



Report of Online Seminar on "**Paradigm Shift in Mechanization for Futuristic Agriculture**"

The College of Agricultural Engineering and Technology, Godhra and National Agricultural Higher Education Project-CAAST, Anand Agricultural University, Anand jointly organized an online Seminar on "*Paradigm Shift in Mechanization for Futuristic Agriculture*" on 16th December, 2020.

The inaugural function was started with the welcome address by Dr. R. S. Pundir, *Professor and PI*, NAHEP-CAAST, AAU, Anand who highlighted the objectives and achievements of the project. He proudly conveyed that AAU, Anand's NAHEP-CAAST project has been ranked top and got "competent" rating at National level. He welcomed all the dignitaries present and eminent speakers who were going to deliver the lectures in the seminar. Dr. Pankaj Gupta, *Professor and Head*, Deptt. of Farm Machinery and Power Engineering, CAET, Godhra and Organizing Secretary of the seminar, explained the objectives behind organizing the seminar. As a Key Note Speaker and Chief Guest of the seminar **Dr. R. Subbaiah**, *Principal and Dean*, CAET, Godhra delivered his speech on a topic "*Growth Inclusiveness and Sustainability of Next Generation Agriculture through Mechanization*". In his speech he highlighted the need and scope of Agricultural mechanization in India along with the challenges and solutions for it. In the Presidential address, Dr. R. V. Vyas Sir, *Hon. Vice Chancellor*, AAU, Anand and Patron of the seminar highlighted the need and scope of Precision and Automation technologies to increase the production and income of the farmer. Inaugural session came to the end with vote of thanks proposed by Dr. Y. A. Lad, *Associate Professor*, core Co-PI, NAHEP-CAAST, AAU, Anand and Joint Organizing Secretary of the seminar.

Four Technical sessions were conducted throughout the day. The speaker of the First Technical Session was **Dr. Lav R. Khot**, *Associate Professor of Precision Agriculture*, Centre for Precision and Automated Agricultural Systems, Department of Biological Systems Engineering, Washington State University, USA. He had delivered his speech on the topic "*Precision Agriculture & Automation Technologies for Specialty Crop Production Management*". Dr. Khot explained about methods, technologies, gadgets used in precision agriculture particularly used in horticultural crops.

The speaker of the Second Technical Session was **Dr. K. P Singh**, *Principal Scientist* at CIAE, Bhopal and his topic was "***Applications of Artificial Intelligence in Mechanization for Resource Conservation***". Very specifically, he highlighted the application of AI in agriculture and showed the precision machineries developed at CIAE, Bhopal.

The speaker of the Third Technical Session was **Dr. Pradeep Rajan**, *Sr. Principal Scientist*, and Head, Farm Machinery & Precision Agriculture, CSIR-CMERI, Ludhiana and his topic was "***Farm Mechanization: Towards Agriculture 4.0***". He explained the concept of "Agriculture 4.0" and its scope and utility in Indian Farming with some latest technologies developed all around the world like battery operated smart tractor.

The fourth Eminent Speaker of the seminar was **Prof. Indra Mani**, *Head*, Division of Agri. Engineering, Indian Agricultural Research Institute, New Delhi. He delivered lecture on "***Automation of Farm Operations and Efficient Technology Dissemination for Profitable Agriculture***". In his lecture, he highlighted successful and efficient methods for dissemination of Technologies from Lab to Land of the farmer.

After each technical session, healthy discussion was undertaken in between the panelist and viewers regarding the topic of respective sessions.

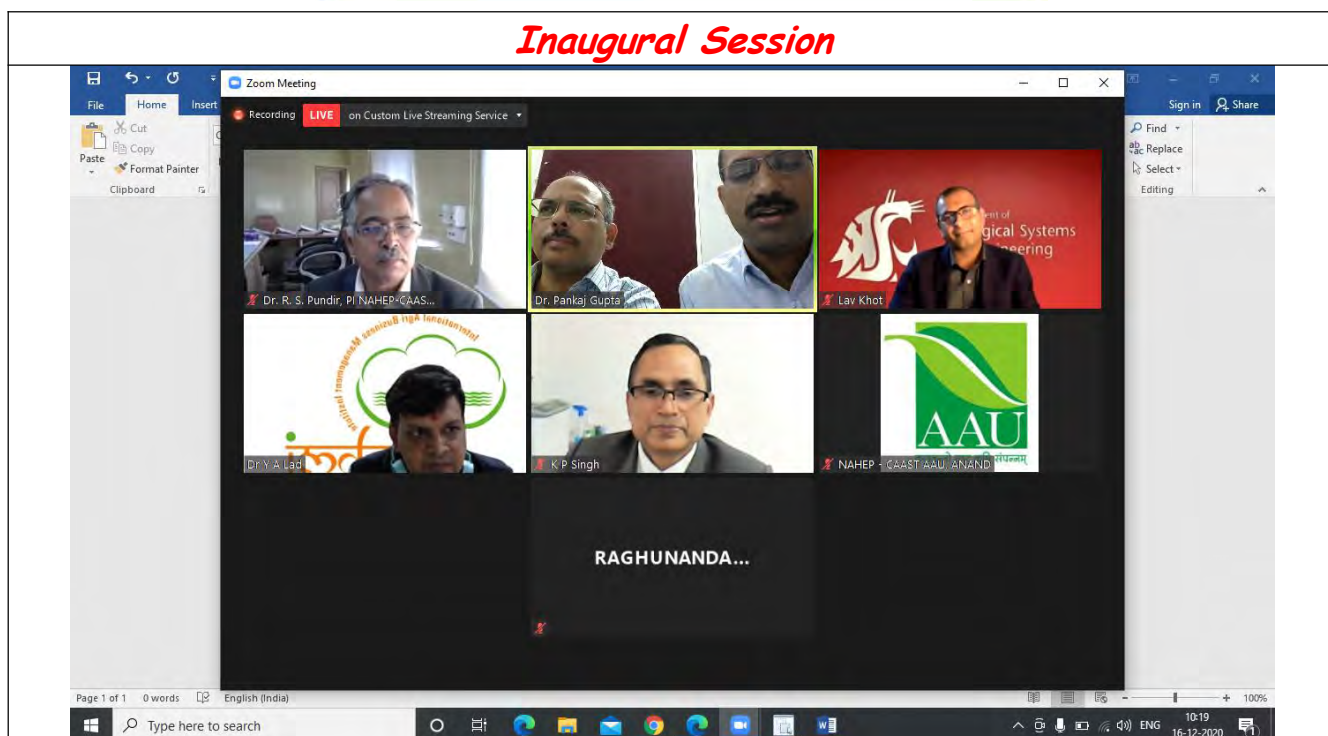
In the Plenary session, again welcome address was given by Dr. R. S. Pundir, with greetings to the entire team of NAHEP-CAAST, Anand and CAET, Godhra for organizing this online seminar successfully. Dr. Pankaj Gupta, Organizing Secretary summarized the observations/outcome came from the discussion of whole day exercise, which are given below. Prof. Indra Mani, Chief Guest of the Plenary session, emphasized on the challenges for implementation of mechanization at grass root level and the role of Agricultural Engineer to meet the challenge. Dr. R. Subbaiah, Dean Agricultural Engineering Faculty, convey his gratitude to Hon. Vice Chancellor, AAU, Anand and all distinguished Speakers of the day. Dr. R. Swarnkar, Professor, Deptt. of FMPE, CAET, Godhra proposed vote of thanks and ended the plenary session. Dr. K. L. Dabhi, Assi. Prof. and member of organizing committee extended his help in conducting all Technical sessions. All the sessions were anchored by Dr. R. C. Salunkhe, Asst. Professor, and member of organizing committee.

❖ **Brief observations/finding of the seminar:**

- Mechanization is the need of the hour to increase the farm productivity as well as income of the farmers and shifting towards digital technologies based mechanization will be inevitable in future.

- There is need to increase the mechanization, especially in farm implements, as present mechanization is tractor centered.
- Custom hiring centers are one of the ways to increase the mechanization to harvest it's benefits even by small farmers.
- The current agricultural implements may also be made smart by digital technologies for precision operations, but, efforts are needed for developing attachment for making the existing implements smart in country like India, where most of the farmers are small and marginal.
- Drones will play a vital role in futuristic agriculture as it can be used for monitoring of evapo-transpiration and crop physiology, crop canopy management and smart spraying. Even it seems to be better than satellite based mapping in especially in crop monitoring.
- IoT has promising application in agriculture e.g abiotic crop loss management, disease identification, nutrient and yield mapping, etc.
- Expectations are there that Artificial intelligence will play an crucial role in futuristic Indian agriculture. AI may be used in fertilizer application, soil analysis, weather prediction, seed sowing, disease diagnosis, etc. Many startups in India are also coming for these and working on various related aspects.
- Some of futuristic technologies for agriculture may be variable rate applicators, Intelligent orchard sprayers, automated fixed spray systems, UAS based sprayers, image based herbicide applicators, IoT enabled equipment, field robots, electric tractors, etc.
- Digital agriculture, which is all about measurement, analysis and management, has a lot of avenues for entrepreneurship development apart from increasing the labour productivity, farm productivity and income.
-

Glimpses of the Online seminar



Information-based management cycle for advanced agriculture



Category	Subcategory
CROP	Precision and Smart Farming
	Social and economic impact
	Management zones
PLATFORM	Remote sensing (satellite and aircraft)
	Proximal sensing (ground vehicles)
DATA	Big data
	Internet of Things (IoT)
	Mapping
DECISION	Information Systems (GIS, FMIS)
	Artificial Intelligence (AI)
ACTUATION	Decision Support Systems (DSS)
	Variable Rate Applications (VRA)

Technical Sessions

Precision Ag & Automation Technologies for Specialty Crop Production Management

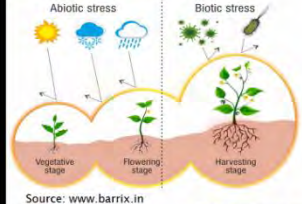
Lav R. Khot, PhD
Associate Professor of Precision Agriculture
Biological Systems Engineering



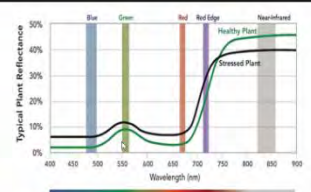
Center for Precision & Automated Agricultural Systems



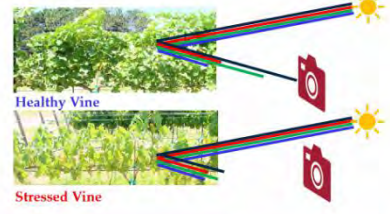
Crop Sensing



Source: www.barrix.in



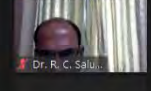
Source: MicaSense



WASHINGTON STATE UNIVERSITY
World Class. Ever to Face.



K P Singh



Dr. R. S. Pundir,...

Different types of Agricultural Drones



a. Planting Drone



b. Irrigation Drone



c. Soil Analysis Drone



d. Crop Monitoring Drone

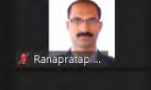


e. Crop Spraying Drone

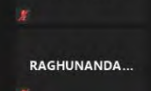


f. Health Assessment Drones

Source: (Unnaprom et al., 2018)



Dr Y A Lad



Farm Mechanization: Towards Agriculture 4.0

Dr. Pradeep Rajan
Sr. Principal Scientist
CSIR-CMERI, Ludhiana

Seminar - Paradigm Shift in Mechanization for Futuristic Agriculture

16 Oct 2020

AAU, NHEP



K P Singh

Recording **LIVE** on Custom Live Streaming Service

FARM POWER
Tractor, Machinery, Motor, Engine, Human Labour

SEEDS
Seeding, Planting, Transplanting

WATER
Flood irrigation, Sprinkler, Drip

FERTILIZERS
Nitrogen, Potash, Phosphorous, Micro-nutrients

PESTICIDES
Herbicides, Insecticides, Fungicides

AAU **NAHEP** Seminar - *Paradigm Shift in Mechanization for Futuristic Agriculture* 16 Oct 2020

Dr. Pradeep Rajan

Plenary Session

Zoom Meeting Recording **LIVE** on Custom Live Streaming Service

Dr. Indra Mani

Dr. Pankaj Gupta

Dr. K. P. Singh

Dean (Agril. Engg.), AAU, Anand

Dr. R. S. Pundir, P. NAHEP-CAAS...

Dr. K. L. Dabhi

Dr. R. C. Salunkhe

RAGHUNANDA...

AAU

Dr. Pradeep Rajan

Windows taskbar: Type here to search, 16:35 16-12-2020
