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THE CREATOR & AI THE GOOD, THE BAD, THE AGRICULTURE

The spectacular new movie *The Creator* depicts a world run amok in AI, but the real-world field of agriculture tells a different story. *The Creator*, the AI epic sweeping across movie screens this week, raises all sorts of questions about the future of humanity in a world where machines just can't seem to get beyond projecting the extremes of human behavior onto, well, the world. With that in mind, let's take a look at the influence of artificial intelligence on agriculture, and the implications for a live-able planet.



The Creator: A Visually Stunning Whodunnit

The Creator unspools against the backdrop of a nuclear holocaust. As for who pushed the button, go see the movie and find out.

The studio behind the film is 20th Century Studios (Disney's 2020 rebrand of the familiar 20th Century Fox house), which is not giving anything away except to tease the idea that someone came up with the brainy plan of ending all wars by ending humanity. As for who did that, go see the movie.

Regardless of who (or what) did do it, the action packed thriller has gotten rave reviews for stunning visuals

and use of a relatively simple consumer-grade cinematic camera, the Sony FX3. The relatively small, lightweight camera is available at electronics stores everywhere at the relatively affordable price of around \$3,500, so you can run right out and try to replicate some of the shots. Or...go see the movie.

On The Bright Side, AI Is Good For Agriculture

Partly due to its adept use of the lightweight FX3 in visually storytelling, *The Creator* manages to mine new turf in the never ending war between humans and their creations. Whether or not good or evil will prevail is beyond

the scope of this article, but speaking of turf, stakeholders in the agriculture industry are already coming down on the side of artificial intelligence.

One recent example comes from the University of Tokyo, where a research team has been studying how automated drones can deploy AI to optimize crop harvesting.

"If farmers know the ideal time to harvest crop fields, they can reduce waste, which is good for them, for consumers and the environment," explains Associate Professor Wei Guo, of the school's Laboratory of Field Phenomics.

"But optimum harvest times are not an easy thing to predict and ideally require detailed knowledge of each plant; such data would be cost and time prohibitive if people were employed to collect it." Professor Guo cautions.

Guo and his team came up with a solution in the form of inexpensive drones equipped with imaging and analytic

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CROP MODELLING A COMPREHENSIVE OVERVIEW AND APPLICATIONS IN AGRICULTURAL SYSTEMS

Crop modelling has emerged as a powerful tool in agriculture, enabling farmers, researchers, and policy makers to better understand and manage complex agricultural systems. By simulating the growth, development and yield of crops under varying environmental conditions, crop models provide valuable insights into the impacts of factors such as climate change, soil fertility, water availability, and pest infestation on crop productivity. It is important for a country, where productivity of crops in any season may vary greatly depending on the prevailing weather conditions of that season (Jones et al., 2003). Crop modelling play a crucial role in optimizing resource allocation, improving decisionmaking processes and enhancing overall agricultural sustainability. Crop models are tools of systems research which help in solving problems related to crop production (Bannayan et al., 2003). The success of crop models for decision making relies on their performances for yield and environmental budget simulations. By harnessing the power of crop modelling, farmers and agricultural stakeholders can make informed decisions to maximize productivity,



minimize risks, and ensure sustainable food production in the face of evolving environmental and socio-economic challenges.

Simulation

The art of building mathematical models and study their properties in reference to those of the system (De wit, 1982).

Crop Model

Simple representation of a crop. Crop models are tools of systematic research which help in solving problems related to crop production.

Types of Crop Models

Depending upon the purpose for which it is designed the models are classified into different groups or types. Of them a few are:

1. Statistical models: These models express the relationship between yield or yield components and weather

parameters. In these models relationships are measured in a system using statistical techniques.

Example: Step down regressions, correlation, etc.

2. Mechanistic models: These models explain not only the relationship between parameters and yield, but also the mechanism of these models. These models are based on physical selection and explain the relationship of influencing dependent variables.

3. Stochastic models: A probability element is attached to each output. For each set of inputs different outputs are given along with probabilities. These models define yield or state of dependent variable at a given rate.

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SEPTEMBER RAINFALL HELPING AGRICULTURE IN MAHA: IMD



Rainfall received from September 1 to 27 and active monsoon conditions throughout the month are helping agriculture in Maharashtra. This will be particularly useful for the Rabi harvest or winter crop,

said an official from the India Meteorological Department (IMD).


Meanwhile, the recent spell in Pune district brought a good amount of water in the dam catchment areas, and Khadakwasla dam experienced a 7% increase

in water levels in the last 24 hours. The IMD expects more rain in the state in the next eight to 10 days, and it is expected that rain activity in the coming days will help reduce the rainfall deficit in the state, especially in the Marathwada region which is experiencing a huge rainfall deficit.

Early in May this year, the IMD had predicted normal to below-normal rainfall in Maharashtra this monsoon season between June and September. As El Nino was likely to impact rainfall this year, the department had expected rainfall activity to remain subdued. The department had forecast that the positive Indian Ocean Dipole (IOD) might have a

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THE CREATOR & AI . . .

software that can identify and catalogue every plant in a field, and predict the growth characteristics of each one.

As explained by Guo, a farmer's income from a particular crop can fall somewhere between 3.7% and 20.4% if harvesting takes place even just a day before the optimal time, so taking out the guesswork could make a significant difference.

In addition to potentially boosting harvest yields, the system is also a cost-saver.

"The drones carry out the imaging process multiple times and do so without human interaction, meaning the system requires little in terms of labor costs," the school explains.

That sounds simple enough, but the devil is in the details. The team had to spend a considerable amount of time teaching their machines how to interpret the images, proving once again that human input is the key.

"Collecting the image data itself is relatively trivial, but given the way plants move in the wind and how the light changes with time and the seasons, the image data contains a lot of variation that machines often find hard to compensate for," the school explains.

More Good News About AI & Agriculture: The Water Angle

Another interesting twist on the theme of AI in agriculture comes from the University of Florida Institute of Food and Agricultural Sciences, where Dr. Sandra Guzmán has been applying to machine learning to help resolve irrigation and hydrology issues related to agriculture.

Guzmán leads the Smart Irrigation and Hydrology program at the school's Indian River Research and Education Center. She works hands-on

with farmers in an epicenter of the state's citrus industry, helping them to incorporate new technology to increase productivity.

The transition to AI technology may take some time, and farmers can hesitate to invest in new equipment. However, Charles Brown, of the University of Florida Technology Transfer Center, sees a similarity with existing technology. At one time, Brown explains, standard irrigation sensing equipment also seemed futuristic and hard to wrap one's head around.

"Guzmán can work with producers to get them started with smart irrigation or to help them create the system they need to control irrigation and to generate the data needed for the advanced tools she can provide," Brown explains.

Guzmán's signature product, called IrrigMonitor, is described as decision support system software. It collects soil, weather, and other data from a variety of different sensors in the field.

"The software allows the grower to quickly assess the water status of the topsoil layers where most plant roots are located," Brown explains. "This can guide the grower to irrigate more frequently at lower volumes."

Among other rising issues, the AI-based system can be deployed to curb the impacts of citrus greening, the common name of the serious citrus disease Huanglongbing, which was first found in Florida as recently as 1998. More & Better AI For Agriculture

Dr. Guzmán's work is supported by the US Department of Agriculture as part of a broader AI research program under the wing of the National Institute of Food and Agriculture.

"The AI activities

supported through a variety of NIFA programs advance the ability of computer systems to perform tasks that have traditionally required human intelligence, including machine learning, data visualization, natural language processing and interpretation, intelligent decision support systems, autonomous systems, and novel applications of these techniques to agriculture and food production," USDA explains.

The emphasis on AI may appear to run counter to the regenerative agriculture trend, which draws from centuries of indigenous experience to focus on soil and water conservation. However, to the extent that AI can enhance indigenous knowledge rather than steamroll over long term sustainability, that's a good thing.

In addition, the practice of growing crops within fields of solar panels — the emerging field of agrivoltaics — is providing new opportunities to deploy AI for optimizing both solar cell conversion efficiency and crop yields (see more CleanTechnica coverage here).

Stay tuned for more on that. Among other projects, in 2021 the USDA launched a four-year, multi-institution agrivoltaics research program spearheaded by the University of Illinois, aimed at demonstrating how the combo of solar panels and agriculture operations can provide bottom line benefits to farmers. ■

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SEPTEMBER RAINFALL HELPING . . .

positive impact on rainfall in the latter phase in August and September. The late arrival of the monsoon, weak monsoon conditions, and a month-long monsoon break in August raised concerns over agriculture in Maharashtra. Even the July rainfall could not help bridge the rainfall deficit in the state. However, back-to-back systems which formed in the Bay of Bengal, helped in the revival of the monsoon over Maharashtra in September and the state received good rainfall in many areas, especially in the Marathwada sub-division

K S Hosalikar, head of climate services and research, IMD Pune, said, "September has brought good rainfall in Maharashtra. There were some instances when districts in Vidarbha and north Maharashtra experienced flood-like conditions. Many districts in Marathwada too received good rainfall. The Konkan and Goa sub-divisions have already exceeded the rainfall limit this monsoon season."

"This scenario is helpful for agriculture in Maharashtra, especially during the Rabi season as it will help maintain the moisture in the soil and recharge groundwater sources. The majority of reservoirs are experiencing good water storage which will help in meeting irrigation and drinking water demands," said Hosalikar.

As the Vidarbha region requires both heat and moisture for agriculture, September has been a good month for the farming sector, said Milind Phadke, former IMD official and weather expert.

September rainfall till date

With 221.8 mm of rainfall, Maharashtra is experiencing 32% excess rainfall from September 1 till date. All sub-divisions in the state are on the positive side of rainfall. While Konkan and Goa, central Maharashtra, and Vidarbha sub-divisions are experiencing 'excess' category rainfall, Marathwada is experiencing 'normal' category rainfall. Nearly 12 districts in the state are experiencing excess category rainfall while nine districts are experiencing large excess category rainfall in September. Among the nine districts experiencing large excess category rainfall in September, five are from the Vidarbha sub-division and four from the north Maharashtra region. At least five districts are experiencing normal category rainfall. Four districts in south Maharashtra including Sangli, Satara, Solapur and Osmanabad have reported high rainfall deficit.

Pune district received

22% excess rainfall
In September, Pune district received 22% excess rainfall

between September 1 and 27. The rainfall was recorded as 203.2 mm against the normal rainfall of 166.7 mm. Pune city area also experienced good rainfall in September. Vineet Kumar, a former researcher at the Indian Institute of Tropical Meteorology (IITM), said, "In September, the city received 137.8mm of rainfall and the month is now the second-most rainy month of this season. Earlier, the city recorded 204.6 mm of rainfall in 2022; and 78.8mm in 2021 between September 1 and 27."

Significant increase in Khadakwasla dam water level

Due to the intense spells in the district over the last three days, dams in the Khadakwasla cluster have recorded a significant increase in water levels. As per the state irrigation department data, "The Khadakwasla dam recorded a 7% increase in water level in the last 24 hours. On September 27, the water level in Khadakwasla was 81.43%; up from 74% on September 26. Till date, the Khadakwasla dam has recorded 77% water storage while the other three dams in the district including Bhama Askhed, Warasgaon and Panshet have recorded 100% water storage.

Source: www.hindustantimes.com

UPSSSC CANDIDATES PROTEST DEMANDING UPDATE ON VACANT POSTS OF AGRICULTURAL TECHNICAL ASSISTANT

Uttar Pradesh Subordinate Services Selection Commission (UPSSSC) candidates have staged a protest regarding the recruitment issue of 3,446 vacant posts of Agricultural Technical Assistant (AGTA) outside the office in Lucknow. The candidates are demanding information to be provided soon regarding the advertisement.

Earlier in August, it was reported that the protesting agriculture graduates were told that the delay was due to UPPSC's failure to transfer the data of 96 candidates to UPSSSC in a specific format. The origin of this conflict goes back to a round of appointments that began a decade ago in 2013.

UPSSSC advertised 6,628 AGTA posts in October 2013, conducted the examination in February 2014 and announced results in May 2015. A section of candidates moved the Allahabad High Court and later the Supreme Court alleging violation of reservation rules in the recruitment drive.

In September 2019, the Supreme Court ordered that the 906 candidates who were not issued appointment orders due to a change in the number of reserved seats be granted



age relaxation as a one-time measure to participate in the upcoming recruitment. These candidates were not required to clear the PET again to sit for the written requirement exam. The apex court had also directed the UPPSC to send the data of the candidates to UPSSSC so that the latter can allow these candidates to sit in subsequent recruitment drives.

The protesting candidates have said that over the data issue, they have become overage for the exam and have demanded an update on the recruitment for the post. UPSSSC notified recruitment for another AGTA post in July 2018. The exam was conducted in February 2019 and the results were announced in September 2020. The recruitment drive was completed in February 2021, delayed by COVID-19. This was the last recruitment drive for UP AGTA posts and candidates are still waiting for UPSSSC notification for AGTA vacancies in 2023.

Source: www.news18.com

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CROP MODELLING . . .

4. Dynamic models: Time is included as a variable. Both dependent and independent variables are having values which remain constant over a given period of time.

5. Static: Time is not included as variables. Dependent and independent variables having values remain constant over a given period of time.

6. Deterministic models: These models estimate the exact value of the yield or dependent variable. These models also have defined coefficients.

7. Simulation models: Computer models, in general, a mathematical representation of a real world system. One of the main goals of crop simulation models is to estimate agricultural production as a function of weather and soil conditions as well as crop management. These models use one or more sets of differential equations, and calculate both rate and state variables over time, normally from planting until harvest maturity or final harvest.

8. Explanatory model: This consists of quantitative description of the mechanisms and processes that cause the behaviour of the system. To create this model, a system is analyzed and its processes and mechanisms are quantified separately.

Steps in Modelling

1. Define goals: Agricultural system is complex comprising of various disciplines. In order to develop or understand a crop model one requires strong knowledge base of different subjects. Depending upon the objective of study, knowledge base of different disciplines is integrated to develop a crop model.

2. Define system and its boundaries: In agriculture, crop field is chosen as a system.

3. Define key variables in system: Variables include state, rate, driving and auxiliary variables.

- State variables are those which can be measured or quantified, e.g. soil moisture content, crop yield etc.
- Rate variables are the rates of different processes operating in a system, e.g. photosynthesis rate, transpiration rate.
- Driving variables are the variables which are not part of the system but the affect the system, e.g. sunshine.
- Auxiliary variables are the intermediated products, e.g. dry matter partitioning, water stress etc.

These variables are identified in the crop field.

4. Quantify relationships: Once the relationship is established it is then quantifies using different mathematical equations and functions.

5. Calibration/Validation: When the model is developed, it requires calibration and validation. First the model is run with any experimental data set and calibrated accordingly. Calibrated model is then validated with another experimental data set to check its simulation ability

under different situations or environment.

6. Sensitivity analysis: Validated model is then tested for its sensitivity to different factors (e.g. temperature, rainfall, N dose). This is done to check whether the model is responding to changes in those factors or not.

7. Simplification: Any model is initially written in computer programming languages. But they are made simple by making it user friendly.

8. Use of models in decision support: Once developed, calibrated and validated models can be used in any decision support system for forecasting or making suitable decisions regarding crop management.

Crop Models Require Certain Input Data which is Used by the Model to Further Generate the Required Output

Input data requirements: Crop modeling requires data related to weather, soil, crop management practices and insect pests.

Weather data includes: Maximum and minimum temperature, rainfall, relative humidity, solar radiation and wind speed. Weather data is required at daily time step to assess daily crop growth processes.

Crop data includes: Crop name, variety name, crop phenology (days to anthesis, days to maturity etc.), leaf area index, grain yield above ground biomass, 1000 grain weight.

Soil data includes: Thickness of soil layer, pH, EC, N, P, K, soil organic carbon, soil texture, sand and clay percent, soil moisture, saturation, field capacity and wilting point of soil, bulk density.

Pest data includes: Name and type of the pest, their mode of attack, pest population at different crop growth stages. Data on insects or pests are included only in those models which contains the pest module.

Crop Management Data Includes

- Date of sowing of crop is required to initiate the simulation process.
- In case of transplanted crop date of transplanting is used instead of sowing date. Seed rate and depth of seeding are also required.
- Use of inputs in the crop field, namely, irrigation, fertilizer, manure, crop residue etc. needs to be mentioned. Amount of these inputs are specified along with their type, date of application and depth of placement.
- If crop residues or organic nutrient sources are applied in the field then C:N ratio of those sources are quantified.

A Few Successfully Used Models in Agrometeorology

1. The deWit school of models:

- The results obtained from this model were used among others, to estimate potential food production for some areas of the world and to provide indications for crop management and breeding (Linneman and Graves., 1979).

- This was followed by the construction of an

Elementary CROP growth Simulator (ELCROS) by deWit et al. (1970).

- This model included the static photosynthesis model and crop respiration was taken as a fixed fraction per day of the biomass, plus an amount proportional to the growth rate.

2. IBNSAT and DSSAT Models:

- (International Benchmark Sites Network for Agrotechnology Transfer and Decision Support System for Agro-Technology Transfer)
- The goal is to obtain higher yields from the crops that have been growing for a long time.

Some Other Crop Models Reported Worldwide

MODVEX (Model development and validation system), **IRRIGATE** (Irrigation scheduling model), **CropSyst** (Wheat & other crops) and **SIMCOM** (Crop (CERES crop modules) & economics).

Possible Applications of Crop Model

- Estimation of potential yields
- Estimation of yield gaps: causes and their contribution
- Yield forecasting
- Impact assessment of climatic variability and climatic change
- Optimizing management-Dates of planting, variety, irrigation and nitrogen fertilizer
- Environmental impact-percolation, N losses, GHG emissions
- Plant type design and evaluation
- Genotype by environment interactions.

Limitations of Modeling

- Input data:** Models require large amount of input data, which may not be available with the user.
- Skilled manpower
- Knowledge of computers & computer language
- Limited awareness and acceptance towards modeling
- Multidisciplinary knowledge
- No model can take into account all the existing complexity of biological systems. Hence simulation results have errors.

Future Scope of Crop Modelling in Agriculture

1. Climate Change Adaptation: Crop models will play a crucial role in assessing the impacts of climate change on crop productivity and developing adaptation strategies.

2. Precision Agriculture: Models can aid in optimizing input management, including precise water and nutrient application, site-specific pest management, and variable rate seeding, leading to improved resource efficiency and reduced environmental impact.

3. Genetic Improvement: By simulating the performance of different genotypes under varying environmental conditions, models can assist in identifying traits that contribute to higher yields, stress tolerance, and nutritional quality, thus supporting the development of improved crop varieties.

4. Digital Agriculture Platforms: By combining real-time weather data, soil information, and farm management practices with modelling capabilities, these platforms can provide

personalized recommendations to farmers, helping them optimize productivity, minimize risks, and increase profitability.

5. Decision Support Systems: By incorporating real-time data, machine learning, and artificial intelligence techniques, models can provide dynamic and context-specific recommendations,

enabling more efficient and sustainable agricultural practices.

Conclusion

Models are holistic, knowledge-based international tools for worldwide and local applications. Crop model helps us in assimilating knowledge gained from experimentation. It helps to understand or

foresee the behaviour of biological systems on the basis of fundamental level of incorporation. It offers dynamic, quantitative tools for analyzing the complexity of agricultural systems. Promote inter-disciplinary research. Increase the efficiency of agricultural research and management and improve agronomic efficiency and environmental quality.

NEED TO FOCUS ON CLIMATE AND COME UP WITH GREEN AGRICULTURE INITIATIVES: NABARD CHAIRMAN

In a first, the Bombay Stock Exchange saw the listing of social bonds by the National Bank for Agriculture and Rural Development (NABARD). Chairman Shaji KV spoke to CNBC-TV18 exclusively and explained that this is just the beginning, it also coincides with his first ever television interview.

The issuance of social bonds is targeted at bolstering rural development. This move, driven by a focus on crucial areas such as irrigation and sanitation, particularly in southern states, aims to address persistent challenges faced by rural communities.

The bank's chairman also emphasised the practical significance of this initiative. He noted that these social bonds signify more than mere financial tools; they embody a pragmatic approach to rural development. By targeting social needs alongside financial investments, NABARD is setting a new standard for impactful financial initiatives, he said.

NABARD said it received bids aggregating Rs 8,590.50 crore but accepted Rs 1,040.50 crore at coupon rate of 7.63 percent. The face value of each bond is Rs 1,00,000. The base issue size is Rs 1,000 crore,

which comes with an option to retain oversubscription up to Rs 2,000 crore, thereby aggregating up to Rs 3,000 crore.

After the successful listing of social bonds, the rural bank is looking forwards to raising funds through its upcoming 'green bonds' in March of next year.

"Climate is one of the concerns for rural areas. The rural livelihood gets impacted deeply due to climate and that calls for a lot of adaptation measures. We are looking for innovative measures to combat the ill effects of the climate. Agriculture is one of the biggest emitters of greenhouse gases, so, projects will now have equivalent to the green initiatives attached to them," he added.

This comes month after the finance minister Nirmala Sitharaman had taken a check of NABARD. In her review, the FM had suggested that bank must work with farmers starting from a ground level.

"The FM had reviewed and suggested in June that whatever we do we must impact the lives of farmers directly. So we are on our way to do that though most of our work involves working with the state governments, we are



looking for direct interventions as well. We have also set up a venture capital fund of Rs 600 crore, Rs 300 crore of which have already been invested in 34 companies focusing on rural tech, food tech and agritech," Shaji added.

India's agriculture is predominantly dependent on monsoon. This year witnessed scanty rainfall throughout the month of August.

"We are supporting lot of irrigation facilities and projects across the country. We intend even out the effects of erratic monsoon. So, our effort include dam constructions and water storage facilities," he added.

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CROP RESIDUE MANAGEMENT GUIDELINES REVISED; SUBSIDY ON MACHINERY TO HELP CHECK STUBBLE BURNING

On the long-standing issue of stubble burning, S Sivakumar, Chairman, CII National Agriculture Council and Group Head, Agri & IT Business, ITC Ltd, said that in every problem there lies a solution, but almost all solutions create new problems.

The government has revised guidelines for crop residue management enabling ex-situ management of paddy straw and is also providing financial assistance on the capital cost of machinery, a senior agriculture ministry official said on Friday.

"The Government of India is committed to helping farmers to manage stubble," S Rukmani, Joint Secretary, Ministry of Agriculture and Farmers Welfare, was quoted as saying in a statement issued by CII. She was speaking at a National Workshop on Clean & Green Solutions for Rice Straw Management, organised by the CII and the Agriculture Ministry.

"We have launched revised guidelines on crop residue management and are now promoting ex-situ management of straw, offering financial assistance for capital cost of machinery through subsidy of up to 65 per cent for projects, while industry will need to contribute 25 per cent towards operational costs," she said.

Rukmani emphasised

that stubble can be a source of wealth. She spoke about the Government's initiative on paddy straw supply chain, promoted in a Public-Private Partnership (PPP) model with the purpose of involving industries that can utilize it.

There are many uses for paddy straw, but there was no robust supply chain available for these industries, the joint secretary said.

On the long-standing issue of stubble burning, S Sivakumar, Chairman, CII National Agriculture Council and Group Head, Agri & IT Business, ITC Ltd, said that in every problem there lies a solution, but almost all solutions create new problems.

"This is a continuous journey, and the issue of rice straw management is no exception. For instance, burning stubble seemed like a solution at one time given the short window period between harvesting one crop and sowing the next, but burning ruined soil quality and created enormous pollution," he said.

To understand what is hindering a complete solution, he said, "We need to understand where gaps exist whether in terms of awareness, cost issues or where investment is holding us back: each region will face unique challenges that must be overcome.

Arvind Meshram, Deputy



Commissioner, Ministry of Agriculture and Farmers Welfare elaborated on the revised guidelines and said that machinery such as the Happy Seeder, Super Seeder, and others can help in incorporating paddy straw into the soil, benefiting farmers by enriching the soil.

The crop residue management project will benefit farmers by providing them with income from selling paddy straw, while industries will receive a continuous supply, he said.

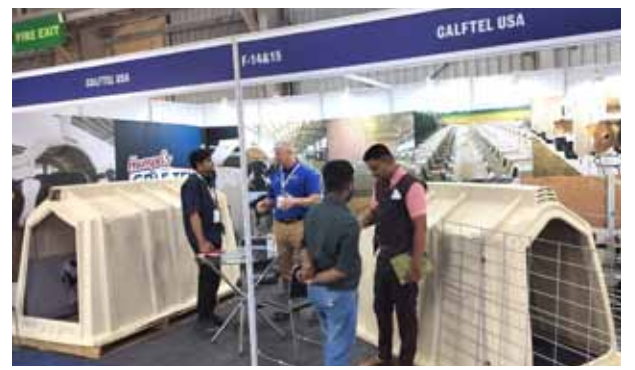
In July, the Centre had revised the Crop Residue Management guidelines enabling efficient ex-situ management of paddy straw generated in the States of Punjab, Haryana, Uttar Pradesh and Delhi.

As per the revised guidelines, techno-commercial pilot projects for Paddy Straw Supply Chain will be established under the bilateral agreement between the beneficiary/aggregator (Farmers, rural entrepreneurs, Cooperative Societies of Farmers, Farmers Producer Organizations (FPOs) and Panchayats) and industries utilising the paddy straw.




Glimpses









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JAYAKUMAR KARUPPUSAMY WINS TIMES NOW AMAZING INDIAN AWARD 2023 FOR HIS CONTRIBUTION TO AGRICULTURE

Dr. Karuppusamy has been working as the President of IndiaSkillPedia Foundation for 33 years. This initiative does not merely aim to nurture young entrepreneurs who can set up businesses for manufacturing farm machinery but it also seeks to encourage mechanized agricultural and farming practices.

New Delhi: Times Now, India's leading English news channel is hosting the new edition of the Amazing Indians, a prestigious national platform that celebrates and honours the indomitable spirit of India's common people who have performed uncommon deeds to improve society, on Friday. Dr. Jayakumar Karuppusamy has won the Amazing Indian award for the category of Agriculture.

Dr. Karuppusamy has been working as the President of IndiaSkillPedia Foundation for 33 years. They have been training Civil Service Youth of North East States to assemble trolley-mounted multipurpose farming machine technology developed and patented to promote farm mechanisation in small farms, hilly or difficult-to-access terrains.

The primary goal is to establish local industrial units within their communities. The remarkable efforts put forth have recently granted a US Patent (US 11,653,584B2) in May 2023, with patents for this innovative technology also in progress in Canada and Europe. This initiative does not merely aim to nurture young entrepreneurs who can set up businesses for manufacturing farm machinery but it also seeks to encourage mechanized agricultural and



farming practices.

The trainees have successfully developed workshop infrastructure in Shristinagar and are now proficient in tasks such as dismantling, reassembling, and fabricating. A major driving force behind the success of this initiative includes active community involvement, close collaboration with government agencies, and strategic partnerships with industry stakeholders to ensure a steady supply of original equipment manufacturer (OEM) parts.

Eight village communities have adopted a model of Common Industrial Manufacturing Workshops and incubation facilities. Through this initiative, effective mentoring processes for people who complete a 6-month industry-focused program have been established. A progressive instructional methodology has been developed to impart skills in metal fabrication, Argo farming machine production, structural steelwork, and parts and components manufacturing.

This effort has yielded impressive results as these trained youth are setting up their own enterprises, creating

workshop infrastructure, servicing vehicles, demonstrating leadership and teamwork, and showing a strong work ethic.

Times Now Amazing Indians features inspiring stories of individuals who through their grit, determination and selfless acts of service have significantly impacted people's lives. The premier national awards night will felicitate winners across 12 categories - Agriculture, Animal Welfare, Education, Environment & Climate, Food Management and Nutrition, Girl Child And Women's Rights Empowerment, Healthcare, Medical & Clinical Assistance, Rural Development, Sanitation And Water, Slum Care, Shelter Management and Tech For Good.

Source: www.timesnownews.com

NEW GREEN REVOLUTION: HOW START-UPS ARE TURNING INDIAN AGRICULTURE INTO ORGANISED SECTOR

Innovations in agriculture, are making technology more accessible to farmers, and attracting young people to take it as a career.

In the latest episode of the businessline podcast, host Jayapriyanka delves into the transformative trend of off-season corporate farming. This approach involves start-ups and MSMEs partnering with farmers through various contracts to produce agricultural products for consumers.

Archana, the Founder of My Harvest Farms, highlights how this business model is empowering farmers to increase their income during non-season periods. Additionally, it offers employment and expertise to farmers who would otherwise be unemployed, says Shan Kadavil, CEO & Co-founder, FreshToHome.

While concerns about farmer exploitation exist in corporate farming, companies with strong marketing knowledge are often able to secure better prices for farmers' produce. Rahul Singh, Co-Founder of EcoSoul Home, shares insights from his unit's processing of palm leaves.

This not only provides farmers with a steady income but also gives start-ups access to expert labour and the agricultural sector. Kadavil emphasises how start-ups can

offer better prices to farmers while keeping products affordable for buyers.

Furthermore, these partnerships go beyond monetary benefits; some companies offer farmers vacations and social security benefits such as ESI and PF schemes, demonstrating a commitment to improving farmers' lives.

Rituraj Sharma, founder, Zetta Farms, explains how aggregating farmers' efforts and providing social security benefits is mutually beneficial. This model also includes landless agricultural labourers, addressing the issue of seasonal unemployment.

Start-ups not only market farm products but also educate farmers, helping them become entrepreneurs and produce value-added products, says Archana.

These innovations are making technology more accessible to farmers, attracting young people to agriculture as a career. The goal is to create more rural employment and tackle seasonal unemployment, which remains a significant challenge.

However, there are obstacles to bringing farmers



into the organized sector, says Singh. Nonetheless, Sukhpal Singh, Professor, IIM-Ahmedabad believes this shift is crucial for making Indian agriculture export-oriented.

Building trust between farmers and corporates is another challenge. Some companies partner with government institutions to gain trust, but trust-building remains an ongoing issue, says Sharma.

Many of these new farming ventures focus on organic farming, recognising the market value of organic products. However, the lack of incentives for natural farming poses a hindrance, says Archana.

Despite the challenges, scaling up operations could offer solutions to sector-wide issues, according to Archana. Lastly, Singh emphasises the importance of striking a balance between the benefits and potential drawbacks of this approach.

RICE EXPORT BAN A REGULATION RATHER THAN RESTRICTION FOR FOOD SECURITY: INDIA TO WTO'S AGRI COMMITTEE MEET

The ongoing war between Russia and Ukraine, and this year's El Nino climate conditions are among the factors that have disrupted the food grain supply chain.

The US has urged India to lift this export ban with immediate effect.

India has said that the export ban on rice is a regulation rather than a restriction and is crucial for securing the food security of 1.4 billion people, according to an official.

This was stated by India in response to concerns raised by a group of countries including the US during a meeting of the WTO's Committee on Agriculture in Geneva on September 27. The Geneva-based official said that in the meeting, India reiterated its commitment to ensure food security in importing countries by granting exemptions to those in need upon their governments' requests.

The Indian government has already allowed exports of non-basmati rice to Bhutan (79,000 tonnes), UAE (75,000 tonnes), Mauritius (14,000 tonnes) and Singapore (50,000 tonnes) through the National Cooperative Exports Ltd (NCEL). On July 20 this year,

India banned exports of non-basmati white rice to boost domestic supply and keep retail prices under check during the upcoming festive season.

"The Government of India has the commitment that in case of food insecure, vulnerable countries and neighbouring countries request, it will provide with the required quantity of rice or wheat," the government official said. India has also argued that, in order to prevent private players from manipulating market conditions, advance notifications were not provided in the WTO.

Furthermore, these measures are temporary and are regularly reviewed to allow necessary adjustments based on domestic demand and supply situations. A group of member countries of the World Trade Organisation (WTO) including the US has raised concerns about banning the export of non-basmati white rice by India, saying the decision may impact import-dependent nations, the Geneva-based trade official said. The US has urged India to lift this export ban with immediate effect.

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PROF. SWAMINATHAN'S UNYIELDING COMMITMENT AND FORESIGHT USHERED A NEW ERA OF AGRICULTURAL PROSPERITY: PM



A few days ago we lost Professor M.S. Swaminathan. Our nation lost a visionary who revolutionised agricultural science, a stalwart whose contribution to India will always be etched in golden letters. Prof. M.S. Swaminathan loved India and wanted our nation, and our farmers in particular, to lead a life of prosperity. Academically brilliant, he could have chosen any career but he was so impacted by the Bengal famine of 1943 that he was clear that if there is one thing he would do, it would be to study agriculture.

At a relatively young age, he came in contact with Dr. Norman Borlaug and followed his work in great detail. In the 1950's, he was offered a faculty position in the US but he rejected it because he wanted

Green Revolution."

The Green Revolution offered a glimpse of India's "Can Do Spirit" - that if we have a billion challenges, we also have a billion minds with the flame of innovation to overcome those challenges. Five decades after the Green Revolution began, Indian agriculture has become far more modern and progressive. But, the very foundations laid by Prof. Swaminathan can never be forgotten.

Over the years, he undertook pioneering research in combatting parasites affecting potato crops. His research also enabled potato crops to withstand cold weather. Today, the world is talking about Millets or Shree Anna as super foods but Prof. Swaminathan had encouraged discourse around millets since the 1990's.



to work in India and for India.

I want you all to think about the challenging circumstances in which he stood as a colossus, guiding our nation towards the path of self-sufficiency and self-confidence. In the first two decades since Independence, we were dealing with immense challenges and one of them was food shortages. In the early 1960s, India was grappling with the ominous shadows of famine and it is then that Prof. Swaminathan's unyielding commitment and foresight ushered a new era of agricultural prosperity. His pioneering work in agriculture and specific sectors like wheat breeding led to a significant increase in wheat production, thus turning India from a food-deficient country into a self-sufficient nation. This tremendous achievement earned him the well deserved title of, "Father of the Indian

My personal interactions with Prof. Swaminathan were extensive. They began after I took over as Chief Minister of Gujarat in 2001. During those days, Gujarat was not known for its agricultural prowess. Successive droughts and a super cyclone and an Earthquake had impacted the growth trajectory of the state. Among the many initiatives we launched, was the Soil Health Card, which enabled us to understand the soil better and address problems if they arose. It was in the context of this scheme that I met Prof. Swaminathan. He appreciated the scheme and also shared his valuable inputs for the same. His endorsement was enough to convince those who were sceptical about the scheme which would eventually set the stage for Gujarat's agricultural success.

Our interactions continued during my Chief Ministerial

tenure and also when I took over as Prime Minister. I met him at the International Agro-Biodiversity Congress in 2016 and the next year in 2017, I launched a two-part book series written by him.

The Kural describes farmers as the pin that holds the world together because it is the farmers who sustain everyone. Prof. Swaminathan understood this principle very well. A lot of people call him a "Krishi Vaigyanik" - an Agricultural Scientist. But, I have always believed that he was even more. He was a true "Kisan Vaigyanik" - a Farmers' Scientist. In his heart there was a farmer. The success of his works is not restricted to their academic excellence; it lies in the impact they have had outside the laboratories, in the farms and the fields. His work narrowed the gap between scientific knowledge and its practical application. He consistently advocated for sustainable agriculture, emphasising the delicate balance between human advancement and ecological sustainability. Here, I must also note Prof. Swaminathan's special emphasis on improving the lives of the small farmers and ensuring they also enjoy the fruits of innovation. He was particularly passionate about improving the lives of women farmers.

There is another aspect about Prof. M.S. Swaminathan which is remarkable - he stands tall as a paragon of innovation and mentorship. When he won the World Food Prize in 1987, the first recipient of this prestigious honour, he used the prize money to establish a not-for-profit research foundation. Till date, it undertakes extensive work across various sectors. He has nurtured countless minds, instilling in them a passion for learning and innovation. In a rapidly changing world, his life reminds us of the enduring power of knowledge, mentorship, and innovation. He was an institution builder as well, having to his credit many centres where vibrant research takes place. One of his stints was as Director, International Rice Research Institute, Manila. The South Asia Regional Centre of International Rice Research Institute was opened in Varanasi in 2018.

I will again cite The Kural to pay tributes to Dr. Swaminathan. It is written there, "If those who have planned have firmness, they will attain what they have desired." Here was a stalwart who decided early on in his life that he wants to strengthen agriculture and serve farmers. And, he did it exceptionally innovatively and passionately. Dr. Swaminathan's contributions continue to inspire and guide us as we navigate the path of agricultural innovation and sustainability. We must also keep reaffirming our commitment to the principles he held dear, championing the cause of farmers and ensuring the fruits of scientific innovation reach the roots of our agricultural expanse, fostering growth, sustainability, and prosperity for generations to come.

Source: www.narendramodi.in

MS SWAMINATHAN, A TRUE CHAMPION OF FARMERS AND SUSTAINABLE AGRICULTURE, PM MODI WRITES

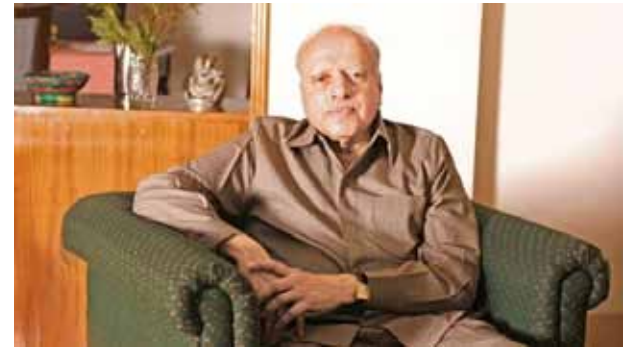
A few days ago, we lost professor M.S. Swaminathan. Our nation lost a visionary who revolutionized agricultural science, a stalwart whose contribution to India will always be etched in golden letters. Swaminathan loved India and wanted our nation, and our farmers in particular, to lead a life of prosperity. Academically brilliant, he could have chosen any career but he was so impacted by the Bengal famine of 1943 that he was clear that if there is one thing he would do, it would be to study agriculture.

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M.S. SWAMINATHAN, EMINENT AGRICULTURAL SCIENTIST, PASSES AWAY

Mankombu Sambasivan Swaminathan, popularly known as M.S. Swaminathan, the legendary agricultural scientist and a key architect of the country's 'Green Revolution,' passed away at his residence in Chennai on September 28, 2023 at 11.20 am, following age-related issues. He was 98. He is survived by three daughters - Soumya Swaminathan, former chief scientist, World Health Organisation; Madhura Swaminathan, professor, economic analysis unit, Indian Statistical Institute, Bengaluru

and former chairperson, MSSRF, and Nitya Rao, director, NISD, University of East Anglia, UK. His wife, Mina Swaminathan, who was Distinguished Chair, Gender and Development, M. S. Swaminathan Research Foundation (MSSRF), died in March 2022.

Education

Born in Kumbakonam on August 7, 1925 to M.K. Sambasivan, a surgeon, and Parvati Thangammal, Swaminathan had his schooling there. His keen interest in agricultural science coupled with his father's

participation in the freedom movement and Mahatma Gandhi's influence inspired him to pursue higher studies in the subject. Otherwise, he would have become a police officer, for which he got qualified in the late 1940s. By then, he got two undergraduate degrees, including one from the Agricultural College, Coimbatore (now, Tamil Nadu Agricultural University).

On obtaining a postgraduate degree in cytogenetics in 1949 from the Indian Agricultural Research Institute (IARI), New Delhi, he earned a Doctor of Philosophy degree from the Cambridge,





where he met his wife, who was also pursuing higher studies there. He did his post-doctoral research at the University of Wisconsin. In 1954, Dr. Swaminathan joined the Central Rice Research Institute (CRRI), Cuttack and later, IARI. In July 1966, he became IARI Director, the post he held till 1972. It was during this stint in his long career that he shot to fame.

Role in 'Green Revolution'

The back-to-back severe drought in mid-1960s compelled the political leadership and scientific fraternity to look for solutions to overcome the "ship-to-mouth" existence when the country was dependent on foodgrains imported from the U.S.

Dr. Swaminathan worked closely with two Union Agriculture Ministers, C. Subramaniam (1964-67) and Jagjivan Ram (1967-70 & 1974-77) for the success of the 'Green Revolution,' a programme that paved the way for quantum jump in productivity and production of wheat and rice through adaptation of chemical-biological technology. The discovery of Norman Borlaug, a celebrated American farm scientist and 1970 Nobel Laureate, on wheat had played a huge role in this regard.

Awards and recognitions

Dr. Swaminathan, who was a recipient of the Padma Shri in 1967, was chosen for the Ramon Magsaysay award for community leadership in 1971. He was awarded the Padma Bhushan in January 1972.

He became Director General of the Indian Council of Agricultural Research (ICAR). In 1979, he was made the Principal Secretary, Union Ministry of Agriculture and Irrigation. When Indira Gandhi became the Prime Minister again in 1980, he was appointed Member (Agriculture, Rural Development, Science and Education), Union Planning Commission, and, for a few months, he served as the Deputy Chairman of the body. Between 1982 and 1988, he headed the International Rice Research Institute (IRRI), Philippines. By the time he returned to India in 1988, he had received many more awards and honours, both in India and outside. In 1987, he became the first to get the World Food Prize and the first foreigner to receive the Golden Heart Presidential Award of Philippines. Two years later, he was conferred with Padma Vibushan.

Immediately after returning to India in 1988, the veteran agriculture scientist established a not-for-profit trust – MSSRF – with the proceeds he got from the Food Prize. The Foundation, which began functioning in Chennai since 1989, aims to accelerate use of modern science and technology for agricultural and rural development to improve lives and livelihoods of communities.

In November 2004, the Union government made Dr. Swaminathan chairman of the National Commission on Farmers. Popularly known as the Swaminathan Commission, the panel submitted five reports in two years to the Centre. Its main recommendation was that minimum support price should be at least 50% more than the weighted average cost of production.

Dr. Swaminathan was a nominated member of the Rajya Sabha from 2007 to 2013. The first World Agriculture Prize, instituted by the Indian Council of Food and Agriculture, was given to him in October 2018.

Controversies

He had his share of controversies. As head of the ICAR, he had to bear the brunt of the attack when a senior agronomist of the IARI reportedly died by suicide following his non-selection as professor. Subsequently, the Centre set up a high-profile committee, headed by P. B. Gajendragadkar, former Chief Justice of India, to go into recruitment process of the ICAR. Later, the Agricultural Scientists Recruitment Board was constituted and Dr. Swaminathan became the prime mover behind its creation.

In March 1978, Jyotirmoy Bosu, a tall Leftist leader and a member of the governing body of the ICAR, publicly accused the Institute of having a "one-man show," a charge promptly refuted by the Janata government. More than these instances, Dr. Swaminathan's critics hold him responsible for certain ill effects of the "Green Revolution", including ecological damage and benefits of high-yield technology eluding small and marginal farmers. To this, he responded with the idea of "evergreen revolution," with emphasis on crop and livestock productivity in perpetuity without ecological or social harm.

Tributes

V.L. Chopra, former ICAR DG, recipient of Padma Bhushan and a founder-trustee of the MSSRF, once told this correspondent that he began his career as a research student with Dr. Swaminathan in 1957 and had remained so till now. The veteran scientist, who was "humane and humble," had earned leadership by setting an example of "personal involvement and commitment at all levels," and was particular in "meeting the aspirations of the last one in the queue," Prof. Chopra had observed then.

Amshan Kumar, a filmmaker, who made two documentaries – one for the MSSRF in 1998 and another on Dr. Swaminathan in 2005 – recalls that he was amazed at the scientist's adherence to time discipline. Also, "he would pepper his speeches with data without recourse to notes."

Source: www.thehindu.com

MS SWAMINATHAN, 'VISIONARY' FATHER OF INDIA'S GREEN REVOLUTION, DIES AT 98

Pioneering plant geneticist and agronomist whose work revolutionised farming and brought self-sufficiency in food production to India

The year was 2005. There had been a wave of farmer suicides in the Indian state of Maharashtra. The mainstream press paid scant attention, but MS Swaminathan rushed to the scene with a team of officials. "He was in tears listening to the families of those who had ended their own lives," says journalist P Sainath in a tribute.

This image of the renowned scientist – well into his golden years – championing distressed farmers is one that epitomises MS Swaminathan's life's work.

Swaminathan, who has died at 98, is renowned as the father of the green revolution in India, for his introduction of high-yielding genetic varieties of rice and wheat. His work alongside American agronomist Norman Borlaug led to the doubling of wheat yields in Pakistan and India in the late 1960s.

Mankombu Sambasivan Swaminathan was born in 1925, in Chennai, then known as Madras. He was only 18 when he witnessed the devastating effects of the Bengal famine, which led to the deaths of about 3 million people. The experience spurred him into a career in the agricultural sciences.

After earning degrees from the Indian Agricultural Research Institute, Wageningen Agricultural University's institute of genetics, and the University of Cambridge, he turned down a faculty position at the University of Wisconsin. He chose instead to return to India with his wife, Mina, who he met at Cambridge (Mina died in 2022). The couple had three daughters, all of whom went on to become established figures in the academia and global development: Nitya Rao is professor of gender and development at the University of East Anglia; Madhura Swaminathan is professor at the economic analysis unit at the Indian Statistical Institute; and Soumya Swaminathan is the former chief scientist at the World Health Organization.

On returning to India, Swaminathan collaborated with Borlaug in crossing Japanese and Mexican dwarf varieties of wheat, which led to the high-yield, disease-free crop strains that revolutionised world agriculture. Borlaug won the Nobel peace prize for his work, and he credited Swaminathan for first recognising the potential value in the successful crop varieties.

Because of Swaminathan's efforts, India went from being drought-stricken and dependent on US imports in the 1960s to being declared self-sufficient in food production in 1971. He was awarded the first World Food Prize in 1987 for his work.

He then turned his energies towards supporting India's beleaguered farmers. As head of the National Commission on Farmers, he produced several reports which recommended minimum support prices for crops, suggestions for faster and more inclusive growth, and a holistic national policy addressing farmer suicides.

In a statement to the Guardian, fellow



green revolution stalwart Gurdev Khush noted that Swaminathan also played a crucial role in building India's relationship with international organisations such as the UN Food and Agriculture Organization and the World Bank. "He was a visionary and an inspiring leader," says Khush, who worked with Swaminathan during his term as the first Asian director general of the International Rice Research Institute in the Philippines.

Several figures have remembered his gentle disposition. Ronnie Coffman, emeritus professor at Cornell and Borlaug's PhD student, looks back fondly on Swaminathan's tenure as honorary professor at Cornell. "What I remember most about him was his kindness and consideration toward every person he met," says Coffman.

The World Food Prize Foundation chief operating

officer Mashal Husain echoes his sentiments: "His keen insight into the many different food and agricultural issues was rivalled only by his warm encouragement and mentoring of young students."

However, Swaminathan was not without his critics. As a consequence of the green revolution, the agricultural industry witnessed a widespread increase in the use of chemical fertilisers and pesticides. He subsequently concentrated his efforts on an "evergreen" revolution, which he defined as "improvement of productivity in perpetuity without ecological harm".

To address the issue, Swaminathan used the proceeds from the World Food Prize to start the MS Swaminathan Research Foundation. The foundation aims to accelerate the goals of the evergreen revolution, taking a "pro-poor, pro-women and pro-nature"

approach. He would go on to donate the winnings of future awards to the foundation as well.

Swaminathan was garlanded in international and national circles. In addition to the World Food prize, he was conferred awards by the Netherlands, the Philippines, France, Cambodia and China. He was also highly decorated within his country, having received India's second, third and fourth highest civilian awards. Many feel that also he deserved the Bharat Ratna (India's highest honour). "He was above feeling any resentment over this," says the former diplomat Gopalkrishna Gandhi. "But his conspicuous absence from that scroll of honour in his home country which owes so much to him, impoverishes that list for sure."

Indian scientist Ashok K Singh reflected on Swaminathan's legacy in a statement to the press. "An era of agricultural research, education and extension filled with disruptive innovation comes to an end," says Singh, who is director at the Indian Agricultural Research Institute (Swaminathan himself was a director in the 1960s).

Singh summed up Swaminathan's work by saying: "If God appears to the poor and hungry in the form of bread, as Mahatma Gandhi said, then that God is Dr Swaminathan, who should be revered by every citizen while partaking in their daily meals."

Mankombu Sambasivan Swaminathan, agronomist, agricultural scientist, plant geneticist, administrator and humanitarian, born 7 August 1925; died 28 September 2023.



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EMPOWERING INDIAN AGRICULTURE: THE IMPACT OF CLOUD-BASED SOLUTIONS

An exclusive interview with
Ms. Madhulika Shukla, CEO, IFFCO eBazar Ltd.



Q1: What is the power of cloud-based solutions in the agriculture sector?

E-commerce is pivotal in ensuring fair prices for farmers and produce, irrespective of their physical location. Today, farmers can conveniently purchase agricultural products through cloud-based solutions, from daily essentials to inputs. This pan-India accessibility is akin to platforms like YouTube, where farmers can quickly access vital information, such as fertiliser recommendations based on their soil conditions, without needing direct contact with agricultural scientists.

Cloud-based AI is a game-changer, offering widespread access to weather forecasts and other critical information. Farmers can plan their activities based on upcoming weather conditions.

Additionally, cloud platforms facilitate information sharing, allowing farmers to showcase their products to a broader market. Cloud's ability for farmers and agricultural businesses can be simplified through advanced cloud technology, where no technical expertise is needed. Farmers can connect with organisations that provide cloud services, allowing them to market their agricultural products more effectively.

The power of the cloud computing lies in its availability and cost-effectiveness, specifically in rural India, wherein technological resources are limited. With cloud computing, farmers can access various software solutions and services remotely. Furthermore, embedded AI in cloud solutions enables

data-driven decision-making, benefiting the agricultural sector's supply chain by providing valuable insights into soil and weather conditions across different regions.

Q2: How important is cloud as an element in IFFCO eBazar's overall innovation strategy?

The success of IFFCO eBazar owes much to the crucial role played by cloud solutions. Cloud technology has been instrumental in supporting us during our rapid expansion and high turnover periods. IFFCO eBazar primarily operates as a retail chain specializing in agricultural inputs, catering to the needs of rural India.

Traditionally, setting up physical outlets, hiring a workforce, and deploying various software solutions for sales, operations, and inventory management was time-consuming and resource intensive. Today with the help of the cloud, we were able to streamline these operations, efficiently. We leveraged Oracle Cloud to develop in-house applications without hardware or additional internet connectivity for our remote outlets. This allowed growth in the organisation at a

fast pace. In the past year, our turnover reached 2500 Crore Rupees, with a profit of about 100 Crore Rupees. Managing a network of around 330 outlets and 2600 franchise presence in remote locations across India is a unique challenge. To address this, we developed mobile apps with Geocoding, Geotagging, and face recognition features. These apps helped us monitor employee attendance, door access, and security remotely. Furthermore, we transitioned our accounting software from a traditional data centre setup to a server-based cloud service, particularly after encountering a ransomware incident.

IFFCO eBazar selected Oracle Cloud ERP in December 2021 to consolidate finance on a single, highly secure, and scalable cloud platform which can eliminate inefficient manual processes. This allowed us to digitise and store all our documentation securely in the cloud. Oracle Cloud ERP enables us to create and manage an empowered and inclusive environment, allowing our business to grow. This transformation has empowered us to efficiently manage a company with a turnover at about 2500 Crore Rupees while keeping our in-house operations, accounts and IT team small and focused. This move has transformed our decision making, productivity and removed operational bottlenecks, thereby offering to serve the farming community for a better tomorrow.

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Q3: Tell us more about your specific use of Oracle Cloud-based ERP solutions. What are the benefits, and how does it impact your employees and customers?

Our operations have significantly improved ever since we opted for Oracle ERP. As a retail chain agri inputs trading company, we procure agricultural inputs from various sources. To streamline our supply chain management, we've recently acquired licenses for three modules in Oracle Fusion ERP: Procurement, Inventory and Finance. These modules are seamlessly integrated with Oracle-based in-house developed software, which manages invoicing for all aspects of

our business, including sales to farmers, B2B and B2C transactions. This integration allows auto flow of data and ensures that all financial transactions, including sales, purchases, rents, expenses, and collections, are efficiently handled through Oracle ERP.

At IFFCO eBazar Limited, we operate in two main verticals. The first is our retail business, encompassing 330 stores and over 2,600 franchise remote locations in pan India. The second vertical is our online e-commerce platform, which facilitates the sale of agricultural inputs directly to farmers.

To manage these diverse operations efficiently, we've created separate Business Units (BU) within Oracle ERP, one for retail and another for e-commerce, paving the way for an efficient data handling and reporting. The integration capabilities of Oracle ERP also extend to our banking transactions, enabling us to make payments directly to vendors.

We've also integrated Oracle Fusion ERP with GSP portals for the filing of GST returns. This integration provides us with immediate access to data, enabling us to assess profitability and financial performance at the end of each month. In summary, Oracle ERP has revolutionised our operations at IFFCO eBazar, allowing us to efficiently manage our supply chain, financial transactions, and compliance requirements while enhancing overall business performance.

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INTERNATIONAL CONFERENCE TO RECOMMEND POLICIES TO ADDRESS GENDER INEQUALITY ON FARMS

A four-day conference, organized by the Consultative Group on International Agricultural Research (CGIAR) and the Indian Council of Agricultural Research (ICAR), in New Delhi, will discuss women farmers' lack of access to land rights, to agriculture. inputs and inequalities in agriculture. President Droupadi Murmu will inaugurate the conference, which will be attended by agricultural scientists, farmers and policy makers from around 60 countries.

Speaking to reporters about the conference, ICAR Director General Himanshu Pathak said recommendations on tackling gender inequality in agriculture would be sent to policy makers in these 60 countries. He said measures to address this inequality must be fair and scientifically correct. "It has to be right from a social, scientific and political point of view. We want to do things scientifically," said Dr Pathak, adding that the problems faced by women farmers are bigger problems. "We will deliberate on these aspects. If we come up with recommendations, we will send them to policy makers so that they take note and make the unjust become right," he added.

CGIAR Gender Impact Platform Director Nicoline de Haan said one of the areas where discussions would take

place during the conference is financial inclusion. "We are looking for solutions. Financial inclusion is very important. We are working on issues such as lack of access to seeds and fertilizer for women farmers," said Dr Haan.

Titled "From research to impact: towards just and resilient agri-food systems", the international research conference will address gender and social inequalities in agri-food systems. "The conference aims to promote the sharing of cutting-edge knowledge on gender and inclusion in agri-food systems to help bridge the gap between research and practice and foster resilient, socially inclusive and gender-equal food systems. sexes," says the conference agenda. said. The conference takes place every year.

Gender and social inclusion lens on resilience in the context of climate change, COVID-19 and other shocks and stressors; From women's empowerment to transformative gender change in agri-food systems; Gender-responsive and transformative innovations in agri-food systems; Promote fair market systems; Ensuring nutrition, food security and health for all as well as youth and agri-food systems are the six themes that will be addressed during the conference.

LIBRARY'S 15-MILLIONTH VOLUME IS INFLUENTIAL MANUSCRIPT ON AGRICULTURAL MANAGEMENT FROM MIDDLE AGE

The 15-millionth volume in the collection of the University Library is a medieval copy of Walter of Henley's 13th-century work "Hosbondrye," one of the most influential works on agriculture and land management in the Middle Ages. The Library purchased the manuscript through a collaboration between Sarah C. Williams, left, the head of the Funk ACES Library; Lynne M. Thomas, center, the head of the Rare Book and Manuscript Library; and Erin E. Kerby, right, the head of the Veterinary Medicine Library.



A medieval manuscript by an English agronomist describing the agricultural management of a manor is the 15-millionth volume of the collection of the University Library at the University of Illinois Urbana-Champaign.

The manuscript is a 14th-century copy of the text of Walter of Henley's 13th-century work "Hosbondrye," one of the most influential works on agriculture and land management in the Middle Ages.

"It is directly tied to our long and august history as an agricultural college, which is one of the reasons we thought it would be an appropriate fit for the University Library," said Lynne M. Thomas, the head of the Rare Book and Manuscript Library, where the Henley manuscript will be housed.

It is one of 41 surviving manuscript copies of Henley's work. The Library purchased the manuscript with money from the Waco Worthy Albert and Betty Jean Albert Endowment Fund and a \$50,000 bequest to RBML from Betty Albert's estate, as well as with similar funds from the Funk ACES Library and Veterinary Medicine Library. The RBML bequest was made to purchase rare books about animal husbandry for the same species.

Walter of Henley wrote "Hosbondrye" in the form of a sermon and from the viewpoint of the owner of a small estate, Thomas said.

"This is a work by a steward telling other people how to be a steward," she said. "Henley talks about handling an estate as a business proposition. It's not solely about the welfare of animals or subsistence. It's knowing how to grow your yields and knowing when to cut your losses. There's an emphasis on profit honestly and honorably gained. It's very much a working document that is very clear about what it is and who it's for and what its goals are, which is a profitable estate with a moral center to it."

Henley wrote the work to be accessible and understandable, Thomas said: "One of the reasons this manuscript got copied

over and over was that it was easily understood. Henley was trying to make it as clear as possible how he thought the raising of cows should be done."

Library administrators decided to use the Albert bequest to RBML for its 15-millionth volume and worked with book dealers to find an appropriate item. The Walter of Henley manuscript became available - the first time a copy of the manuscript had come to the auction market since 1978, Thomas said.

The one purchased by the Library previously was part of the Rothamstead Collection at the Lawes Agricultural Library. It is slightly different than other versions of the manuscript in its interpretations of some words and in omissions of some corrections and sentences, Thomas said. The Library purchased it in 2020 but the pandemic delayed its unveiling.

The price was \$95,000, nearly double the RBML bequest, so Thomas, on the advice of Associate University Librarian for Collections and Technical Services Thomas Teper, approached Sarah C. Williams, the head of the Funk ACES Library, and Erin E. Kerby, the head of the Veterinary Medicine Library, about collaborating on the purchase using money from their libraries' Albert endowment funds.

"Given the specific nature of this particular endowment and the fact that the item fit the donors' intentions quite well, we were happy to contribute toward that," said Williams, who noted that a 1986 exhibit created by the agricultural library on rare agricultural books in the U. of I.'s collections mentioned the significance of Henley's work.

Kerby said the libraries have partnered before to make larger purchases using money from their endowment funds, including another recent purchase of a historical map showing horse breeds from around the world.

"It can be tricky to find really special and unique pieces in this particular area," Kerby said. "Publishing, especially in the sciences,

has really changed. There's a lot less focus on books and manuscripts and print materials, and a lot more focus on electronic materials and online journals. Having an endowment like this that sets money aside for more traditional formats is valuable. You never know when something like this is going to be useful to a researcher."

An image and description of the manuscript will be framed and displayed in the Millionth Volumes Exhibit in the north-south corridor of the Main Library. A digital version of the manuscript is available in the RBML Digital Library. The catalog record of the manuscript was created by RBML graduate student Mariagabriella Stuardi.

81.6 PER CENT INCREASE IN AREA UNDER CULTIVATION IN 10 YEARS: MINISTER S NIRANJAN REDDY

Agriculture Minister S Niranjana Reddy said that the area under cultivation has increased from 1.31 crore acres in 2014 to 2.38 crore acres by 2022-23, or 81.6%. Addressing the media while explaining the progress of agriculture in the last 10 years at a hotel here, Niranjana said that paddy production has gone up from 68 lakh tonne to 3 crore tonne.

Since 2014, he said that 722.92 lakh tonne paddy has been procured by spending Rs 1.33 lakh crore, and other crops have been procured by spending Rs 11,439.06

crore. Niranjana said that 45 lakh acres have been brought under irrigation through Kaleshwaram Lift Irrigation Scheme (KLIS) and another 12.30 lakh acres in six districts will be irrigated through Palamuru-Rangareddy LIS.

Disclosing that Rs 72,815 crore has been spent in 11 phases of the Rythu Bandhu scheme, he said that insurance claims worth Rs 5,566 crore have been disbursed to families of 1,11,320 farmers through Rythu Bima. He said that crop loans worth Rs 16,144.10 crore have been waived in the first



phase of loan waiver covering 35.31 lakh farmers, and Rs 13,000.51 crore has been spent in waiving off loans of 22.98 lakh farmers till now in the second phase.

Source: www.msn.com

MUZAFFARPUR RANKS TOP IN AGRICULTURE IN THE COUNTRY

Delta ranking of 112 aspirational districts of the country. In this, Muzaffarpur district of Bihar ranks top in the country in the field of agriculture.

Key Points:

- Continuous improvement in the field of agriculture has taken Muzaffarpur to the first ranking among the aspirational districts.
- This time Muzaffarpur district has got sixth position in the overall ranking in the country. It ranks 100th in education

and 26th in health. The district has been continuously slipping in education and this time it has had its worst performance in two years.

- Under the aspirational districts, work is being done in Muzaffarpur especially on education, health, agriculture, financial and skill development, and basic infrastructure. There were continuous achievements in the field of education in the district.
- From December 2020 to



2021, the district remained in the top positions from 1 to 10. After this it reached the 20th and 64th number.

- This time not only has the ranking slipped to 100th but the scoring has also decreased. This time the score has gone down by one percent compared to last time.

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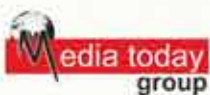


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