

e-CROP
ELECTRONIC CROP
Agriculture Meets Innovation

REVOLUTIONIZING AGRICULTURE

THE FUTURE OF FARMING

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Welcome to
e-CROP Magazine
Agriculture meets innovation



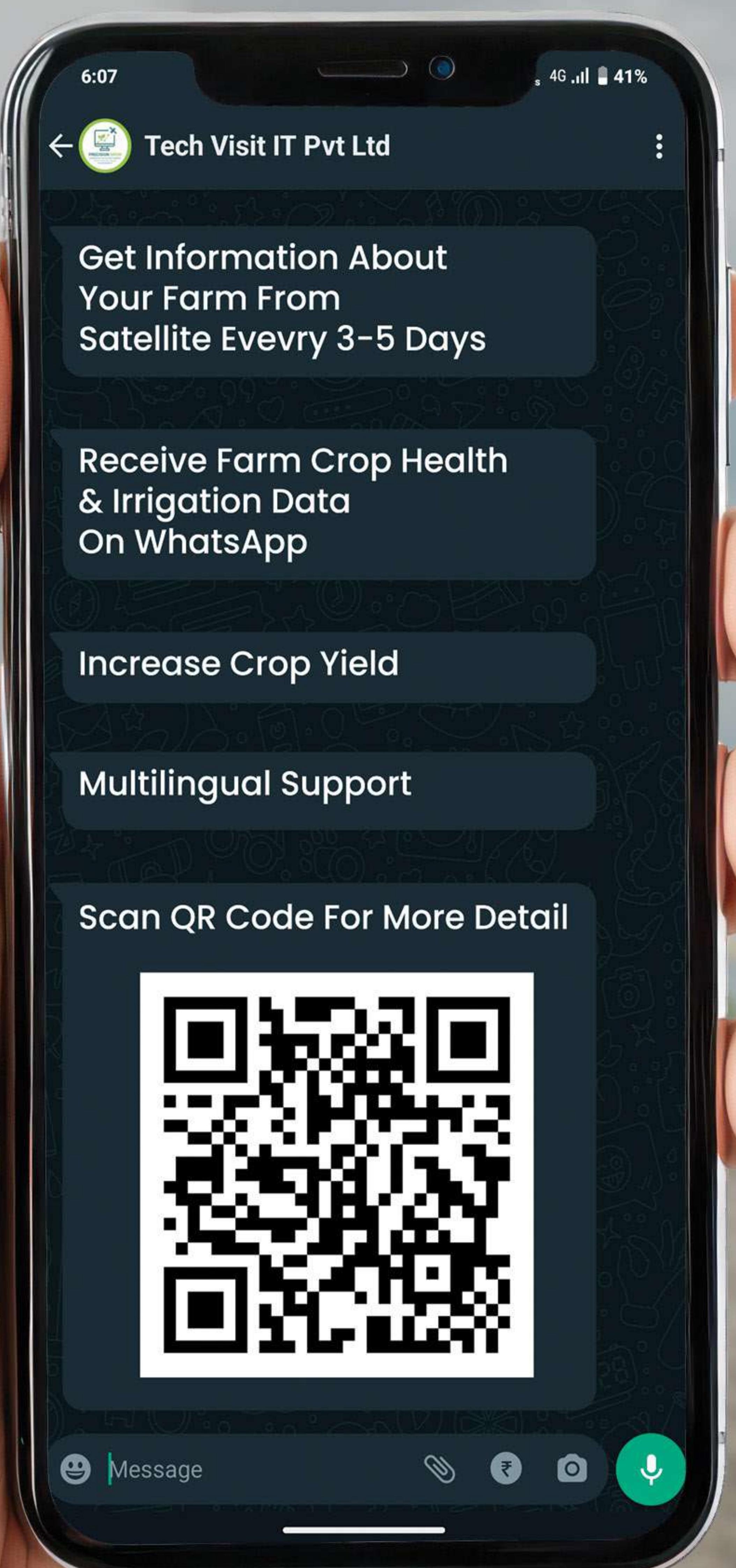
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Celebrating Women in Agriculture this Environmental Day and Every Day! Around a century ago, the Industrial Revolution transformed every sector—from manufacturing to transportation, agriculture to energy—ushering in an era of rapid growth and technological advancement. The world was introduced to fast food, bustling metros, towering skyscrapers, and busy streets. For the first time, humanity had access to a vast array of medicines that could combat previously deadly diseases, leading to unprecedented survival, expansion, and thriving.

Fast forward nearly 100 years, and while technological advancements have continued to skyrocket, we've also faced significant environmental challenges. Our dependence on technology has led to severe environmental destruction, a reality that was once unimaginable. The excessive carbon emissions and rising global temperatures—once mere chapters in textbooks—have become our alarming reality. In May 2024, New Delhi recorded its highest temperature ever, a stark reminder of the urgent climate crisis we face.

The world is currently grappling with war, famine, drought, and injustice, making it an apt time to reflect on our collective mishandling of the environment. Despite technological progress, we have contributed to an unavoidable catastrophe. The United Nations' pleas to major carbon-emitting nations like the United States and the European Union have often been met with discretion. While the introduction of Carbon Credits has fostered global policies to control emissions, the efforts of leaders like Prime Minister Narendra Modi in advocating for Green GDP are crucial. Recognizing the environmental impact of economic activities and striving for sustainable growth is imperative.

As we launch the first edition of e-CROP magazine, our vision is to promote a sustainable future that values environmental stewardship and gender equality. Despite historical patriarchal challenges, we aim to provide women with the equal opportunities they deserve in modern society. As the Chief Editor of e-CROP, I am thrilled to present this platform dedicated to instilling values that resonate with our collective human consciousness. Our goal is to cultivate sensitivity towards nature, enhance understanding of its workings, and foster responsibility and care.

Our team has meticulously curated articles that address global issues, striving to make a positive impact. Let us work together for a sustainable future, making Earth a better place for all species.

Amarben
Editor in Chief





**EVERY DAY IS
ENVIRONMENT DAY**



01

REVOLUTIONIZING AGRICULTURE WITH AUTOMATED SATELLITE MONITORING SERVICE

02

IS 2024 THE YEAR OF SUSTAINABLE ECO-FRIENDLY REAL ESTATE?

03

DRONE SOIL ANALYSIS: MULTISPECTRAL REMOTE SENSING FOR SOIL MAPPING

04

EXPLORING CONNECTIONS BETWEEN THE PARIS AGREEMENT AND THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

05

END ALL HUNGER: THE CHALLENGE TO TACKLE THE GLOBAL FOOD SECURITY

06

TOBACCO PRICES TO RISE IN ANDHRA AFTER CROP FAILURE IN BRAZIL & INDONESIA

07

THE VITAL ROLE OF ESG IN ADDRESSING CLIMATE CHANGE: UNDERSTANDING ITS IMPACT, IMPORTANCE AND SOLUTIONS

08

THE APPLICATION OF MACHINE LEARNING IN CROP MAPPING

09

UNDERSTANDING THE CHALLENGES OF GLOBAL FOOD SECURITY: THE PIVOTAL ROLE OF FERTILIZERS IN ADDRESSING THIS ISSUE

10

UNDERSTANDING GREEN GDP AND ITS IMPLICATIONS FOR SUSTAINABLE DEVELOPMENT

Revolutionizing Agriculture with Automated Satellite Monitoring Service

In the face of global warming, agriculture is confronting unprecedented challenges. With rising temperatures impacting soil health and water retention, farmers are under immense pressure to maintain crop productivity while ensuring sustainability. However, amid these challenges emerges a beacon of hope: Automated Satellite Monitoring Service. This innovative technology leverages the latest advancements in satellite imagery to empower farmers with invaluable insights into their fields, revolutionizing how farming is practiced.

Harnessing the Power of Satellite Data Analytics

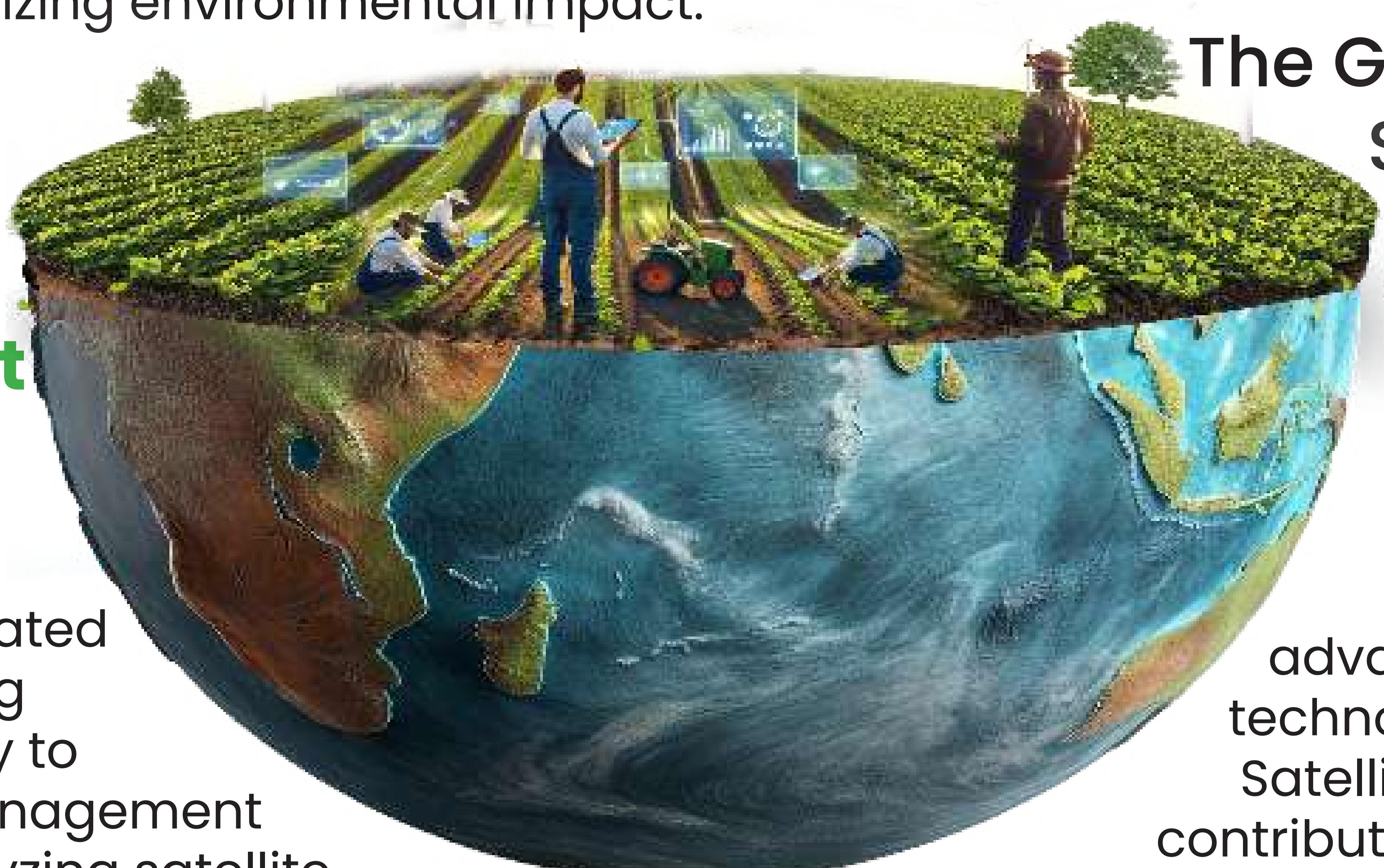
Automated Satellite Monitoring Service is at the forefront of agricultural innovation, offering a comprehensive solution to the complex challenges faced by modern farmers. This cutting-edge service enables growers to monitor multiple farming fields with unprecedented accuracy and efficiency by harnessing the power of satellite data analytics. From assessing crop health to optimizing irrigation strategies, the insights provided by satellite imagery are invaluable in maximizing yields while minimizing environmental impact.

Enhancing Crop Management Practices

One of the key benefits of Automated Satellite Monitoring Service is its ability to enhance crop management practices. By analyzing satellite imagery, farmers can gain real-time insights into the health and growth patterns of their crops. This allows for proactive decision-making, such as adjusting irrigation schedules or implementing targeted pest control measures, to optimize crop yields and quality.

Improving Resource Efficiency

In addition to optimizing crop management, Automated Satellite Monitoring Service also plays a crucial role in improving resource efficiency. By accurately monitoring soil health and moisture levels, farmers can fine-tune their irrigation systems to minimize water usage while ensuring optimal crop growth. Moreover, satellite imagery enables precise nutrient management, ensuring that crops receive the necessary nutrients for healthy development without excess fertilization, thus reducing environmental impact.



The Global Impact of Satellite Data in Agriculture

The significance of satellite data in agriculture extends far beyond individual farms. By leveraging advanced satellite sensor technology, the Automated Satellite Monitoring Service contributes to global efforts to address food security and mitigate the impacts of climate change.

Combatting World Hunger

Satellite data collection is not limited to individual farms but is also applied to broader agricultural initiatives aimed at combating world hunger. By providing insights into crop health and yield predictions on a global scale, satellite imagery enables policymakers and humanitarian organizations to make informed decisions regarding food distribution and agricultural development in regions facing food insecurity.

Reducing Greenhouse Gas Emissions

Moreover, the adoption of Automated Satellite Monitoring Service has the potential to significantly reduce greenhouse gas emissions associated with conventional farming practices. **Precision Grow** understands that by optimizing resource usage and minimizing waste, satellite-based agriculture contributes to a more sustainable and environmentally friendly food production system. A report by the World Economic Forum highlights the potential of satellite data to reduce greenhouse gas emissions by up to 13%, underscoring the importance of this technology in addressing climate change.

Future Outlook and Market Potential

Precision Grow, a company pioneering in satellite crop health monitoring realises that as the demand for sustainable agriculture solutions continues to rise, the market for Automated Satellite Monitoring Services is poised for exponential growth. Analysts predict that the market for satellite data in agriculture will surpass \$1 billion by 2030, driven by the increasing adoption of precision farming techniques across small, medium, and mega-farms worldwide.

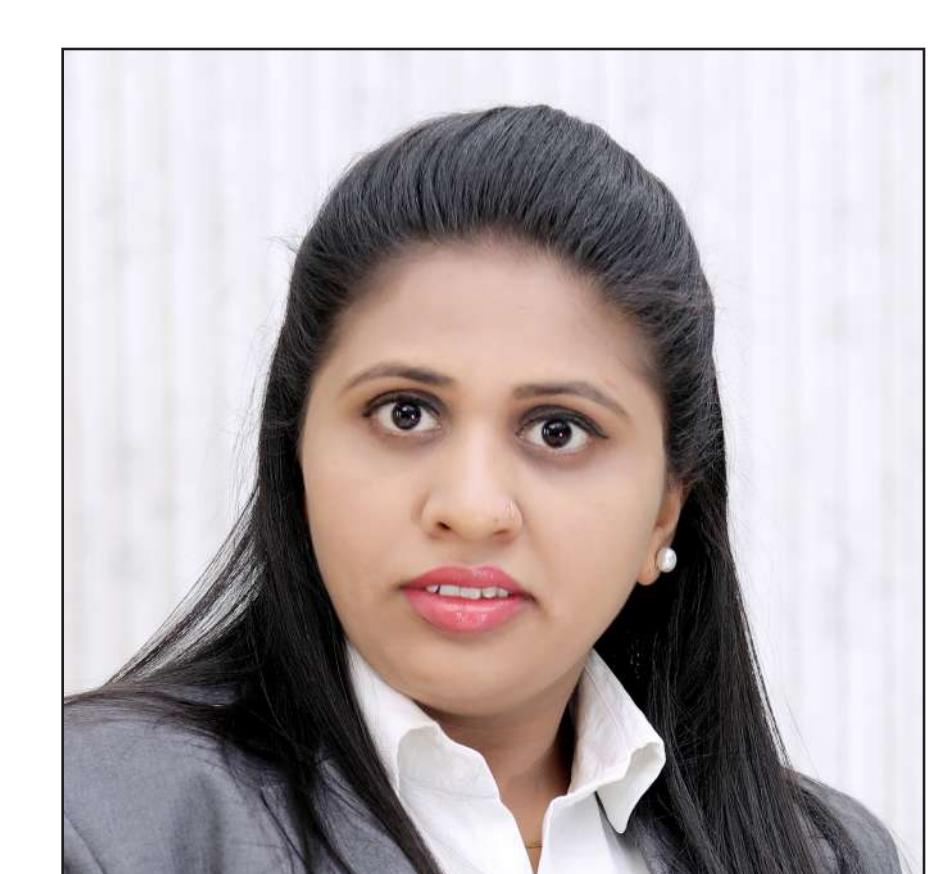
Mainstream Adoption Across Farms

Satellite-based agricultural data analytics are no longer confined to large-scale farming operations but are increasingly becoming a mainstream tool across farms of all sizes. From smallholder farmers in developing countries to industrial-scale agribusinesses, the Automated Satellite Monitoring Service offers actionable insights that empower farmers to optimize productivity, minimize environmental impact, and ensure food security for future generations.

In conclusion, the Automated Satellite Monitoring Service represents a paradigm shift in the way farming is practiced, offering unparalleled insights into crop health, resource management, and environmental sustainability. As the agriculture industry embraces technological innovation, satellite data analytics will continue to play a pivotal role in shaping the future of food production on a global scale.

“

Satellite Monitoring Service has the potential to significantly reduce greenhouse gas emissions associated with conventional farming practices.”



By Amarben Patni



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Is 2024 the Year of Sustainable ECO-FRIENDLY REAL ESTATE?

Innovations, and Green Development

The word Sustainable is not just an uncommon word anymore but has become an important word of daily use. All sectors have realized that if there is a growth path it has to be sustainable and real estate is no exception, as there is the looming danger of climate change and degradation of vegetation on the planet.

The Impact of Real Estate

Real estate has been one of the most consistently growing sectors in the world and has been in the limelight of everyone's attention for time immemorial. Still, it has also been one of the major causes of greenhouse emissions causing an upsurge in the global catastrophe.

According to the International Energy Agency (IEA), real estate generates 40% of global CO₂ emissions. About 11 percent of these emissions are generated by manufacturing materials used in buildings (including steel and cement), while the rest is emitted from buildings themselves and by developing the energy that powers buildings. The sector is therefore in a critical state of achieving the Paris Climate Agreement through global efforts to maintain the average temperature rise below 2°C.



By Kirti Rawal





Action has to be **Fast and Effective**

The urgent problems of climate change have compelled the developer community to come up with more environment-friendly solutions. Now Sustainability is not a choice but a necessity. We are possibly going to witness a great shift in the real estate market with many developers focusing on ESG (Environment, Social & Governance) which will not only help the sector in the path of sustainability but also become carbon neutral by the end of 2050.

Environmental impact includes Architectural design, conservation of natural resources, adoption of greener construction technologies, water optimization, use of solar energy, composting, and water harvesting. Government bodies are also providing tax benefits to builders and developers to promote environmentally responsible construction practices which are also Energy and Environmental Designed (LEED)- certified buildings.

Key Sustainable **Trends for 2024**

Renewable Energy Integration

It is anticipated that notably there will be an increase in including renewable energy sources in real estate projects, significantly reducing carbon emissions.

Green Infrastructure & Urban Planning

The inclusion of green roofs, rain gardens, and permeable pavements will be highly beneficial offering environmental social, and economic benefits. cantly reducing carbon emissions.

Sustainable Design

Focusing on sustainable architectural design will be an effective way to tackle climate problems, such as including low-carbon materials for construction will become a common practice among developers.

Zero Waste Strategy

The implication of reusable materials will help eliminate a lot of construction waste and the zero-waste approach will promote a more sustainable and circular economy.

Corporate Sustainability Commitments

More corporate companies should incorporate Sustainable goals in their implementation of projects to include principles of circular economy reducing the overall greenhouse emissions.

Conclusion

The urgent problems of climate change have compelled the developer community to come up with more environment-friendly solutions. Now Sustainability is not a choice but a necessity. We are possibly going to witness a great shift in the real estate market with many developers focusing on ESG (Environment, Social & Governance) which will not only help the sector in the path of sustainability but also become carbon neutral by the end of 2050.

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The urgent problems of climate change have compelled the developer community to come up with more ENVIRONMENT-FRIENDLY solutions..

Technology Transfer of eCrop Module to **PRECISION GROW** on World Environment Day

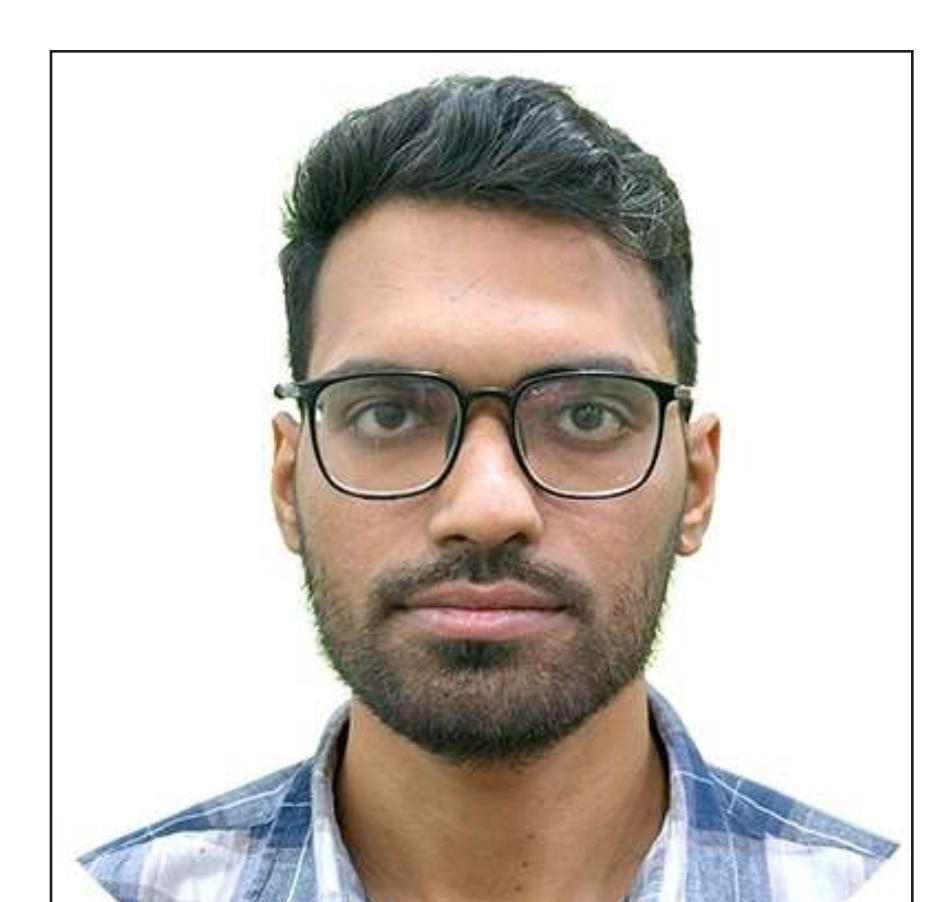
Thiruvananthapuram, June 5, 2024 – In a significant step towards advancing precision agriculture, the Indian Council of Agricultural Research - Central Tuber Crops Research Institute (**ICAR-CTCRI**) facilitated the technology transfer of the innovative eCrop module to **Precision Grow**, a unit of **Tech Visit IT Pvt Ltd**. The signing ceremony, held on the occasion of World Environment Day, marks a milestone in the integration of cutting-edge technology with sustainable farming practices.

The formal agreement was signed at ICAR-CTCRI, Thiruvananthapuram, by three eminent leaders in the field: Dr. G Byju, Director of **ICAR-CTCRI**; Dr. Praveen Malik, CEO of Agrinovate India Ltd; and Bhimji Patni, Director of **Tech Visit IT Pvt Ltd**. This collaboration is set to revolutionize the agricultural landscape by leveraging the eCrop module's capabilities to enhance crop management, monitoring, and productivity.

Dr. G Byju emphasized the importance of such collaborations in fostering innovation and sustainability in agriculture. "The eCrop module is a testament to our commitment to providing farmers with advanced tools that improve yield and environmental stewardship. This transfer to **Precision Grow** ensures that more farmers will benefit from this technology," he stated.



By Swapanil Tiwari





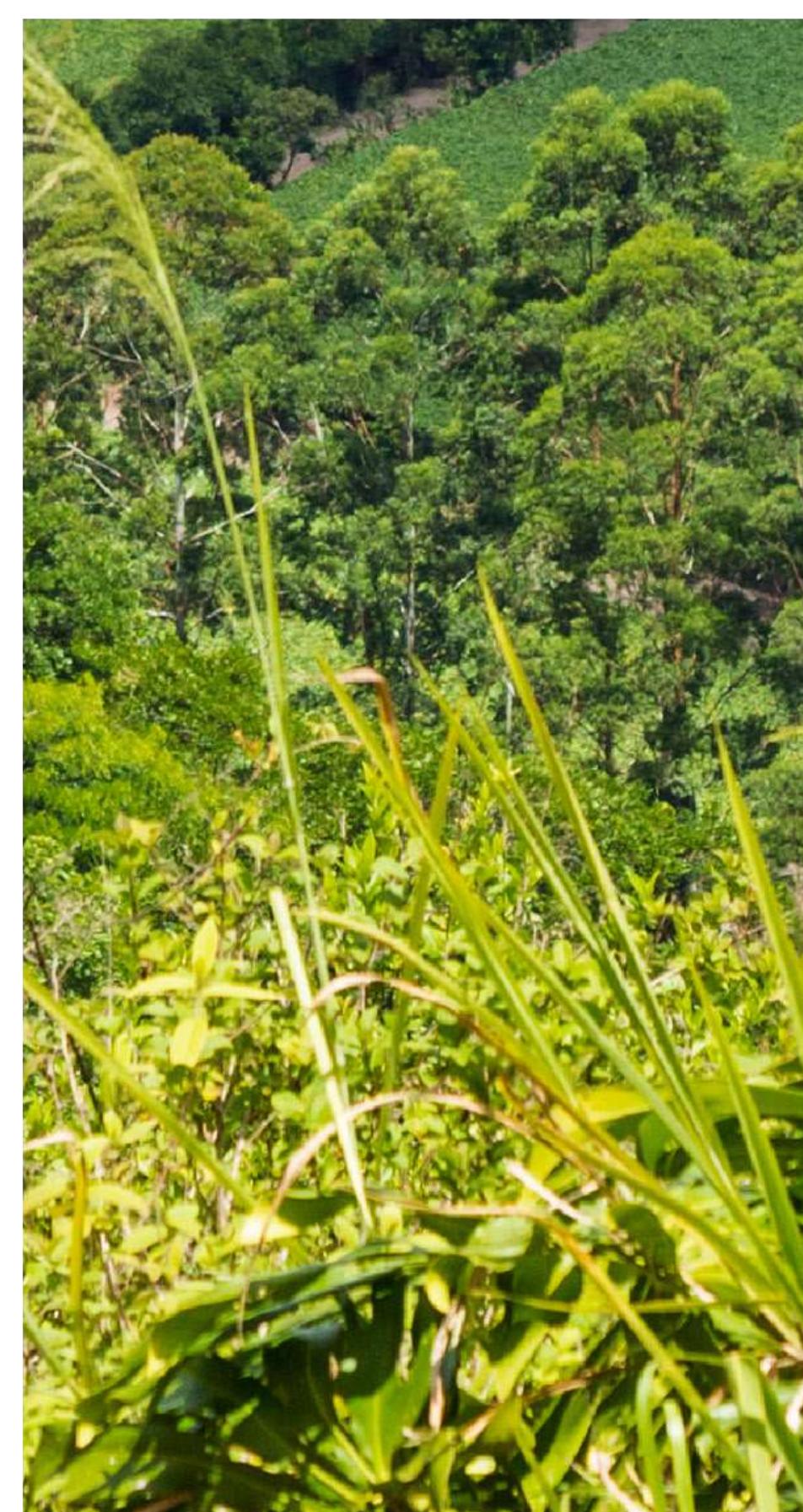
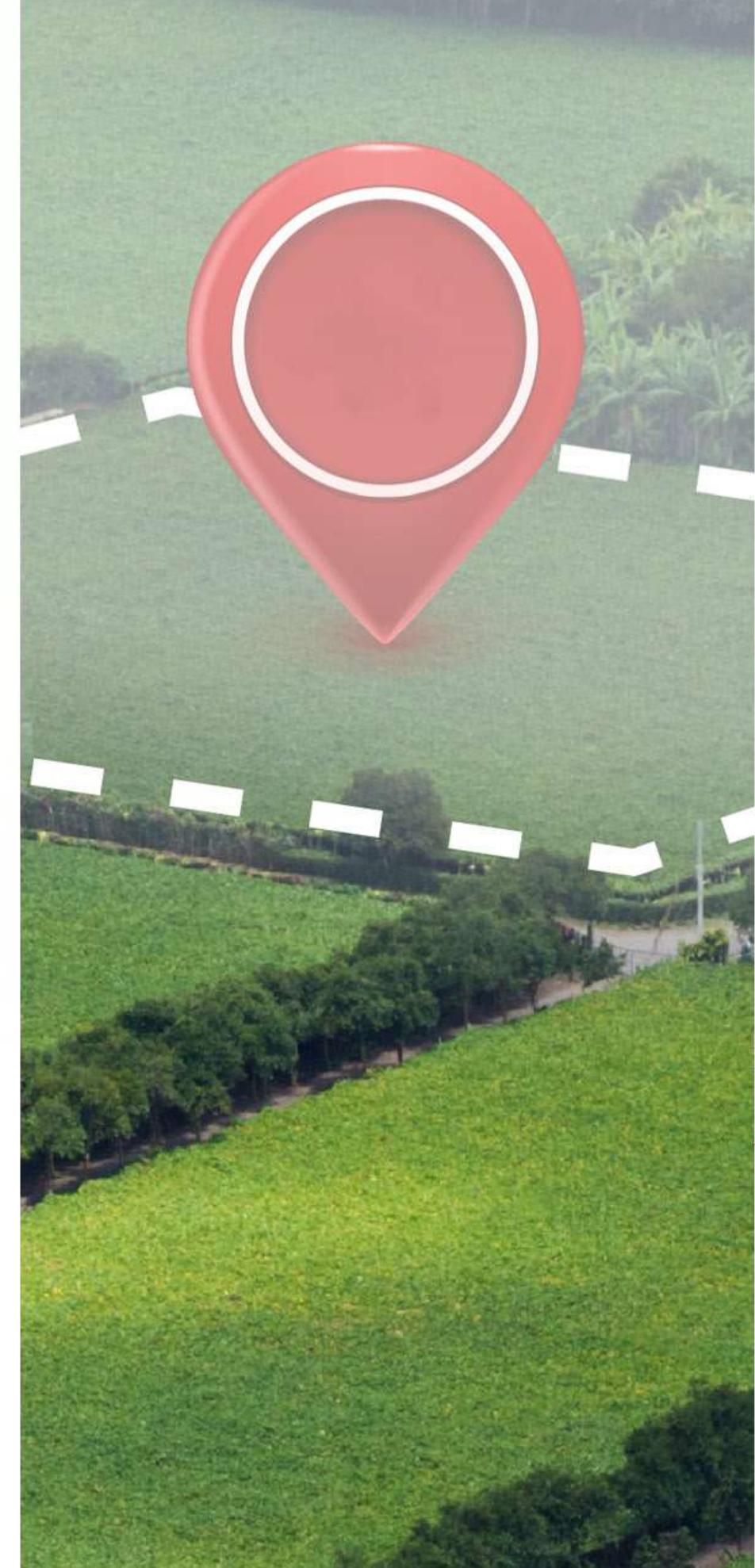
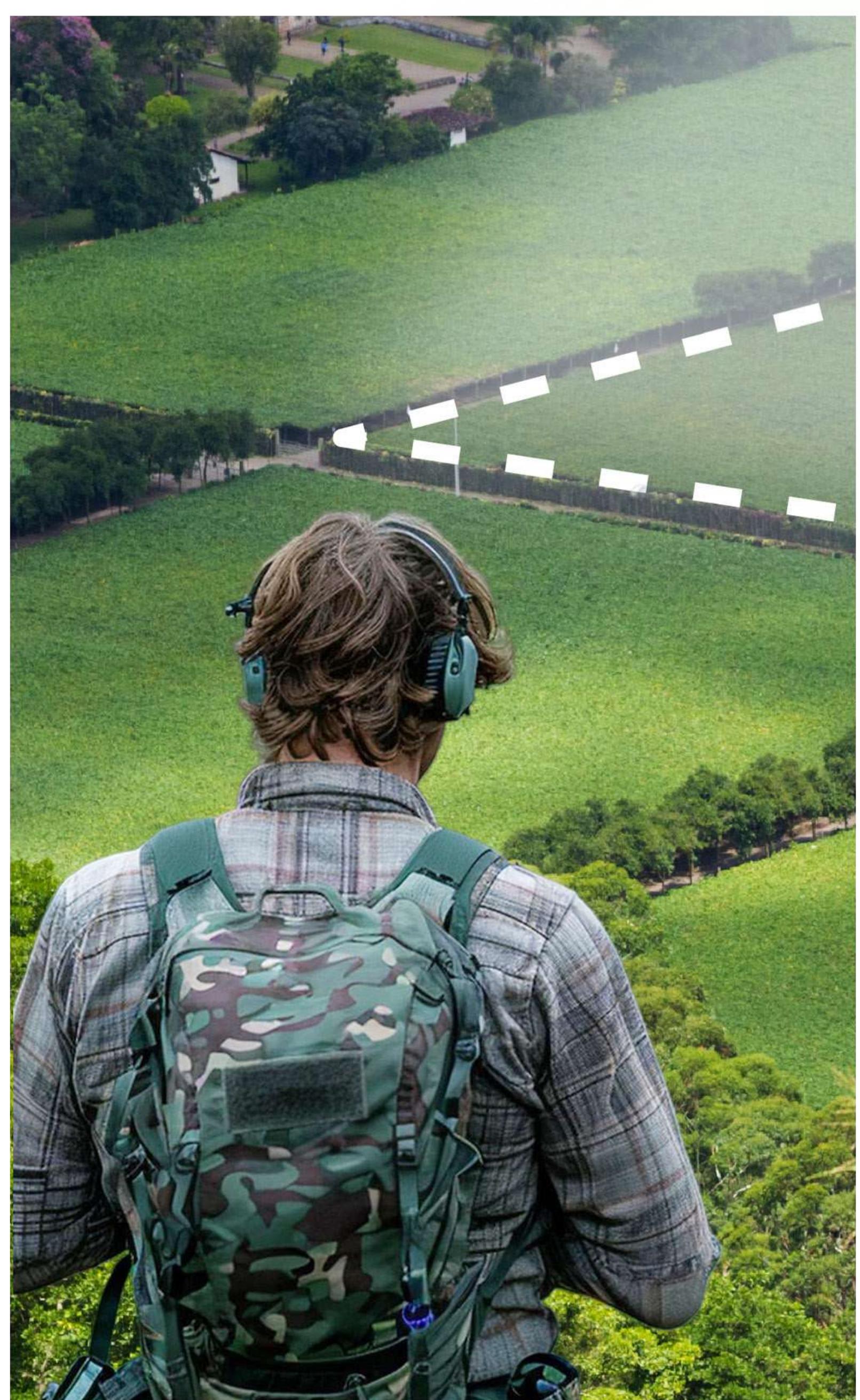
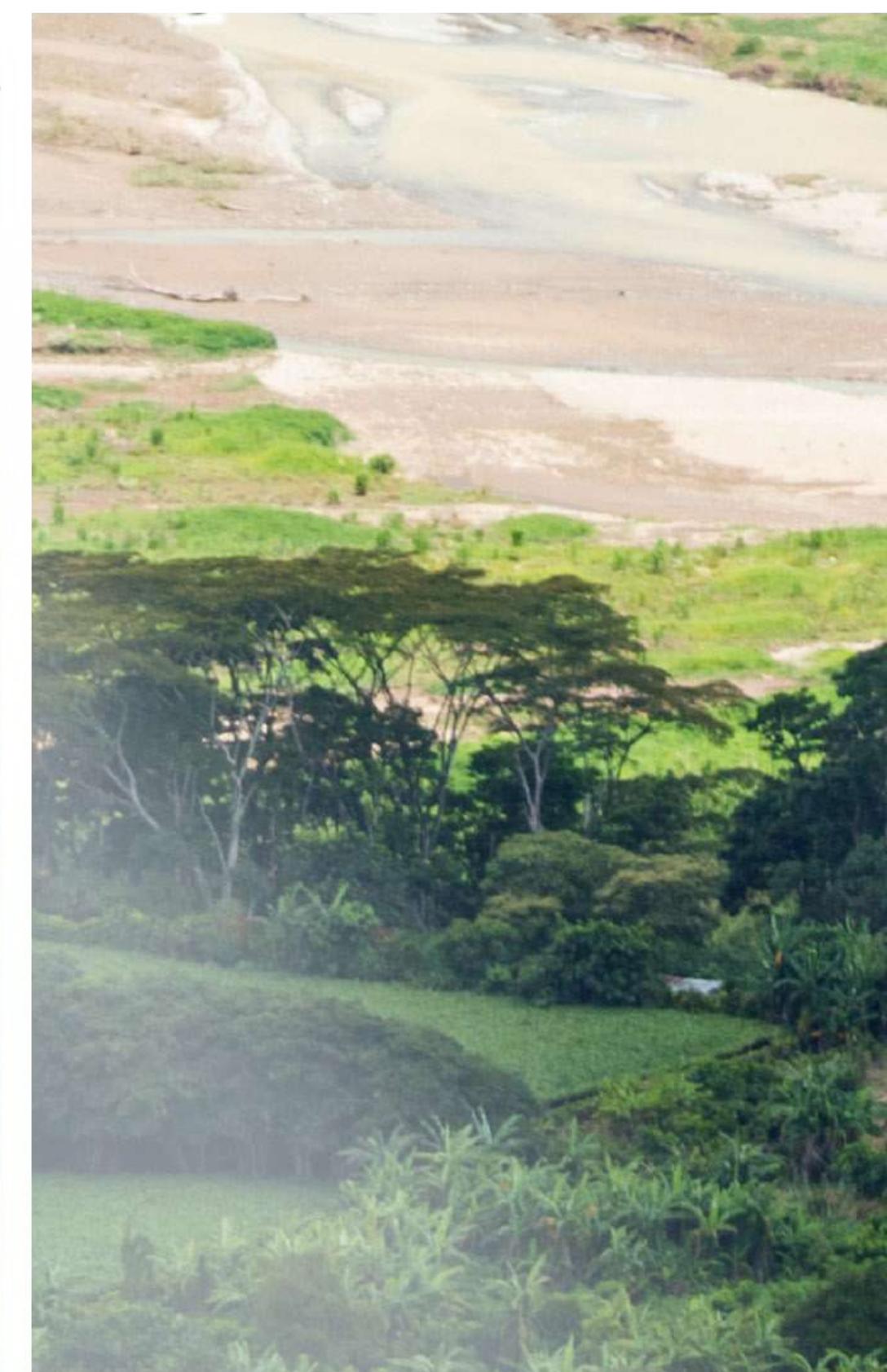
Dr. Praveen Malik highlighted Agrinovate India's role in bridging the gap between research and commercial application. "By transferring the eCrop module to Precision Grow, we are ensuring that the advancements made in agricultural research are effectively utilized in the field, promoting sustainable and precise farming techniques," he remarked.

Bhimji Patni expressed enthusiasm about the partnership and its potential impact on the agriculture sector. "**Tech Visit IT Pvt Ltd** is dedicated to integrating technology with agriculture to drive efficiency and sustainability. The eCrop module will empower farmers with actionable insights, leading to better decision-making and resource management," he said.

The eCrop module, developed and Patented by **ICAR-CTCRI**, is designed to provide real-time data and analytics on crop health, soil conditions, and environmental factors. This technology enables farmers to optimize their farming practices, reduce waste, and enhance productivity, aligning with global goals for sustainable agriculture.

The signing ceremony, held at the **ICAR-CTCRI** headquarters in Thiruvananthapuram, was attended by key stakeholders, researchers, and industry representatives. The event underscored the importance of technology transfer in achieving sustainable agricultural practices and highlighted the collaborative efforts of ICAR, Agrinovate India Ltd, and **Tech Visit IT Pvt Ltd**. This strategic partnership is poised to make a significant impact on the agricultural sector, paving the way for innovative solutions that support both farmers and the environment.

DRONE SOIL ANALYSIS: MULTISPECTRAL REMOTE SENSING FOR SOIL MAPPING



Making farmland Sustainable and productive come a pressing issue for a lot of farmers today, and the factor that determines the longevity of agricultural land is the quality of "Soil". Modern farmers have long shifted to the usage of Synthetic fertilizers from natural fertilizers to increase crop production but this was done at a terrible

price as studies showcase that over the years the over usage of fertilizers has resulted in the loss of Soil Organic Carbon which in turn has decreased the overall quality of soil. Soil testing has paramount importance as it allows the farmer to understand the different contents which provides valuable insights.

What is Drone Soil Analysis?

Advances in agricultural technology have allowed farmers to gather accurate data from remote sensing and get an overall insight into the agricultural land much more efficiently in comparison with the traditional ways of analyzing soil such as the zig-zag method. Those insights contain data that could then be properly analyzed and effectively implemented to increase the quality of Soil.

Drones are fueled with radio sensing technologies and operated with Machine Learning models that monitor soil's nutrient levels, moisture content, and more. The ideal levels of nutrients, salinity, and moisture will vary depending on the crop in question, but the balance must be tracked closely. As a general rule, plants require a soil composition that includes:

- **Non-mineral elements: Carbon, hydrogen, and oxygen**
- **Minerals: Nitrogen, phosphorus, potassium, and more**
- **pH balance: Not too alkaline, and not too acidic**

Nitrogen-level management is especially important for farming. Even with today's advanced farming practices, maintaining the right nitrogen balance in the soil can be extremely difficult. Unfortunately, crops will suffer when nitrogen is scarce. At the same time, chemical-heavy farming practices can permanently damage topsoil if not carefully applied.

Digital Soil Mapping Vs Traditional Soil Mapping

The fundamental difference in both the approaches eventually boils down to the limitation factor, the traditional method however subtle and erudite is limited and is not able to factor in a lot of data sets that are required to come to a plausible conclusion. Whereas the spatial mapping techniques provide a wide range of information regarding soil including moist and texture levels as well with the accuracy of precise observation it surpasses the amount of data gathering required for implementation.

This technology performs soil mapping and field analysis using drones affixed with remote sensing cameras that collect information by measuring the electromagnetic spectrum of light reflected from the land below. Different elements can be identified by how they reflect unique wavelengths of light. Multispectral imaging sensors collect reams of data on those wavelengths, powering advanced AI software that can pinpoint minute differences in elemental soil composition.

How Multispectral Imaging Helps Farmers **Understand Soil Better**

Farmers can use special cameras on drones to take pictures of their fields. These pictures give them important information about the soil. They can use this info to decide where to plant seeds, when to water, and how much fertilizer to use.



By Krishna Shambhu Kanu

Making Farming Better

The insights gathered from the drones help farmers make smart choices about farming. Even though sometimes they still need to take soil samples, these insights show them the whole picture of their land. With this big picture, they know where to look closer to understand the quality of the soil better.

Keeing Soil Healthy

By taking these insights regularly, farmers can see how their farming affects the soil over time. They can also spot causes for problems like soil erosion and a decrease in crop growth. This helps them take action early to keep their soil healthy for the future.



Knowing What's Coming

With the help of these Insights, farmers can keep an eye on the soil even after planting seeds. Drones can fly over the fields and check the condition of the soil in real-time. This way, farmers can fix any problems before they become big issues. They can add more food for the plants or change how they water them.

Getting Ready for Anything

By watching the soil closely, farmers can prepare for bad weather or other surprises. They can make sure the land is ready for dry spells or heavy rains. They can also plan for changes in the seasons. All of this helps farmers keep their crops growing strong, no matter what comes their way.

SOIL MAPPING: THE KEY TO PRECISION AGRICULTURE

Keeping an eye on soil quality is crucial for today's farming. The more precise information farmers have, the better they can plan. With multispectral soil maps, farmers can choose the best spots to plant different crops and decide when to make changes. The payoff? They get larger, healthier harvests while also taking care of the land.



**DEAR HUMAN IF YOU
DON'T DESTROY ME**

**I WILL GIVE YOU SHELTER,
FOOD, WATER & OXYGEN**

EXPLORING CONNECTION BETWEEN THE PARIS AGREEMENT AND THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

The 2030 Agenda universal visions and are the bottom up, meaning and ambitions. Following binding contributions, the coherently implemented been made to examine Agreement, the 2030 strategies. However, global analysis of

and the Paris Agreement are both based on being implemented from that countries identify their priorities, needs, this paradigm shift towards voluntary world is now moving on to discuss how to both agendas. First attempts have already the alignment between implementing the Paris Agenda, and national development plans and until now there has not been a comprehensive how climate actions could contribute to the SDGs.



By Rajni Dhankanthi



THE 2030 AGENDA AND THE PARIS AGREEMENT

The 2030 Agenda consists of 17 SDGs, 169 targets, and a declaration text articulating the principles of integration, universality, transformation, and a global partnership. The SDGs integrate the social, environmental, and economic dimensions of Sustainable development and aim to provide a social foundation for humanity while ensuring that human development takes place within the biophysical boundaries of Earth.

The SDGs were arrived at through a unique global process, centering on an open working group of member states and consultation with a broad range of stakeholders. The text was subsequently agreed on by all UN member states in the General Assembly in September 2015. While the 2030 Agenda is global in its ambition and universally applicable, it is up to countries to decide how to implement it, and how to prioritize goals and targets, depending on national needs and ambitions. They are free to set up their own national and subnational implementation structures and plans. Countries are also encouraged to work in

THEMES AND CROSS-SDG SYNERGIES

The Climate measures support the thesis that actions generate co-benefits across SDGs. The analysis of cross-cutting themes in NDCs shows that there are many SDG-relevant issues mentioned in the NDCs that relate to more than one SDG.

By revealing the links between these SDG themes, NDC SDG Connections shows how NDC activities can promote several SDGs at once. In that respect, SDG themes such as energy and agriculture are particularly relevant, but activities related to infrastructure, land use, and finance also span across several SDGs. NDC-SDG Connections can help to identify the most important overlaps between NDCs and targets across the 17 SDGs and pinpoint key ways in which climate action under the Paris Agreement can contribute to the 2030 Agenda.

CONCLUSION

The synergies revealed by the NDC-SDG Connections tool underline the need for policymakers to consider the SDGs and climate action under the NDCs as linked, even integrated agendas; and to address them with coherent policies. Taking into account SDG commitments can help countries ensure that climate actions promote wider social, economic, and environmental ambitions. At the same time, considering committed climate actions and SDG targets together can help avoid duplication of effort and opportunities for more efficient budget allocation.

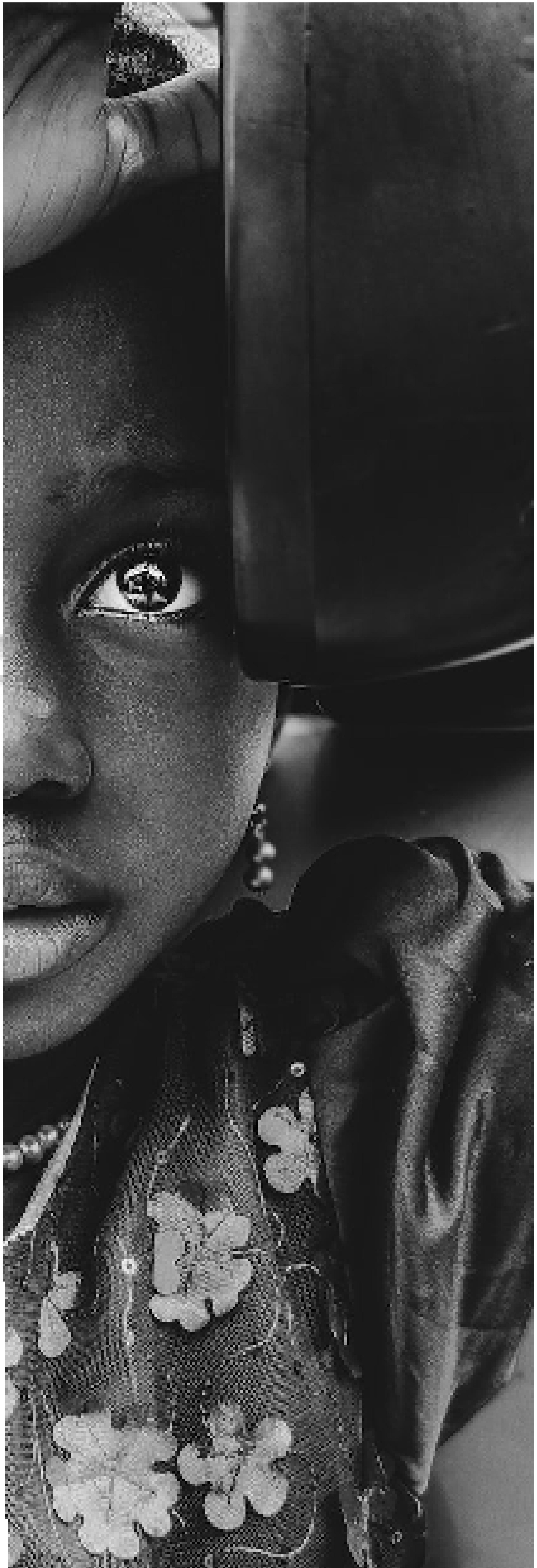


IF I DIE
We all die



End All Hunger: The challenge to tackle global food security

We have all felt that burning sensation in our stomach when we get hungry. This urgent demand pushes off every other desire and forces our attention on only one thing, which is to calm this sensation and the only way it can be done is to intake one of the most integral things for the progression of life and that is "Food". Across the world, more than 300 million people are facing acute food insecurity as per the data released by the United Nations in 2024. Around 42 million people in 45 countries are at 'emergency' or worse levels of hunger.



LACK OF FOOD NUTRITION

Although global food production is enough to fill all stomachs the socio-economic barriers, climate change, and structural inequality have been the prime reasons for the lack of food access.

Food security around the world can be seriously dealt with by the analysis of the Agricultural output, determining the quality of soil, and crop nutrition that is getting affected by the overuse of fertilizers and pesticides and providing sustainable solutions to the problem without hampering the environment.

CLIMATE CHANGE: A MAJOR RISK

Climate change has been unceasingly affecting global food production at large scale, as agriculture uses 70% of all freshwater, produces around a third of all GHG emissions, and contributes to biodiversity loss and soil degradation (around 69% of agricultural land is degraded). If food demand continues to grow as projected, by 2050 we will need 120% more water, 42% more cropland, lose 14% more forest and produce 77% more GHG emissions. Even with yield gap closure through SI, we would still need 56% more water, 5% more cropland, lose 8% more forest, and produce 42% more GHG emissions.

The growing global population is increasing the overall food demand and to cater to that farmers are increasingly using artificial fertilizers which in turn is degrading soil health and in the long run, will significantly affect the Food Security of the world.

WHAT CAN WE DO

Progressive actions are taken all around the world by several countries, meetings between important delegates from different countries have been constantly in motion to tackle this pressing issue in the world, and various policies have been implemented by the political bodies in accordance and guidance by the United Nations as well.

A global collective awareness has to be inculcated, the idea that ignorance is bliss should not be the current motto but proactive action to tackle the upcoming problems up front must be our outlook.

at the beginning of our blog, we were talking about the burning sensation, we all feel the pain of hunger, and a simple change in our attitudes can have global impacts. Now is the time to be reminded of our responsibility and prepare for a future where every stomach feels satisfied and full.

Around 42 million people in 45 countries are at 'emergency' or worse levels of hunger.



By Dipti Chavan

THIS IS NOT JUST A TREE



It's the longest-living organism on earth which never dies of old age

Planting it can reduce your energy costs

They can **Communicate and defend themselves against attacking insects**

They can help us with climate change

**Tobacco prices
to rise in
Andhra after
crop failure
in Brazil
& Indonesia**

Tobacco known as the 'Golden Leaf' is one of the most profitable commercial cash crops worldwide and plays an important role in the world's economy. In the 2022 fiscal year, India exported and manufactured tobacco for US\$ 353 million. India is the Second largest producer of Tobacco in the world and contributes a huge portion of global demand after China and Brazil respectively.

Tobacco is consumed worldwide and is largely a huge cash crop considered for the farmers as it mints a considerable amount of profits before cultivation. It is typically grown in warmer conditions and requires a controlled supply of water for its irrigation and well-drained rich soil.

Its total contribution to the national economy is Rs 18,255 crores. In India, the tobacco crop directly or indirectly supports 36 million people engaged in production, processing, marketing, and exports which includes six million farmers and 5 million people involved in bidi-rolling and tendu leaf-plucking. Thus, the crop is a lifeline for a sizeable chunk of the population, particularly rural women, tribals, and other weaker sections of the society.

THE DECLINE OF TOBACCO PRODUCTION IN INDONESIA

Almost 60 percent of the Indonesian population are smokers, apart from consuming tobacco Indonesia is also a leading manufacturer and distributor of tobacco all over the world, but for the past two years, the farmers have struggled a lot due to the change in rainfall patterns and complications arising in the supply chain making the farmers adhere to losses which is forcing them to move to other crops such as corn and red beans.

Tobacco farmers are at the bottom rung of the industry, while the middlemen who bought the harvest from farmers remained relatively unaffected. The intermediate buyers magnified the issue because farmers had no choice but to accept the prices they offered.

The tobacco trading system in Indonesia does not allow farmers to sell directly to big tobacco companies such as HM Sampoerna, Gudang Garam, or Djarum. The product must instead pass through a long chain of middlemen, small and large-scale traders, and tobacco graders before it arrives at the factory. More tobacco control makes for lower cigarette sales, equaling more misery for farmers.

Brazil's tobacco output has also declined to 440m kg from an estimated 550m kg, while Zimbabwe's crop production shrank to around 240m kg from an expected of 300m kg.

THE RISE OF TOBACCO PRICES IN ANDHRA PRADESH

Due to the shift of demand and low cultivation of tobacco from countries like Indonesia and Brazil, the focus has now emerged at Andhra Pradesh one of the top producing states of tobacco in India, surging the prices and allowing the farmers to make profits.

The global shortage of 400 million kg of tobacco spurs export demand for the crop premium leaving farmers in Prakasam and Nellore districts a record ₹210 a kg during e-auctions. In the last week of December 2023, the cyclone inflicted more damage, estimated at around 10,000 hectares, to the final-stage tobacco crops across the district. Many affected tobacco growers resumed cultivation in the 3rd and 4th weeks of December 23, while some even initiated re-plantation of tobacco saplings in the preceding days, a process still ongoing in a few areas. This surge in cultivation has led to abnormal increases in additional capital amounts required by many farmers.

By Vandana Prajapati



THIS IS NOT JUST A MANGO

It's the most popular fruit eaten in the world

It's related to pistachios, cashews and peanuts

It's part of the drupe fruit family



The Vital Role of ESG in Addressing Climate Change: Understanding its Impact, Importance and Solutions



Environmental, social, and governance (ESG) has become an important measurement to report on for businesses. With regulations around ESG increasing on a global scale and studies correlating good ESG practices to increased revenue growth, ESG performance has become a key determinator when selecting who to do business with.

By Pooja Bhise



WHAT IS AN MSCI ESG RATING?

MSCI ESG Ratings are like report cards for companies. They look at how well a company handles certain important factors related to the environment, social issues, and governance (ESG). These factors can affect a company's finances. The ratings use specific rules to figure out which companies are doing really well in managing these ESG issues (leaders) and which ones are not doing so great (laggards). The ratings go from leader (AAA, AA), average (A, BBB, BB), to laggard (B, CCC).

These ratings don't just apply to companies. They also look at other things like stocks, bonds, loans, mutual funds, and even entire countries to see how they're doing in terms of handling ESG concerns.

ESG RATINGS: QUANTIFYING RISKS IN A DISRUPTIVE WORLD

Business sustainability has become really important to people all over the world, and ESG Ratings are like a tool to measure how well a company is doing in areas like the environment, social issues, and good governance. These ratings give a number score to show how a company's policies impact things like climate change, pollution, fair treatment of workers, and more.

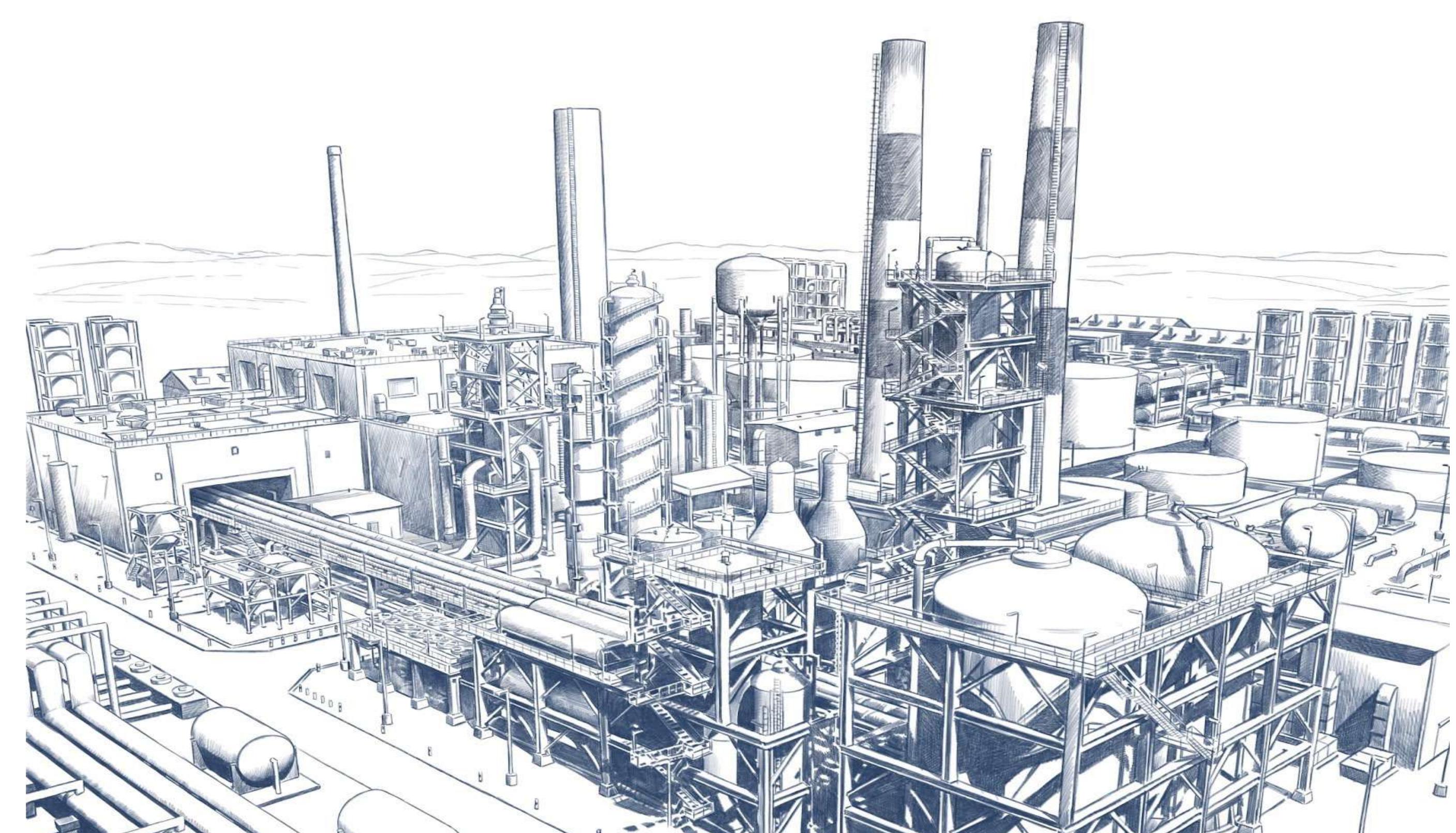
With more than \$30 trillion invested in businesses that focus on sustainability, ESG ratings have become really crucial in deciding where that money goes. They help investors see how strong a company is in terms of being environmentally and socially responsible. For consumers and employees, ESG ratings show how much a company cares about making the world a better place through its actions.

CLIMATE FOCUSED ACTION

The Carbon Disclosure Project (CDP) is leading the way to help the world become safer from climate change. They believe that being open about the environment and taking responsibility for it are really important for our future. CDP asks companies questions about their impact on the environment, following the advice of experts. They use a four-step process to figure out how well a company is doing with the environment. It starts with looking at what the company is doing now, then how aware they are of their impact, then how they manage things, and finally, if they're leading the way in environmental care. A high score from CDP means a company is really conscious about the environment, has good leadership, and is working hard to protect the climate.

CONCLUSION

To be clear, we support ESG ratings. Indeed, we are convinced that they have an integral part to play in promoting more sustainable investment and corporate governance, especially once reporting and rating have become more standardized. But the "super-wicked" problem of climate change is so urgent and far-reaching that it deserves its own rating, one that avoids using the methodological complexities and legal challenges of melding together E and S and G. A climate-specific "C-rating" would empower investors and C-suites alike to make the climate-conscious choices that markets are telling us they want.





The Application of Machine Learning in Crop Mapping

In recent years, agriculture has experienced a profound technological transformation, with machine learning (ML) emerging as a pivotal tool in optimizing crop production and management. Among the significant applications of ML in agriculture, crop mapping stands out as a critical process for monitoring, assessing, and managing agricultural landscapes.

The Importance of Crop Mapping

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Machine Learning Techniques in Crop Mapping

Supervised Classification

Supervised learning algorithms such as Support Vector Machines (SVM) and Random Forests are employed to classify pixels into different crop types based on spectral signatures derived from labeled satellite images. These algorithms excel in identifying crops, even in complex landscapes with multiple intercropping systems.

Unsupervised Clustering

Unsupervised learning methods like K-means clustering and Gaussian Mixture Models (GMM) group pixels with similar spectral characteristics to delineate different land cover classes, including various crop types and non-crop vegetation.

Convolutional Neural Networks (CNNs)

CNNs, a type of deep learning algorithm, automatically learn hierarchical features from satellite images, enabling pixel-wise classification and fine-grained crop mapping at unprecedented spatial resolutions.

Transfer Learning

Transfer learning techniques leverage pre-trained neural networks to extract features from satellite images, adapting them to specific crop mapping tasks. This approach reduces the need for large annotated datasets and accelerates model training.

Advantages of Machine Learning in Crop Mapping

The application of machine learning in crop mapping offers several advantages over traditional methods:

Scalability

ML algorithms can process large volumes of satellite imagery quickly, enabling timely and cost-effective crop monitoring over extensive agricultural landscapes.

Automation

ML enables the automation of crop mapping workflows, reducing human errors associated with the manual interpretation of satellite imagery.

Accuracy

ML models leverage spectral, spatial, and temporal information to achieve high levels of accuracy in crop classification, even for heterogeneous and dynamic cropping systems.

Adaptability

ML enables the automation of crop mapping workflows, reducing human errors associated with the manual interpretation of satellite imagery.

Applications and Implications

The integration of machine learning techniques into crop mapping has diverse applications and far-reaching implications for agriculture:

Accurate crop maps enable farmers to implement site-specific

Accurate crop maps enable farmers to implement site-specific management practices, optimizing inputs like water, fertilizers, and pesticides to enhance productivity and resource efficiency.

Crop Insurance and Risk Management

Crop maps provide insurers and policymakers with valuable insights for assessing agricultural risks, estimating crop losses, and designing insurance schemes.

Sustainable Land Use Planning

Crop maps support informed decision-making in land use planning, biodiversity conservation, and habitat restoration, promoting sustainable agricultural practices.

Crop Monitoring and Yield Forecasting

Machine learning-based crop mapping facilitates real-time monitoring of crop health and growth stages, supporting early detection of pests, diseases, and abiotic stresses.

Conclusion

Despite its promise, the application of machine learning in crop mapping faces challenges like data availability, model generalization, and interpretability. Future research may focus on addressing these challenges through:

Challenges and Future Directions

Despite its promise, the application of machine learning in crop mapping faces challenges like data availability, model generalization, and interpretability. Future research may focus on addressing these challenges through:

Data Fusion and Integration



Integrating multi-source data can enhance model accuracy, particularly in data-scarce regions.

Interpretability and Transparency

Developing interpretable ML models is crucial for gaining stakeholders' trust and facilitating informed decision-making in agriculture.

Continued Innovation:

Advancements in ML algorithms, remote sensing technologies, and computational infrastructure will drive further progress in crop mapping, unlocking new opportunities for sustainable agriculture.

THIS IS NOT JUST AN APPLE

It's a great source of dietary fiber, vitamins (such as vitamin C), and antioxidants.

Over 2500 species of apples are grown around the world



Understanding the Challenges of Global Food Security: The Pivotal Role of Fertilizers in Addressing this Issue.

PRESSING ISSUES IMPACTING FOOD SECURITY

Several factors contribute to the complexity of ensuring global food security:



By Snehal Nagwekar

The world's population is projected to exceed 10 billion by the end of this century, according to estimates by the United Nations. This growth poses significant challenges, especially in ensuring an adequate food supply for everyone. Urbanization further complicates matters by reducing available farmlands and increasing the distance between food production and consumption centers, leading to logistical challenges and increased food wastage.

Moreover, climate instability is affecting agricultural productivity worldwide, adding another layer of complexity to food security issues. Recognizing these challenges, global organizations emphasize the critical importance of addressing food security to sustain stable and prosperous societies. The United Nations has identified Zero Hunger as one of its Sustainable Development Goals (SDGs), underscoring the gravity of the issue.



CLIMATE CHANGE

Extreme weather events disrupt agricultural patterns and decrease crop yields.

Water Scarcity: Shortages of water for irrigation affect crop growth and productivity.

Soil Degradation: Nutrient loss and soil erosion reduce arable land and fertility.

Conflict and Instability: Wars and conflicts disrupt food supply chains and agricultural activities.

Cost of Fertilizers: Rising fertilizer prices impact farmers' ability to maintain yields.

Population Growth: The expanding population demands more food from limited resources.

Addressing these challenges requires innovative strategies and sustainable solutions to ensure a stable food supply for future generations.

The Vital Role of Fertilizers in Enhancing Food Production

Fertilizers play a crucial role in boosting agricultural productivity and addressing food security concerns. They provide essential nutrients that promote plant growth, health, and yields.

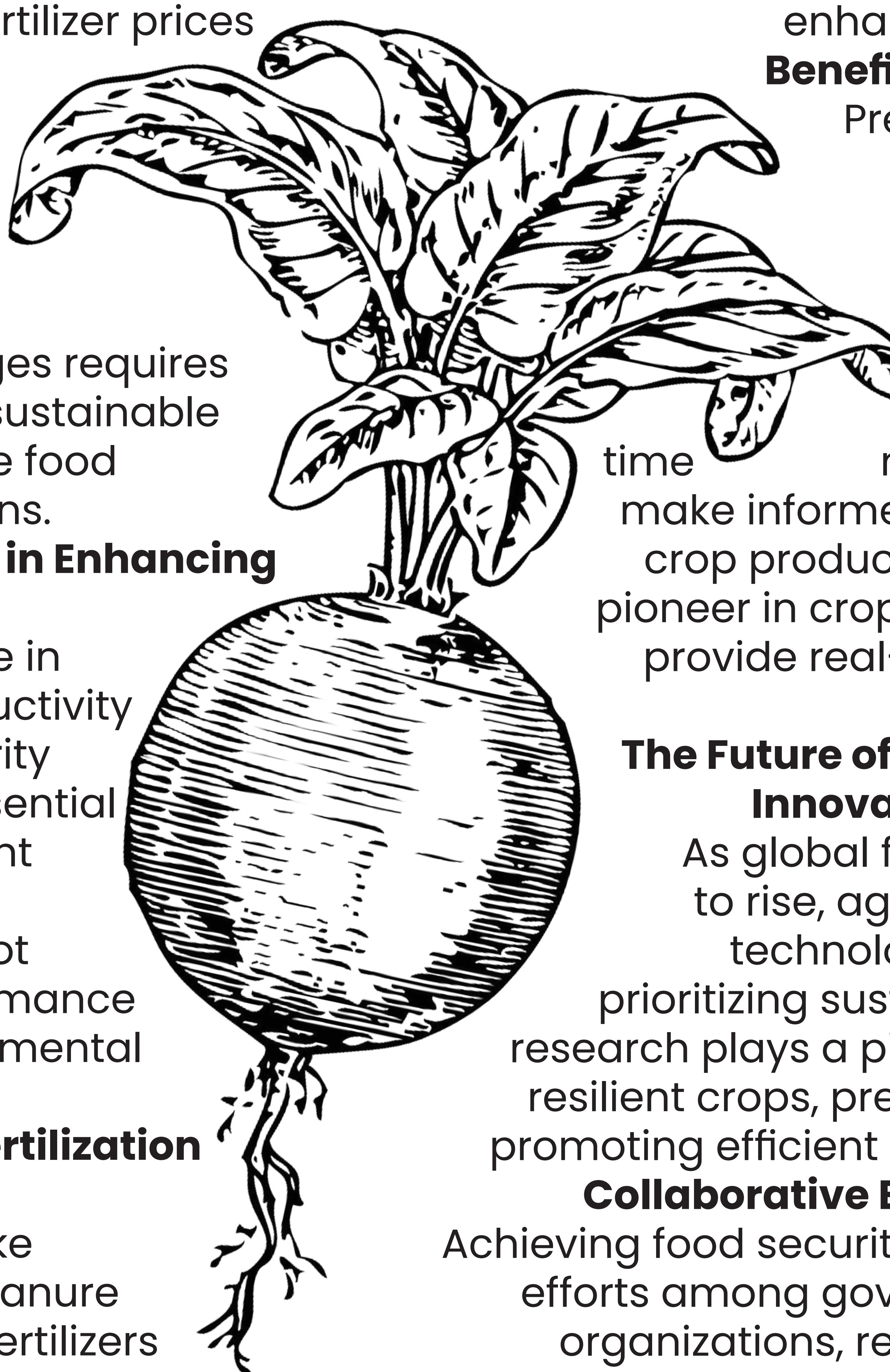
Responsible fertilizer use not only enhances crop performance but also minimizes environmental impact.

Traditional and Modern Fertilization Practices

While historical methods like composting and animal manure remain valuable, modern fertilizers offer tailored solutions to optimize crop nutrition. The International Fertilizer Association estimates that mineral fertilizers contribute significantly to global food production.

Advancements in Fertilizer Technology

Recent innovations in the fertilizer industry have revolutionized agricultural practices. Controlled-release fertilizers and precision farming techniques enable efficient nutrient management, improving crop yields while reducing environmental impact.



Precision Agriculture: Revolutionizing Farming Practices

The advent of precision agriculture, driven by advancements in technology like Artificial Intelligence (AI) and the Internet of Things (IoT), is transforming farming into a data-driven industry. Technologies such as drones, smart sensors, and automated irrigation systems optimize resource utilization and enhance crop management.

Benefits of Precision Farming

Precision farming not only boosts productivity but also reduces resource wastage and promotes long-term soil health.

By leveraging data analytics and real-monitoring, farmers can make informed decisions to optimize crop production. Precision Grow is a pioneer in crop health monitoring that provides real-time data for precision farming.

The Future of Agriculture: Balancing Innovation and Sustainability

As global food demand continues to rise, agriculture must embrace technological innovations while prioritizing sustainability. Agronomical research plays a pivotal role in developing resilient crops, preserving soil fertility, and promoting efficient resource management.

Collaborative Efforts for Food Security

Achieving food security requires collaborative efforts among governments, international organizations, researchers, and industry stakeholders. By investing in sustainable agriculture practices and supporting technological advancements, we can ensure a food-secure future for generations to come.

In conclusion, addressing the challenges of global food security demands a multifaceted approach that integrates innovative technologies with sustainable agricultural practices. Fertilizers, particularly those tailored for precision farming, are instrumental in enhancing food production while mitigating environmental impact.

**BE A PART OF
THE SOLUTION**

**NOT PART OF
THE POLLUTION**

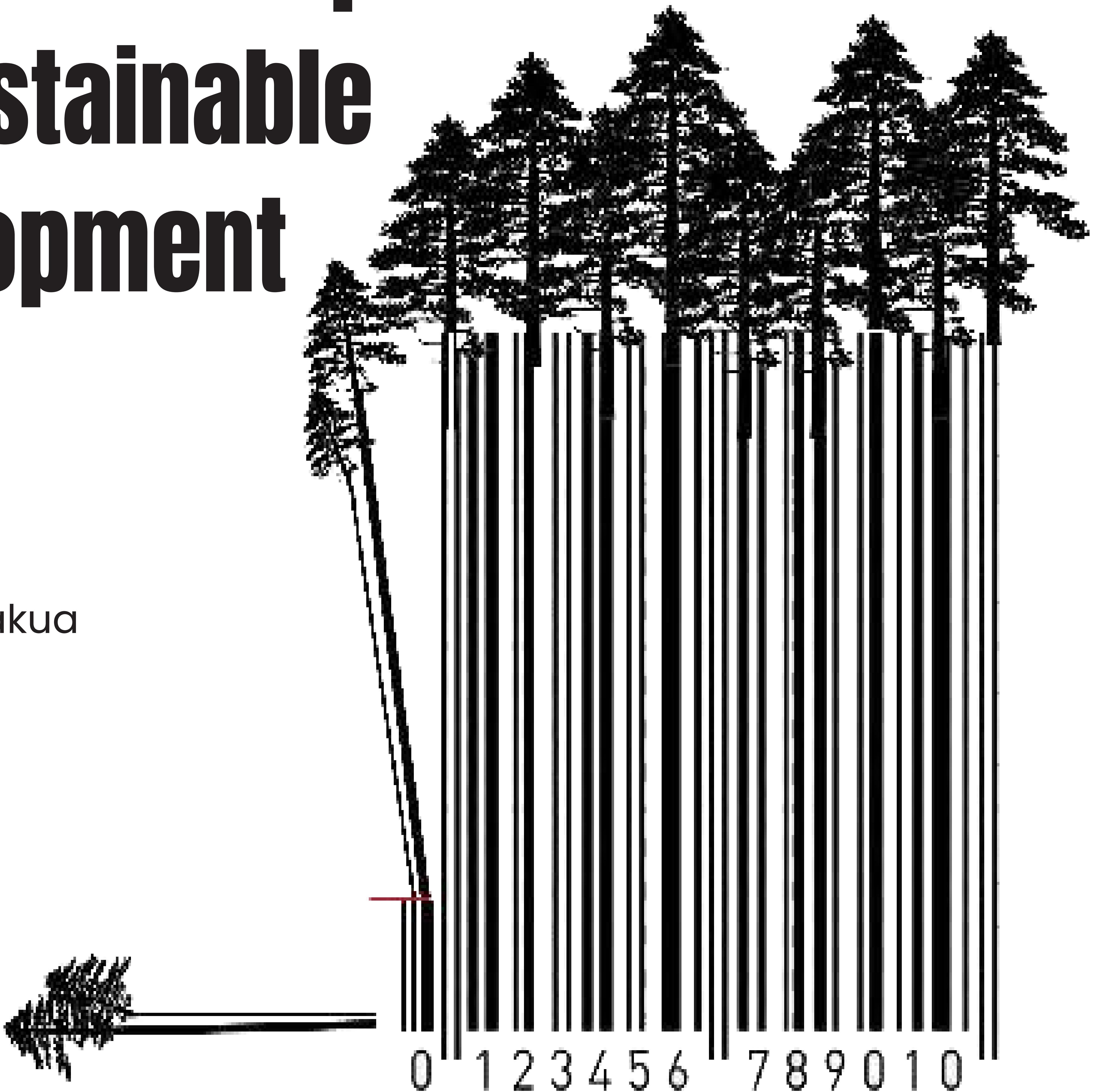


Understanding **Green**

GDP and Its Implications for Sustainable Development



By Neeraj Dakua



In today's global landscape, where environmental concerns are at the forefront of discussions, the concept of Green GDP has emerged as a crucial indicator of a country's economic performance. Green GDP goes beyond conventional GDP measurements by factoring in the environmental costs and benefits associated with economic activities. In this comprehensive guide, we delve into the intricacies of Green GDP, its significance, challenges, and the way forward for its implementation.

help investors see how strong a company is in terms of being environmentally and socially responsible. For consumers and employees, ESG ratings show how much a company cares about making the world a better place through its actions.

WHAT IS GREEN GDP?

Green GDP, also known as environmentally adjusted domestic product, is an indicator that considers the depletion of natural resources and environmental degradation when calculating a country's GDP. Unlike traditional GDP, which solely focuses on economic output, Green GDP provides a more holistic view by accounting for the environmental impact of economic activities.

SUSTAINABILITY

Green GDP aligns with the principles of sustainable development by highlighting the interplay between economic growth and environmental conservation. By integrating environmental considerations into economic assessments, policymakers can make more informed decisions that prioritize long-term sustainability over short-term gains.

RESOURCE MANAGEMENT

Green GDP underscores the importance of sustainable resource management by acknowledging the economic value of natural resources. By quantifying the depletion of resources and encouraging their conservation, Green GDP promotes more efficient resource allocation and reduces environmental degradation.

COMPLEXITY AND INDICATORS

Green GDP is a complex indicator that combines social, economic, and environmental factors, making it challenging to calculate. There is no standardized method for incorporating these factors into GDP calculations, leading to discrepancies in approaches and interpretations.

SIGNIFICANCE OF GREEN GDP

Environmental Valuation

One of the primary advantages of Green GDP is its ability to incorporate the valuation of natural resources and ecosystem services. By assigning economic value to environmental factors such as clean air, water resources, and biodiversity, Green GDP offers a more accurate reflection of the true costs and benefits of economic growth.

POLICY RELEVANCE

By providing policymakers with a comprehensive understanding of economic performance, including its environmental dimensions, Green GDP facilitates the formulation of targeted policies and strategies. This enables governments to identify sectors with significant environmental impacts and implement regulations to mitigate negative effects while promoting sustainable development.

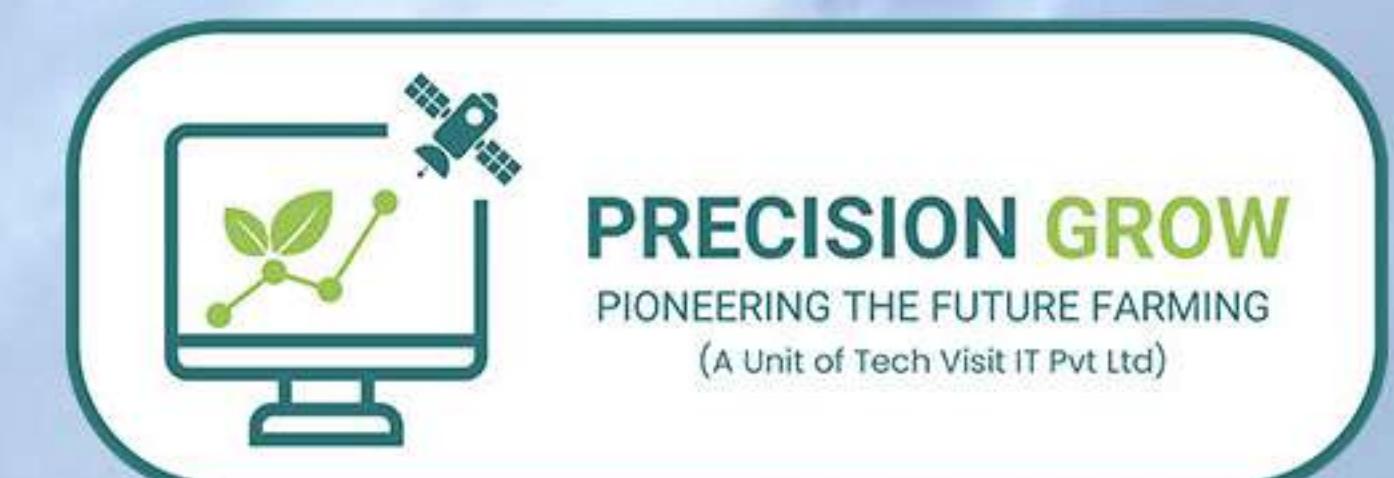
CHALLENGES IN IMPLEMENTING GREEN GDP

Data Availability and Reliability

One of the primary challenges in calculating Green GDP is the lack of reliable data on environmental costs and benefits. Estimating these factors often involves making assumptions and subjective judgments, leading to variations in results and hindering comparability across regions.

Value Assignments

Assigning monetary values to environmental goods and services is a contentious issue, as it may oversimplify the intrinsic value of nature. Critics argue that certain aspects of the environment, such as biodiversity and cultural heritage, cannot be adequately captured by economic valuation methods, posing challenges to the implementation of Green GDP.



ELECTRONIC CROP

e - CROP

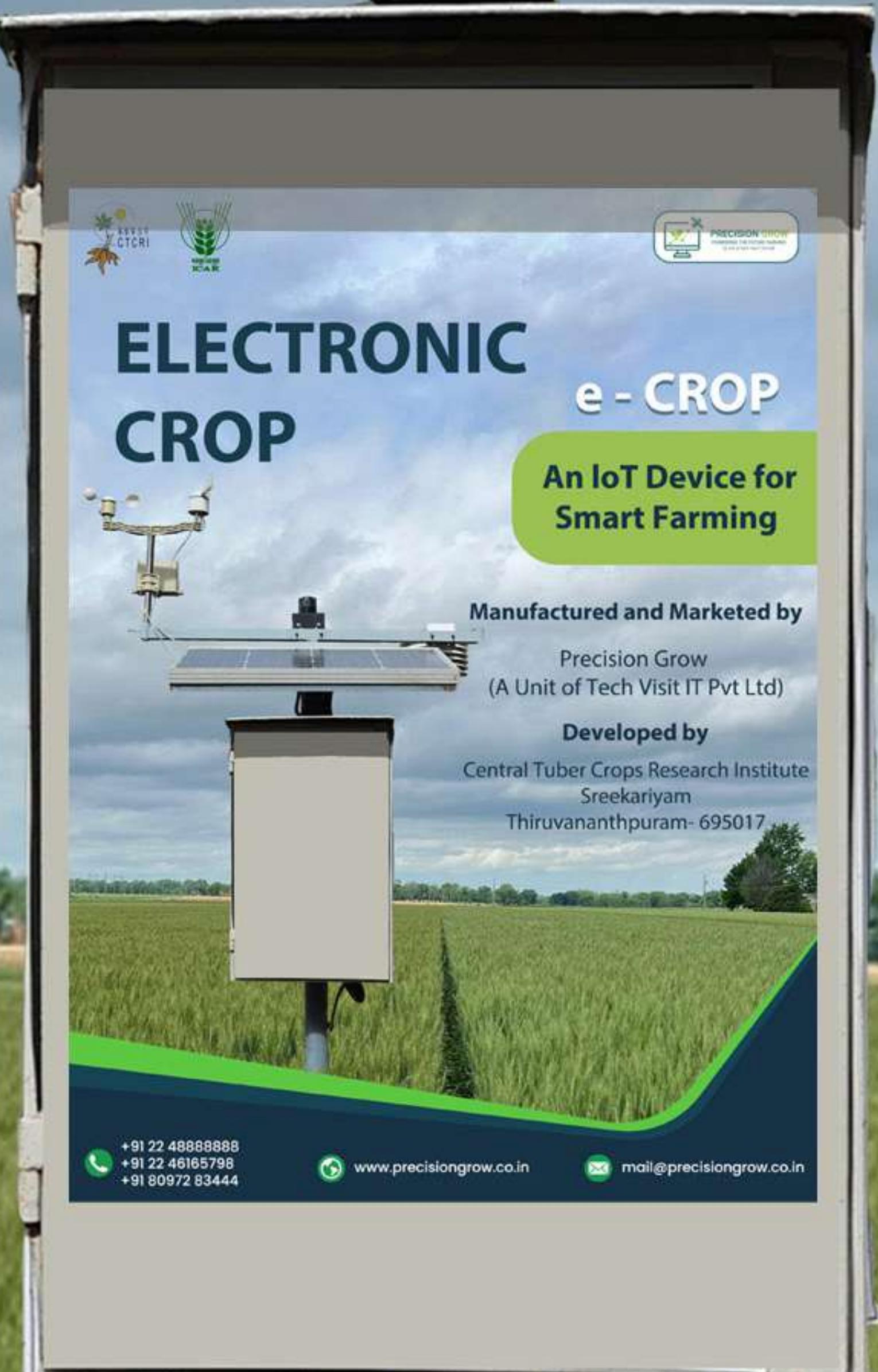
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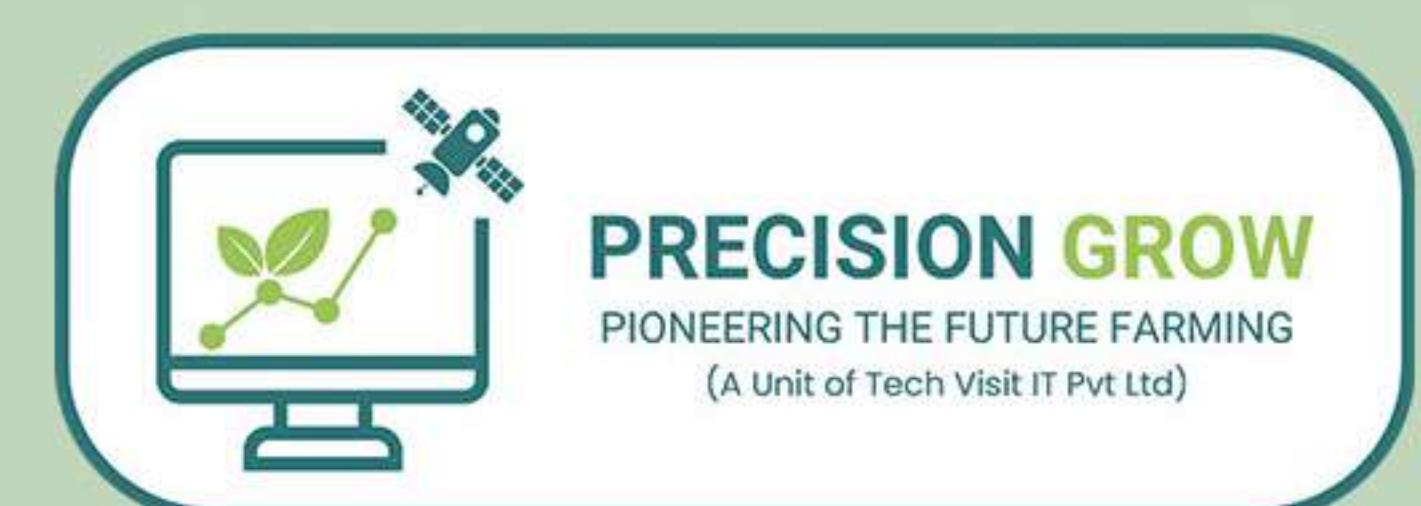
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