniture, false ceiling, and others



## ISAE Happenings

- ❖ Recruitment of an English editor for ISAE was discussed, with the eligibility criteria for scrutinizing technical manuscripts, research papers, and research/popular/news articles to be decided before inviting applications.
- ❖ Concerns related to the cyber security and maintenance of the ISAE website were discussed, and it was decided that an MoU with M/S Cyberlative IT Solutions would be signed with provision of engaging a person exclusively for the ISAE website
- ❖ As per the commitment of the ISAE Executive Committee, the membership drive was to be given priority. It was decided that a life membership drive will be conducted to include newly graduated B.Tech/ M.Tech/ Ph.D. students as well as professionals. Deans of colleges, directors, and other authorities were to be approached for support. A drive for corporate membership and institutional membership would also be undertaken with the help of the President and Editor-in-chief AET.
- ❖ It was decided to prepare an annual activity plan-2024 and submitted to the President by the Vice-Presidents at the earliest for finalization. The final version of the annual activity plan-2024 would be displayed on the ISAE website
- ❖ Change of Auditor of the society as authorized by GBM held in Raichur on the 6<sup>th</sup> November, 2023 was discussed and MIS NNC & Company (Mr. Nilesh) was approved as per given rate and terms conditions till further change authorized by any GBM.
- ❖ The President informed that the state committee constituted for pursuing the matter of opening the Directorate of Agricultural Engineering in UP and Maharashtra and two standards development committee should be revitalized.
- ❖ It was decided that a digital calendar would be circulated to all members, and hard copies of the calendar would be collected from ISAE HQ by the interested ISAE Chapters and the individual members. Membership list, asset registers, physical verification etc. work needs to be completed soon.





## ISAE Happenings

### One day National seminar organized by ISAE, Himachal Chapter on 'Role of Standardization in Agricultural Ecosystem' at CSKHPKV, Palampur, H.P

The ISAE Himachal chapter recently organized a pivotal national seminar at Chaudhary Sarwan Kumar Himachal Pradesh Agriculture University on 3<sup>rd</sup> November 2023, shining a spotlight on the vital **role of standardization in the agriculture ecosystem**. Dr. D.K. Vatsa, the Vice Chancellor and Chairman of ISAE Himachal chapter, set the tone in his inaugural address, underscoring the fundamental necessity of agriculture for survival and the need for maintaining high-quality standards from production to processing of food. He articulated the essence of comprehensive knowledge of agricultural standards among all stakeholders to sustain and enhance the quality of farming practices. In alignment with this vision, Dr. Vatsa highlighted the Bureau of Indian Standards' (BIS) significant contributions to developing Indian Standards across a variety of products, which are essential for both clients and the general populace. He emphasized the trustworthiness and durability of ISI-marked products, which span an array of items including farm machinery, drip irrigation systems, fertilizers, and pesticides, which are pivotal for the agri-entrepreneurs. Despite the inherent value of these ISI-marked products, Dr. Vatsa pointed out a concerning lack of awareness among consumers and the general public about such standards, signaling a pressing need for mass awareness initiatives.

The event featured a rich tapestry of insights from experts like Mr. Debasish Mahalik of BIS on standardization in the food and agriculture sector, and valuable contributions from various experts including Prof. Manjeet Singh of Punjab Agricultural University, Dr. Surendra Singh of AMMA, India, Mr. Chandreshkhar Deshmukh of John Deere, among others.

Dr. Sushant Bhardwaj, the Organizing Secretary, acknowledged the diverse and robust participation of approximately 100 participants, which includes engineers, scientists, officers of CSKHPKV, progressive farmers, agricultural entrepreneurs and students, reflecting a keen interest across the community to advance the standardization agenda in agriculture.



**SEMINAR**

**Role of Standardization in Agriculture Ecosystem**

**3<sup>rd</sup> November, 2023**

**Venue:** Seminar Hall, Directorate of Extension Education

**Organized by**

**Department of Agricultural Engineering, CSK HPKV, Palampur**  
and  
**Bureau of Indian Standards (BIS)**



# ISAE Happenings

## ISAE Released Wall Calander 2024 on Makhana Theme

ISAE wall callender-2024 released in the 57<sup>th</sup> ISAE CONVENTION and International Symposium. The theme of this Callender is on Makhana



### Indian Society of Agricultural Engineers

...Connecting Engineers in Agriculture

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Popped makhana

Makhana is popped kernel of gorgon nut grown in stagnant water bodies

Popped makhana contains about 12% moisture, 84.9% carbohydrates, 11% protein, 0.33% fat, 0.38% total minerals, 0.02% calcium, 0.12% phosphorus and 0.002% iron

Minerals (mg/100 g dry matter)	Raw kernel	Popped makhana	Bran	Amino acid (mg/g protein)	Raw makhana kernel	Popped makhana
Calcium	14.90	20.94	133.00	Lysine*	6.45	6.77
Sodium	2.92	4.05	10.74	Histidine*	300.99	204.14
Potassium	50.25	48.39	85.60	Arginine	17.2	1.93
Magnesium	13.83	12.71	78.96	Isoleucine*	14.74	2.91
Phosphorus	132.53	124.01	213.84	Leucine*	49.15	9.71
Iron	5.73	2.67	114.06	Methionine*	15.97	3.87
Manganese	1.30	1.24	4.76	Phenylalanine*	31.95	4.94
Molybdenum	0.03	0.04	0.03	Threonine*	121.63	28.02
Zinc	1.50	1.04	8.42	Aspartic acid	57.75	11.81
Copper	0.71	0.76	6.42	Serine	153.37	24.18
Cobalt	*ND	*ND	0.07	Glutamic acid	62.31	17.41
				Proline	70.03	15.48
				Glycine	58.97	51.26
				Alanine	17.2	3.87
				Valine*	17.2	3.87
				Cysteine	11.08	1.93
				Tyrosine	22.11	2.91
				Total essential amino acid	451	273

JANUARY

2024

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	26 <sup>th</sup> Republic Day		

ISAE is one of the biggest Scientific Society of India in terms of membership

December 2023						
S	M	T	W	T	F	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Why to wait, get enrolled today

#### Notes

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February 2024						
S	M	T	W	T	F	S
					1	2
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

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## The 57<sup>th</sup> Annual Convention of ISAE

The 57<sup>th</sup> Annual convention of Indian society of Agricultural Engineers (ISAE) and the International Symposium were organised by the Indian society of Agricultural Engineers (ISAE) and Collage of Agricultural Engineering, University of Agriculture Science Raichur during 06-08 Nov., 2023 at UAS Raichur, Karnataka.

The event facilitated the researchers, academicians and technocrats to discuss on the their innovation ideas pertaining to smart agriculture practice, precise and automated control of irrigation

management system, post harvest management of crops for quality and safe food, development of energy efficient farms power machinery tools and adaptation of renewable energy technologies in modern agriculture The theme od ISAE annual convention was “Agri-Food System transformation through Engineering innovation” chosen in context of pivotal role played by Agricultural Engineers in ensuring food security. And the theme of “International symposium was Engineering interventions for promoting Millets as a Global Food”. In the inaugural function, Shri n. Cheluvarya swamy, Hon’ble Minister of Agriculture & district In-charge Minister addressed the delegates and participants.



During the convention emphasis and recommendations on following points were made:

- ❖ Creation of Directorate of Agricultural Engineering in each state
- ❖ All scheme of GoI covering mechanization, processing, irrigation and other Agriculture Infrastructures to be handled by Agricultural Engineers
- ❖ Recruitment of Agricultural Engineers from block level to state level





## The 57<sup>th</sup> Annual Convention of ISAE

During the Convention various presentation and recommendations were made highlights of which are as under:

### A. Recommendations of Farm Machinery and Power Engineering theme

- Future research should concentrate more on advanced research viz. Robotics automation, autonomous agricultural vehicles, Drone, Big data, AI, Nano material & Nano sensors, precision farming machinery etc.
- It was observed that very good work was being done on the use of drones for spraying operations. It was suggested to work out SOP for spraying pesticides for rice, maize and sugarcane crops.
- The developed automatic vegetable transplanter may be scaled up to increase capacity and speed.
- A portable low-cost smart device needs to be developed for the measurement of the quality of jute fibre
- The recommendations of power requirement prediction of tillage machinery need to be submitted to testing institutes for validation.
- Newly developed Mini tractor operated automatic potato planter cum fertilizer applicator, Engine operated drum seeder, Pruning tool for orchards, EPN applicator for white grub management, power operated cone weeder , narrow spaced weeder , tractor mounted hydraulic motor operated bush cutter, Tractor operated FYM applicator for grape orchards, tractor operated trash management machine for sugarcane, self-propelled chilli harvester, tractor operated turmeric stalk cutter, ginger harvester, self-propelled maize harvester, cotton stalk stubble up rooter may be promoted for large scale adoption and commercialization
- There is a need to innovate custom service or rental model by institutionalization for high cost farm machinery by private players or Governmental organizations in major production hubs. The quality manufacturing and after sales support for farm machinery are also needed for the reliability of farm machinery.
- Further studies have to be conducted on the suitability of PPE kit for spraying applications and AI based identification human stress in different agricultural operations

### B. Recommendations of the Processing and food engineering them

**Session – I. Millet Processing and Value Addition Technologies (MPVAT):** Primary processing of millets still facing a challenge in complete dehulling of grains in a single pass and separation of unhulled grain from the milled grains. Better milling efficient machinery need to be developed for all level of stake holders, also better quality and nutrient enriched products with better consumer acceptability need to be developed.

## The 57<sup>th</sup> Annual Convention of ISAE

**Session – II. Agriculture and Horticulture Crops Processing (AHCP):** Holistic approach required while developing the processes of agricultural and horticultural crops by addressing the utilization of byproducts and wastes in view of increased profitability. Also, the automation, electronic controls and novel methods of processing need to be incorporated in all the lab scale technologies and their scaleups in view of safety, efficiency and entrepreneurship development. Colour and other bioactive ingredients from unexploited crops may be extracted to substitute the synthetic and better utilization of those crops.

**Session – III. Nanotechnology, Functional & Nutraceutical Foods (NFNF):** Imaging and artificial intelligence needs more attention on hardware development and to make the system more robust in the Indian condition. Extensive study needed in case of safety of nano based products and treated samples. Developing protocalls and machinery for plant based protein processing has huge scope. Pilot and industrial scale testing of the technologies like refractance window drying, super critical CO<sub>2</sub> extraction are the need of the day and their economics need to be calculated. Developing 3 D printer ink has great potential for further research, especially for using Indian ingredients.

**Session – IV. Novel and Emerging Post-Harvest Technologies (NEPHT):** Process engineers should work for developing machines and tools for street venders and farmers and promote machines like tender coconut pruning machine, custard apple peel and pulper extraction machine and flue cured tobacco stringing machine etc. Technology such as coconut residue based cookies, cotton seed protein bar should be promoted for benefit of the industries. Standardization of novel method for assessment of amylase content for assessing aging of rice needs attention. Agri incubation centres, food startups and agri startups ecosystem should be promoted at national level.

**Session – V. Dairy, Meat, Poultry, Fish and Fibre processing (DMPFF) :** Development of energy and cost effective technologies with varying capacities in case of processing natural fibres. Use of sensors and automation in view of safety as well as making the process operation continuous for extraction of fibers is the thrust areas for the researchers. Sustainable and biodegradable packaging material developed with use of banana fiber and jute and other crop residues need to be scaled up and promoted.

**Session – VI. Natural Fiber and Cotton Processing :** Government policy on natural fibres and crop residues especially unconventional fibres should be proposed covering government policy, implement and environmental issues.

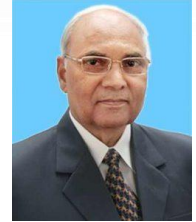
### C. Recommendations for Soil and Water Engineering

Emphasis on Deficit irrigation and its impact on crop growth, economic aspects of deficit water usages. Encouraging automation and measuring devices and its economic feasibility for its end user application. Emphasis on Ground water exploration techniques, estimation of ground water potential in terms of quality and quantity aspects. Exploring possibilities of ground water recharge techniques. Development of innovative water saving technologies and application of IoT and automation. To give more emphasis on real time decision support systems. Study on impact of Climate change on land and water resources. More studies on estimating season wise water budget. Estimating futuristic climate change scenario for managing water resources for future generation.

## ISAE Awardees (2023)

### 1- Mason Vaugh Agricultural Engineering Pioneer Award

Dr N.S.L. Srivastava F-54 (LM-315)  
Retd. Assistant Director General (Engg.), ICAR, New Delhi



*Dr. Nath Saran Lal Srivastava was Born in Bishunpura, Gorakhpur, U.P., India on 1 July 1943. Educated at Kulbhaskar Ashram Agriculture College, Allahabad, 1955-59; Allahabad Agricultural Institute, 1959-62; IIT, Kharagpur, 1964-66; Bhopal University, 1984-88; B.Sc. (Agri. Engg.) 1962; M.Tech. (Agri. Engg.) 1966; Ph.D. (Mech.Engg.) 1988. Retd., Assistant Director General (Engg.), Indian Council of Agricultural Research, New Delhi 110 001. Assistant Director General (Engg.) and Acting Deputy Director General (Engg.), Indian Council of Agricultural Research, New Delhi, 1997-2003; Joint Director, Sardar Patel Renewable Energy Research Institute, Vallabh Vidyanagar, Anand, 2003-10, Executive Director, TIT Group of Institution, Anand Nagar, Bhopal, 2003-2011.*

*He has published more than 200 national and international research papers and received many prestigious national and international awards. He is the fellow of ISAE and NAAS academy*

### 2- ISAE Gold Medal Award

Prof. Sudhindra Nath Panda  
Vice-Chancellor, C.V. Raman Global University  
Bidya Nagar, Mahura, Janla, Bhubaneswar



*Prof. Sudhindra Nath Panda, a distinguished academician and an outstanding researcher, has established the research quality and standards in the development and application of mathematical modeling and simulation tools in (i) “Integrated Land and Water Resources System Planning and Management” in deterministic and stochastic regimes for formulating land and water resources allocation policies in the irrigated canal commands of semi-arid regions in Punjab/Haryana, and sub-humid regions of Odisha; and (ii) “ Rainwater Conservation and Reuse Measures for Climate-Resilient Rainfed Agriculture” in transforming the livelihood of West Bengal farmers. Prof. Panda is also an Outstanding administrator, having great leadership qualities in institutional development activities. The establishment of the School of Water Resources in IIT Kharagpur from its inception; and coordination of Massive Open Online Courses (MOOCs) in Engineering Education, establishes his leadership qualities.*

*In recognition of his lifetime professional contributions, the Indian Society of Agricultural Engineers Confers ISAE Gold Medal 2023 to Prof. Sudhindra Nath Panda*



## ISAE Awardees (2023)

### 3- Prof. Gajendra Singh ISAE Education Gold Medal Award

*Dr. Rameshwar S. Kanwar (LM-10642)*

*Distinguished Professor, Department of Agricultural & Biosystem Engineering, Iowa State University, Ames, Iowa 50011, USA*



*Expertise: Dr. Rameshwar S. Kanwar is Charles F. Curtiss Distinguished Professor of Agricultural and Water Resources Engineering at Iowa State University. His teaching and research interests are in the broader areas of (irrigation, drainage, water security, climate smart agriculture, waste management, and land based ecological and environmental systems. He has led several international projects and has worked for the World Bank, USAID, USDA-FAS, UNDP, FAO, EU, and NATO projects which has taken him to 60+ countries. He received his B.Tech from PAU Ludhiana, M.Tech from GBPUAT Pantnagar, and Ph.D. in Water Resources and Agricultural Engineering from Iowa State University; joined Assistant Professor at Iowa State University in 1983, promoted to full professor in 1991, and appointed Distinguished Professor in 2009. He served Director of Iowa Water Resources Research Institute from 1999- 2002, Chair of Agricultural and Biosystems Engineering Department at Iowa State University from 2001-2011, Vice Chancellor of Lovely Professional University, India, and Vice Rector/Provost of ADA University, Baku, Azerbaijan. He was Senior Fulbright Fellow at University Ss Cyril and Methodius, Skopje, Macedonia in 2017 and American University in Cairo, Egypt in 2022-2023.*

### 4- ISAE Honorary Fellow Award

*Secretary (DARE) & Director General (ICAR)*

*Indian Council of Agricultural Research,*

*Department of Agricultural Research and Education  
Krishi Bhavan, New Delhi*



*Dr Himanshu Pathak Born in Purulia, West Bengal, India on 2 February 1965. B.Sc. (Ag.) 1986; M.Sc. 1988; Ph.D. 1992. Scientist, 1992-01 and Senior Scientist, 2001-06, Indian Agricultural Research Institute, New Delhi; Co-Facilitator, Rice- Wheat Consortium for the Indo-Gangetic Plains (RWC), International Rice Research Institute (IRRI)-India, New Delhi 2006-09;*

*Principal Scientist, Indian Agricultural Research Institute, New Delhi 2009-16; Professor, Discipline of Environmental Sciences, Indian Agricultural Research Institute, New Delhi, 2013-16; Director, ICAR-National Rice Research Institute, Cuttack, Odisha, 2016-20; Director, ICAR-National Institute of Abiotic Stress Management, Baramati, Pune, Maharashtra; 2020-22. He has published more than 500 research articles in reputed national and International Journals. He received more than forty prestigious national and international awards and honours. He is the Editorial Board Member of many reputed national and international Journals. He is Fellow of Indian National Science Academy; The National Academy of Sciences, India; West Bengal Academy of Science and Technology; Indian Climate Congress; Alexander von Humboldt Foundation, Germany*

## ISAE Awardees (2023)

### 5- ISAE FELLOW

#### 1- Dr. K P Sudheer (LM-7849) F-291



Professor & Head, Agri Business Incubator Dept. of Agricultural Engineering,  
College of Agriculture Kerala Agricultural University, Vellanikkara, Thrissur

*Prof. K. P. Sudheer is Involved in Teaching, Research and Extension activities related to Agricultural Engineering Profession for more than 25 years particularly in the field of Agricultural processing & Food Engineering. Prof. Sudheer is also instrumental in fostering entrepreneurship in agriculture sector and nurtured 161 Agri/food start-ups in the country. Besides,*

*having enthusiasm and zeal of Agricultural Engineering Profession, as the Head of the Department of Agricultural Engineering, and Head of Agribusiness Incubator of Kerala Agricultural University, he has made key interventions towards the policy making for job opportunities of Agricultural Engineering Graduates in the various sectors of the Government and Industries. Dr. Sudheer is among the very few who could successfully unfold the academia-industry interface for the benefit of student community during their graduate programme. Besides ICAR funds, he has secured seven external aided projects, which well speaks of his research acumen.*

*In recognition of his lifetime professional contributions, the Indian Society of Agricultural Engineers Confers ISAE Fellow 2023 to Dr. K. P. Sudheer*

#### 2- Dr. Laxmikanta Nayak (LM-10178) F-292



Head, Transfer of Technology Division ICAR-NINFET, 12, Regent Park Kolkata

*Dr. Laxmikanta Nayak is currently working as Head, Transfer of Technology Division at ICAR-National Institute of Natural Fibre Engineering & Technology, Kolkata.*

*His research area focuses on processing of Jute & Allied fibres, Design and Development of extractors, Agri-Business Incubation & Non-conventional energy from fibre residues. He is also actively engaged in promoting natural fibre products through various outreach programmes. Dr. Nayak has developed six (06) fibre extractors and many process technologies related to jute diversified products. Some of the technologies developed by him have been transferred to industries, promoted through agribusiness incubation to entrepreneurs and demonstrated to farmers. He has published more than fifty (50) research papers in peer reviewed journals of national and international repute. He has served as a member of the IMC ICAR-CIPHET, Ludhiana and IMC, ICAR-CIRCOT, Mumbai. He is elected as Fellow of The Institution of Engineers, India (IED) & The Indian Chemical Society (ICS).*

*In recognition of his lifetime professional contributions, the Indian Society of Agricultural Engineers Confers ISAE Fellow 2023 to Dr. Laxmikanta Nayak*

## ISAE Awardees (2023)

### 5- ISAE FELLOW

#### 3- Dr. Adlul Islam (LM-8028) F-293

NRM Division, Krishi Anusandhan Bhawan- II, IARI Campus,  
Pusa, New Delhi



*Dr. Adlul Islam is Principal Scientist in Natural Resources Management Division of Indian Council of Agricultural Research, New Delhi. He holds Master and Ph D Degree from Indian Institute of Technology, Kharagpur. He has also been awarded Global Research Alliance and Norman E Borlaug International Agricultural Science and Technology Fellowship by the US Department of Agriculture (USDA) for training and collaborative research work on integrated assessment of climate change impact on water resources and crop production. He has been working in the area of water resources management for more than 28 years, and is presently involved in climate change impact assessment on water resources using hydrological modelling tools. In recognition of his lifetime professional contributions, the Indian Society of Agricultural Engineers Confers ISAE Fellow 2023 to Dr. Adlul Islam*

#### 4- Dr. K. Narsaiah (LM-9344) F-294

Asst. Director General (Process Engineering), ICAR 407,  
Krishi Anusandhan Bhavan-II, New Delhi



*There is good balance of research work done by Dr. K Narsaiah in frontier areas viz., microencapsulation, biosensors and membrane processing and applied research related to animal handling devices and structures, meat processing and mechanization of traditional dairy products. Adept combining of engineering knowledge, industrial experience and knowledge of biological sciences in development of cost-effective processing systems which include autoclavable for encapsulation probiotics, cool tower with chilled circulation for microencapsulation, simple microencapsulator using innovative multiple air jet impingement droplet generator, hybrid encapsulation method for curcumin encapsulation, mechanized system for continuous production of chhana-balls, refrigerated transport vehicle for meat carcass and products, pneumatically powered sausage filler, scraped surface heat exchanger along with continuous khoa making machine for hygienic and continuous production of burfi, High volume low speed fan, mechanical blade tenderizer for meat tenderization. Formulated and won multi- disciplinary, multi-institutional research projects in open competitive mode. Has 5 patents granted. In recognition of his lifetime professional contributions, the Indian Society of Agricultural Engineers Confers ISAE Fellow 2023 to Dr. K Narsaiah*



## ISAE Awardees (2023)

### 5- ISAE FELLOW

**5- Dr. P V K Jagannadha Rao**  
(LM- 9943) F-295



Associate Director of Research & University Head (Process & Food Engg.)  
Regional Agricultural Research Station Anakapalle

*Dr P. V. K. Jagannadha Rao, graduated in Agricultural Engineering from College of Agricultural Engineering, Bapatla, A. P, pursued M.Tech and Ph.D in Agricultural Engineering with specialization in Post-Harvest Engineering from Indian Institute of Technology (IIT), Kharagpur. Presently, he is working as Associate Director of Research & University Head (Dept.of Processing & Food Engg.), Regional Agricultural Research Station (ANGRAU), Anakapalle, Anakapalle district (A.P.). He has research experience of 21 years; teaching experience of 6 years and administrative experience of 3 years. Twenty-three (27) process technologies/machinery developed for the benefit of farmers. Granted four patents, received three (3) National and five (5) State awards. Published 59 research articles in International and National research journals; 2 research notes; 2 books; 3 book chapters; 4 booklets; 10 leaf lets and folders; 5 study materials; 15 pamphlets; 65 popular articles. Organized 60 training.*

*In recognition of his lifetime professional contributions, the Indian Society of Agricultural Engineers Confers ISAE Fellow 2023 to Dr P. V. K. Jagannadha Rao*

### 6- Commendation Medal

<b>Dr. Sandeep Mann</b> (LM-10241)	(Principal Scientist & Head), ICAR-CIPHET, PAU Campus, Ludhiana
<b>Dr. Mondru Madhava</b> (LM-10859)	Professor and Head, Department of Processing, & Food Engineering, Dr. NTR College of Agricultural Engineering, Bapatla
<b>Dr. Ghanshyam T. Patle</b> (LM-10116)	Department of Irrigation and Drainage Engineering, College of Agricultural Engineering & Post Harvest Technology (Central Agricultural University), Ranipool, Gangtok,
<b>Dr. Udaykumar Nidoni</b> (LM-10743)	Professor and University Head, Department of Processing and Food Engineering, Research Engineer, AICRP on PHET, Raichur,
<b>Dr Surendra Rambhau Kalbande</b> (LM-10426)	Dean, Faculty of Agril Engg, Dr PDKV Akola
<b>Dr. M. Balakrishnan</b> (LM-10119)	Professor and Head, Department of Food Process Engineering, AEC & RI, TNAU,

## ISAE Awardees (2023)

### 7- Distinguish Service Award

1.	<b>Dr. Vijay V. Aware (LM-9926)</b>	Professor and PI, AICRP on ESA, Department of Farm Power and Machinery, College of Agril. Engineering and Technology, Dr. BSKKV, Dapoli, Dist: Ratnagiri (MS)
2.	<b>Dr. Abhijit Khadatkar (LM-10924)</b>	Agricultural Mechanization Division, ICAR-Central Institute of Agricultural Engineering, Nabibagh, Berasia Road, Bhopal – 462038 (Madhya Pradesh)

### 8- Best JAEI Reviewer Award

1	Dr. Mukesh Kumar Tiwari	Soil and Water Engineering	Assistant Professor & HOD Department of Soil and Water Conservation Engineering College of Agricultural Engineering and Technology, Anand Agricultural University Dholakva
2	Dr. Ashish Pawar	Energy and others Areas	Assistant Professor (Renewable Energy Engineering) College of Technology and Agriculture Engineering, Agriculture University Jodhpur
3	Dr. Adarsh Kumar	Farm Machinery & Power	Principal Scientist, ICAR-Indian Agricultural Research Institute, New Delhi
4	Dr. Adinath Kate	Processing, Dairy and Food Engineering	Scientist, APPD, ICAR-CIAE, Bhopal

## ISAE Awardees (2023)

### 9- Best JAEI Research Paper Award

1	Name of Paper: Runoff Prediction of Bharathapuzha River Basin using Artificial Neural Network and SWAT Model Vol. 59 (4) Page: 404-416	Anu Varughese K. K. Praveena P. Sruthakeerthi V. V. Rachana C. V Anjali  (Soil and Water Engineering)	1Assistant Professor, 2Assistant Professor (contract), Department of Irrigation and Drainage Engineering, KCAET, Tavanur – 679573; 3Master's student, NIT, Bhopal; 4Master's student, KCAET, Tavanur; 5Master's student, IIT, Kharagpur.
2	Name of Paper: Pyrolysis Kinetics of Lignocellulosic Waste Biomass (Cicer arietinum) using Iso-conversional Methods Vol. 59 (3) Page: 293-308	Sunil L. Narnaware N. L. Panwar  (Energy and others Areas)	1Research Scholar, 2Associate Professor and Head, Department of Renewable Energy Engineering, College of Technology and Engineering, Maharana Pratap University of Technology and Agriculture, Udaipur, Rajasthan
3	Name of Paper: Reach Envelopes for Indian Tractor Operators Based on Anthropometry with a Gender-Neutral Perspective Vol. 59 (2) Page: 113-125	R. R. Potdar, C. R. Mehta, L. P. Gite, K. N. Agrawal, B. B. Gaikwad P. Shukla (Farm Machinery & Power)	1Scientist, Agricultural Mechanization Division, 2Director, 3Emeritus Scientist, 4Project Coordinator, AICRP on Ergonomics and Safety in Agriculture, 6Ph.D. Scholar (Farm Power and Equipment), ICAR-Central Institute of Agricultural Engineering, Bhopal-462038, Madhya Pradesh, India; 5Scientist, School of Atmospheric Stress Management, ICAR-National Institute of Abiotic Stress Management, Malegaon, Baramati, Maharashtra, India.
4	Name of Paper: Development of Sensor-based Automatic Colour Sorting System for Tomato Vol. 59 (1) Page: 47-60	Yogesh Bhaskar Kalnar, Sandeep P. Dawange, Sandeep Mann, Bhupendra M. Ghodki Th. Bidyalakshmi Devi (Processing, Dairy and Food Engineering)	1Scientist, 2Principal Scientist, ICAR–Central Institute of Post-Harvest Engineering and Technology, Ludhiana, India.



## ISAE Awardees (2023)

### 10-ISAE Team Award

<b>Debabandya Mohapatra (Leader) (LM-10828)</b> <b>Balaji Murhari Nandede (LM-10916)</b> <b>Dipika Agrahar-Murugkar (LM-11931)</b> <b>Rahul Rajaram Potdar (LM-10536)</b> <b>S. Balasubramanian (LM-10315)</b> <b>Sumedha S Deshpande (LM-10361)</b> <b>Alexa Kudos (LM-10289)</b> <b>Sadvatha R H (LM-12152)</b> <b>Narendra Singh Chandel (LM-10829)</b> <b>Shashi Kumar D Deshpande (LM-2338)</b>	ICAR-Central Institute of Agricultural Engineering, Bhopal
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### 10-ISAE Outstanding Book Award

<b>Dr. Rajendra Singh</b> <b>(LM-10637)</b>	Professor, Agricultural & Food Engineering Department IIT Kharagpur, Kharagpur 721302
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### 11-ISAE Best Chapter Award

ISAE Bihar Chapter	College of Agricultural Engineering & Technology, Dr Rajendra Prasad Central Agricultural University, Pusa, Samastipur, Bihar
Convenor (Dr. M. Nemichandrappa)	University of Agricultural Science
Organizing secretary (Dr. Udaykumar Nidoni)	Raichur, Karnataka

## The 57<sup>th</sup> Annual Convention of ISAE

# Glimpse of The 57<sup>th</sup> Annual convention of Indian Society of Agricultural Engineers (ISAE) and the International Symposium





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## Efforts of DBSKKV, Dapoli centre of AICRP on ESA in revolutionizing coastal-hilly agriculture

Agriculture stands as a vital pillar of the Indian economy, engaging a significant 40.6% of the workforce. Remarkably, nearly half of this workforce, around 55%, comprises female labours. These women are deeply involved in a wide array of agricultural tasks, including transplanting, weeding, harvesting, processing, and marketing of food grains, fruits and vegetables. These tasks demand not only considerable time and effort but also subject workers to significant physical strain. Unfortunately, the available tools and equipment have predominantly been designed with male workers in mind. Consequently, women workers are compelled to use these tools whenever necessary, resulting in lower productivity and an increased risk of occupational health problems. Farm mechanization offers a compelling solution, promising to make the daily lives of farmers more comfortable by reducing labour requirements and, notably, alleviating the drudgery faced by female workers. However, a major hurdle lies in the prevalence of small and marginal landholdings, accounting for a staggering 85% of the total operational holdings and covering 44% of the total cultivated area. This significant factor contributes to the mediocre adoption of mechanization and a strong inclination toward traditional farming practices. Efforts have been made to introduce small tools and equipment through both imports and local manufacturing. Regrettably, these imported tools often prove ill-suited for local field conditions, causing operators to experience discomfort due to a mismatch in anthropometric considerations. This situation increases the likelihood of agricultural accidents stemming from faulty manufacturing.

A cooperating centre of Indian Council of Agricultural Research, New Delhi funded All Indian Coordinated Research Project on Ergonomics and Safety in Agriculture is working at Department of Farm Machinery and Power, College of Agricultural Engineering and Technology, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli to tackle above-mentioned challenges and cater the mechanisation needs with enhanced safety and comfort of coastal-hilly farming in Konkan. Ergonomics is a multidisciplinary science dedicated to improving the harmony between work and the worker. When applied in agriculture, ergonomics plays a crucial role in mitigating and eliminating risks associated with work, machinery, and the entire work environment. This encompasses aspects such as tools and materials, work methods, ambient conditions, the physical environment and the organization of work.

The center initially worked in the ad-hoc project on “Measurement of anthropometric dimensions of agricultural workers in Konkan region”. Under this study, 79 anthropometric dimensions of total 2041 agricultural workers including 1249 males and 792 females were recorded. The data of 16 strength parameters was also recorded. The collected data is being used in different design dimensions of agricultural tools and equipments to amplify efficiency and comfort in agricultural operations. This data is also included in published book entitled “Anthropometric

and strength data of Indian agricultural workers for farm equipment design” by ICAR-CIAE, Bhopal. The center has also developed a well equipped ergonomics laboratory having anthropometer, heart rate monitor, portable metabolic system, bicycle ergometer, computerized treadmill, human vibration meter, load cell and other instruments for assessment of developed tools and equipment by quantifying the hiked comfort.

The center has conducted agricultural accident survey in selected districts of Maharashtra state in 2016 and 2022 as accidents results in harm to workers, which can range from non-fatal to fatal injuries. This monitoring helps assess the effectiveness of safety measures implemented in agriculture and identifies evolving patterns in accidents, facilitating the formulation of strategies to minimize worker fatalities and injuries through engineering enhancements, enforcement of regulations, and educational interventions.

The center has developed gender neutral tools, equipment and machinery to increase productivity and mitigate the drudgery in cultivation practices for the crops in the Konkan region.

Various issues tackled so far are highlighted below:

**1- Problem in Paddy Transplanting :** Konkan experiences substantially heavy rainfall of 2000 to 4000 mm. Farmers with small plots of land in low-lying areas are compelled to engage in the cultivation of transplanted paddy due to limited alternatives. Manual transplanting is women dominated, tedious, time consuming and highly labour intensive activity done in bending posture in puddled field. Additionally, labours put their fingers in mud more than 3.3 lakh times for transplanting 1ha area. Power operated transplanter works satisfactorily in large lands, but not suitable for staggered lands due to limitations in maneuverability, transport and farmers poor investment capacity

**Solution developed** - The manually operated cranking type two row paddy transplanter developed by the center attracting the attention of farmers in the region because of its light weight. It features ease of operation in hilly region. The transplanter is capable of simultaneous transplanting in two rows. The principal advantage is that it uses traditional nursery seedlings. The field capacity of transplanter is 250-300 m<sup>2</sup>/h. About 86% time and 7.5 times labour saving can be achieved as compared to traditional transplanting.

The transplanter is recommended by Maharashtra state Joint-Agresco in year 2017. Two manufacturers, viz., “The Sahyadri industries, Kolhapur” and “T.S. Engineering Kolhapur” have signed MOU for manufacturing and sale of the transplanter. Till date 20 units has been sold to different stake holders. The transplanter is available for sale at AICRP center and T.S. Engineering, Kolhapur.





Traditional Practice



Developed transplanter



Gender Neutral Operation

## 2- Problem in Areca nut post harvest operation

### Problem in Peeling / making cuts on upper orange cover of nuts for rapid drying :

Areca nuts are harvested at physiological maturity. To bring the moisture content of freshly harvested areca nut up to 6-7 %, it requires 30 to 35 days in summer season and 60 to 70 days or more in winter season. The three slices of upper orange cover of these nuts are removed by peeling operation using a normal country kitchen tool having a wooden plank and curved MS blade to reduce drying time. Peeling is highly labour intensive, time consuming, uneconomical and above all very unsafe for fingers and palms. This conventional method, consumes about 15 to 20 % of the total profit. Power operated areca nut puncturing machine developed by local manufacturer is commercially available but are costly and have a major drawback of uneven puncturing which also destructs the drying process



Areca nut scarifier

**Solution developed** -The developed hand operated areca nut scarifying unit consists of two concentric drums with pricks on periphery. The hopper and outlets are on either side of machine. The operation is easy and unisexual. Single worker can scarify 1623 nuts in one hour of operation. The scarification efficiency of about 92.4% can be achieved. The scarified nuts retain better colour, texture and taste as compared to traditionally dried nuts.



**Problem in Dehusking :** Dehusking is traditionally done by manual labour using country kitchen tool having a wooden plank and curved MS blade. This conventional method is highly labour intensive, time consuming, uneconomical and above all very unsafe for fingers and palms. It is observed that for a single dehusking operation about 35 to 40 % of the total cost of processing is involved. Also, nuts got scars or cuts due to uncontrolled depth of cut, depleting their market value. Mechanical dehuskers for small scale dehusking are not commercially available.



**Solution developed :** The center has developed hand operated areca nut dehusker for small scale farmers, which can be installed over wooden stool or table. Single worker can dehusk about 4-5 kg nuts per hour. As the capacity of hand operated unit is less and not suitable for farmers with large land holdings. The center has also developed pedal and power operated areca nut dehusker for them. The developed machines eliminate the drudgery and hand injuries in traditional practice with enhanced output of 9 kg and 18 kg kernels per hour using pedal and power operated units, respectively. The machines are made portable as equipped with four wheels. These are women friendly and only single operator is sufficient. Unlike the traditional method (sickle), special rubber lined drum make no scars on the nuts during operation to retain a higher market value. These machines offer approximately 97% dehusking efficiency with only about 7% breakage. According to the demand of farmers, the power operated unit is also provided with blower for husk-free clean kernels.



Hand operated dehusker



Peddle operated dehusker



Power operated dehusker

### 3- Problem in Finger millet threshing, pearling and cleaning

Traditionally, the threshing is performed by different methods such as manually beating with sticks, which is characterized as laborious, low output (4-8 kg/h), uneconomical, low-quality product, unhygienic operation and low germination percentage of grains. Pearling in traditional operations is done by pounding followed by winnowing to separate grains from husk. Labours often complain about joint pains after threshing and pearling operation. The organic dust blowing during these operations also induce allergic respiratory issues. The demand was to develop a machine capable of performing all three operations in one go. As harvested finger millet earheads carried to home, the machine should be operable on single phase domestic connection and portable from home to home on small *kachcha* roads



Traditional practices

Finger millet thresher cum pearler is developed for performing threshing, pearling and cleaning operation in one go. The capacity (output), threshing efficiency, pearling efficiency, grain damage, cleaning efficiency, total grain loss and energy consumption were 26.9 kg/h, 99.5 per cent, 99 per cent, 0.7 per cent, 97.5 per cent, 1.6 per cent and 0.7 kWh, respectively. The machine is operated by 2 hp single phase electric motor. The weight of machine is 145 kg and can be transported easily through small roads in hills. In comparison to traditional practices, the developed machine saves approximately 80 % time and 5.38 time labour



Developed machine

### 4 Fish processing operations:

Fisheries and aquaculture is one of the important sectors of food production in India, which not only provides the nutritional security but also provides employment and livelihood support to 14.5 million people. The fish dressing is one of the important operations in raw fish processing and carried out mostly by women workers under low temperature conditions. A cold environment may be a significant health risk factor such as, respiratory symptoms, musculoskeletal diseases and skin disease. As per survey conducted by center in fish dressing sheds, 73.5% workers had skin related problems and blanching of hands, while 25% have respiratory irritation (sneezing/coughing/cold and fever), 82.3% workers had headache and body ache due to continuous contact of cold water. About 56% of



the workers had faced frequent hand injuries due to working bare handed. The working posture related health hazards revealed that 91.1% workers had back pain, 85.3% workers had leg pain, 89.7% workers had body pain, 83.8% workers had knee pain and 77.9% workers had neck pain.



### **Solution developed :**

**Combination of Medical gloves (inside) and cotton gloves (outside) to avoid hazards due to cold water contact**

A combination of Medical gloves (inside) and cotton gloves (outside) are recommended to use during fish dressing operation to enhance the safety and improve the capacity of working in fish dressing sheds.

Outer cotton gloves provide good grip with easy fish handling from dressing point of view. Also, they protect inner medical gloves from puncture, restricting water contact to skin durably. It was observed that fish dressing capacity (42.4 kg/h) was increased by almost 16% as compared to bare hand dressing. Frequent hand injuries and skin related problems were reduced by 83.3% and 63.3%, respectively as compare to bare hand dressing.



### **Fish dressing platform to avoid musculoskeletal disorders**

A fish dressing platform has been developed by the center to avoid prolonged operation in traditional squatting posture. It was designed on the basis of work place layout for female labours of Konkan. It comprised of raw fish section, fixed dressing SS blade, separate sections for desired and undesired dressed fish part, tap water connection and operator seat. The average capacity is about 85.63 kg/h with cost of fish dressing operation as approx. ₹ 0.62 /kg.



## Cashew nut shelling

Cashew nut shelling is a process that involves removing the outer shell or husk from the cashew nut kernel. While it may seem simple, it comes with several challenges due to the unique characteristics of cashew nuts. Excess force while shelling may damage the delicate nut, resulting in economic loss. The shell contains cashew nut shell liquid (CNSL) oil, having more than 90% anacardic acid. Due to which bare hand shelling can cause skin irritation or even more severe reactions. Suitable hand protection devices /covers must be suggested among the available options

### Solution:

The pure latex (non-slip grip) gloves are more suitable for both shelling and scooping operation as it protects the hand from CNSL. The pure latex (non-slip grip) glove can give higher shelling output of about 12.66 kg/h. The medical examination gloves may give higher scooping output but the tearing and sweating effect are their limitations. Pure latex (non-slip grip) glove can give approximately 8.37 kg/h scooping capacity with gives better comfort to hand with light sweating effect and puncture free operation



The center has filed design registrations of potential tools, equipment and machinery developed under project. The center has published good quality research papers in reputed journal some having NAAS rating above 6. The center has also published book chapters, popular articles, success stories, and leaflets in Marathi, Hindi and English language for popularization of tools, equipment and machinery. The center has also published one booklet comprising features of developed tools, equipment and machinery with QR codes for operational videos. The center also conducts training and awareness programmes, demonstrations and entertains different stake holders who came as visitor to seek the information about developed tools, equipment and machinery. Till date more than 12,000 peoples are benefitted from 36 training programmes and 300 plus demonstrations, mela, exhibitions and visits by this center.

Center is presently working to identify pesticide safety kit for spraying in mango orchard using power sprayer and to develop a battery operated paddy transplanter for transplanting in two rows using traditional root washed nursery seedlings. In future, works related to application of robotics to reduce human drudgery and enhanced safety in Konkan hill agriculture will be undertaken.

*(Source: Dr. V. V. Aware, Principal Investigator, AICRP on ESA, Dr BSKKV, Dapoli)*



## Up coming Events

# National Conference on Innovation Technology and Entrepreneurship Development in Agriculture

National Conference on Innovation Technology and Entrepreneurship Development in Agriculture is scheduled on 07-08 March, 2024 at CAET, Dr. PDKV, Akola (Maharashtra). The key note session of conference are

1. Application of Artificial intelligence and IOT in agriculture and use of Drones
2. Innovation Post-Harvest Technology and marketing techniques for small & marginal Farmers
3. Role of incubation centers in development of Agri-Startup Ecosystem
4. ICT Technologies and control Environmental agriculture

### Key Note Session

- Application of Artificial Intelligence and IOT in Agriculture and Use of Drones
- Innovative Post-Harvest Technology and Marketing Technique for Small & Marginal Farmers
- Role of Incubation Centers in Development of Agri-startup Ecosystem
- ICT Technologies and Control Environmental Agriculture

**Chief Patron**

<b>Dr. S. N. Jha</b> Hon'ble Deputy Director General (Agril. Engg.), ICAR, New Delhi	<b>Dr. S. R. Gadakh</b> Hon'ble Vice Chancellor, Dr. PDKV, Akola	<b>Dr. Indra Mani</b> Hon'ble Vice Chancellor, VNMKV, Parbhani
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<b>Dr. D. M. Panchabhai</b> Dean, Faculty of Horticulture, Dr. PDKV, Akola	<b>Dr. Y. B. Taide</b> Associate Dean (PGQ), Dr. PDKV, Akola	<b>Dr. P. K. Nagre</b> Associate Dean, College of Agriculture, Dr. PDKV, Akola	<b>Dr. S. S. Harne</b> Associate Dean, College of Forestry, Dr. PDKV, Akola

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**Core Team**

Dr. M. R. Rajput, CEO, PDKV-RIF, Akola  
 Dr. S. T. Patil, Incubation Manager, PDKV-RIF, Akola  
 Mr. D. M. Tembhare, Technical Associate, PDKV-RIF, Akola

## National Conference

on  
Innovative Technologies and  
Entrepreneurship Development in Agriculture

March 07 - 08, 2024  
Venue : CAET, Dr. PDKV, Akola (Maharashtra)

Organized by  
**Faculty of Agricultural Engineering**  
in collaboration with  
**PDKV Research & Incubation Foundation and  
Indian Society of Agricultural Engineers - Akola Chapter**  
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## HAM Visit to ICAR Institutes / Talks on Agriculture

Shri Arjun Munda ji, Hon'ble Union of Tribal Affairs and Agriculture and Farmers Welfare paid a visit to the Indian Institute of Agricultural Biotechnology at Garh Khatanga in Ranchi, and was accorded a traditional welcome upon arrival by tribal children.

Hon'ble Minister reviewed the various activities of the Institute along with Dr. Sujay Rakshit, Director for better agricultural production . The Institute is working with a broader vision of harnessing the potential of microbial biotechnology in an integrated manner to accelerate the pace of agricultural growth. Our country resides in its villages and agriculture is a major source of livelihood for rural people. Agricultural growth has an intimate connection with rural development.

Hon'ble Minister also visited ICAR research complex for Eastern Region at Plandu, Ranchi and interacted with the Farmers Producer Organisation (FPO'S) and the local Farmers and expressed his gratitude to the farmers who contribute a lot towards the country's economy. The country has become self-reliant in food production due to the hard work of our farmers and technologies developed by the agricultural scientists like the introduction of agricultural drones being utilized for additional activities like crop spraying and crop monitoring. Hon'ble Minister during his speech urged the farming community to take advantages of several important schemes launched by the Government like, PM Fasal Bima and PM Kisan Samridhi.

Hon'ble Minister also interacted with Agro entrepreneurs and agricultural scientists at the National Institute of Secondary Agriculture in Namkum, Ranchi and had a detailed discussion about the different activities of the Institute regarding the challenges and opportunities of Lac cultivation, processing and export to other countries. The state of Jharkhand ranks first in the country for production of lacquer, and the weather in Jharkhand is also suitable for Lac cultivation



## Success Story – Mr. Ganesh Deshmukh



Mr. Ganesh Deshmukh is a successful entrepreneur who has made a significant impact on the agriculture industry and the economy of the regions where his businesses operate. Born and brought up in Karanja, Maharashtra, Mr. Deshmukh completed his B.Tech Agri Engineering from College of Agricultural Engineering and Technology, Dr. PDKV, Akola. After completing his education, he worked for companies like UPL and Mahabeej and then later he founded Nirman Fertilizers Pvt Ltd in 2008, which has since expanded its operations to 10 states in India and imports fertilizers from countries such as China, Turkey, Latin America, Jordan, Malaysia and so on. His company has business allies in European companies like Germany.

Mr. Deshmukh's entrepreneurial skills have generated employment for over 500 people, both skilled and unskilled, and his companies have a turnover of more than 160 crores. However, his motive behind starting these businesses is not just to earn profits but to generate more employment opportunities and help people become financially independent. With this view Mr. Deshmukh started a pesticides manufacturing company called Nirman Crop care Pvt Ltd. He has also several other businesses like restaurants and departments stores and shopping malls.

In 2012, Mr. Deshmukh founded Nirman Multistate Co-operative Credit Society, which provides financial services to its members, helping them start or expand their businesses. His philanthropic endeavors demonstrate his commitment to social work and the betterment of society. Mr. Deshmukh believes that creating job opportunities is the best way to empower people and make them stand on their own feet. He has helped many people fulfill their lifelong dreams by providing them with the necessary financial aid through Nirman Multistate Co-operative Credit Society.

Mr. Deshmukh has been awarded with several accolades for his contributions to society, including Business Excellence awards, Icon of Akola Award, Poladi Purush Award, Sakal Idol of Akola Award, Divya Marathi Proud Maharashtrian Award, Lokmat Corporate Excellence Award, Dr. PDKV Samajveer Award, Orange FM Business Excellence Award, and many others.

As a proud member of society, Mr. Deshmukh is much loved and respected by the people of Maharashtra, where he has made a significant contribution to the agriculture industry and the local economy. Overall, his dedication to social work and entrepreneurship serves as an inspiration for many, and his businesses have become a symbol of hope for those who wish to achieve financial independence. Mr. Ganesh Deshmukh's journey from a small town to a successful entrepreneur is a testament to his hard work, determination, and commitment to social work.

*(Source: Dr. K.D. Gharde, President, ISAE Akola Chapter)*



## Superannuation



Dr. U. S. Kadam gracefully retired as Director, (Extension Education and Resource Development), MCAER, Pune on Dec. 31, 2023, after serving for 37 years in various prestigious positions including as HoD and Dean, FAE in Dr. BSKKV, Dapoli and Director (Education) in MCAER, Pune.

He has guided about 32 PG and 7 PhD students. He has been abroad for many trainings and meetings including in USA, Israel, UK, China and Netherlands. He has handled about six externally funded projects. He has nearly 33 research recommendations to his credit for the direct benefit of farmers.

He has attended 51 conventions/seminars. He has about 11 awards to his credit, including International Scholarship from Loughborough University, Leistershire, UK for International research/Ph.D., Fellowship from the Asian Productivity Organization, Tokyo, Japan, Fellowship from the Van Hall Larenstein, the Netherlands University, Fellowship from the U.S.A. Government, Fellowship from the ISRAEL Government. He is recipient of "Best Scientist Award (Dandekar Award), Best Performance award, Best Teacher award. He has been Special Invitee Member of Task Force on Micro-irrigation Committee, Govt. of India to promote micro-irrigation in India, State member of the Secondary and Higher Secondary Education Examination Board, Pune, Member of Asian Productivity Organization (APO) Tokyo, Japan, He has been member of different Selection committees. He has authored 04 Text Books. He has filed 03 Patents. He has published nearly 161 research Papers and many Popular articles and delivered many TV talks and delivered many lectures in India and abroad.

The ISAE family wishes happy retirement life for you Sir.

## Obituary



Dr Sewa Ram Verma, former Dean of the College of Agricultural Engineering and Technology, Punjab Agricultural University (PAU), and a stalwart in the field of agricultural engineering, passed away on December 12, 2023 in Ludhiana.

Dr Verma was a highly decorated professional who had rendered unparalleled services in farm machinery and power engineering, ergonomics, and safety. Dr Verma earned name and fame at the national and international level. He was a great visionary and dedicated person to the Agricultural Engineering profession He served at various positions in PAU, worked on international assignments, received numerous prestigious awards and elected as Fellow of various societies.

Dr Verma served as Head, Department of Farm Power and Machinery (1976-79); Dean, College of Agricultural Engineering (1979-87); and PAU Librarian (1997-99). He also served as a Short-Term Consultant at ILO International Training Centre, Turin, Italy in 1983, 84 and 86; and as a Chief Technical Advisor, Commonwealth, Nigeria from 1987-90. Dr Verma had received numerous prestigious awards throughout his career - ISAE Commendation Medal (1971); Rafi Ahmed Kidwai Award (1976-77); Jawaharlal Nehru Award (1977); NRDC Invention Award, (1977 & 1982); ISAE Gold Medal (1990-91); Punjab State Council of Science and Technology Appreciation Certificate (1992-93); Institution of Engineers, Karnataka Citation (1996); Cooperating Editor (India), International Farm Mechanization Journal - AMA, Japan, (1984); and Punjab Government "Award of Honor" for Outstanding Contribution in Agriculture Development, Agriculture Summit (2014).

Dr Verma was elected as Fellow, NAAS in 1998. He was also Fellow of ISAE; IoE, India and BIS. He also served as Member, BoM for Dr Rajendra Prasad Central Agricultural University, Samastipur (2004-06); and Member, Board of Management, Mahatma Gandhi Chitrakoot Gramoday Vishwavidyalaya, Chitrakoot, Madhya Pradesh (2005-2011).

He was a recipient of ISAE Mason Vaugh Agricultural Engineering Pioneer Award in 2019.

The ISAE family pays heartfelt tribute to the departed soul and stand in sorrow of his family, always.

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