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Agri Titbits is an effort to collect and preserve agricultural news, especially spices, appearing in newspapers and online media. Published by Director, ICAR-IISR, Kozhikode ; Compiled & prepared by Jayarajan K ICAR - Indian Institute of Spices Research

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Turmeric: A spice that can boost your memory

May 01, 2025 https://www.newsbytesapp.com/



Turmeric, a bright yellow spice widely used in cooking, has been making the rounds for its possible benefits in improving memory retention.Popular for its active compound curcumin, turmeric is

thought to exhibit anti-inflammatory and antioxidant properties that may promote brain health.Adding turmeric to your everyday routine could be a natural way to improve cognitive function and memory retention.

Here's how turmeric can help you with your memory.

Brain health

Curcumin's role in brain health

Curcumin, the main active component in turmeric, knows no bounds- it crosses the blood-brain barrier.

This means it can directly impact brain cells and can reduce inflammation and oxidative stress.Research indicates curcumin may boost brain-derived neurotrophic factor (BDNF) levels, a protein associated with enhanced memory and learning.

Inflammation reduction Anti-inflammatory benefits of turmeric

Chronic inflammation is commonly associated with cognitive decline and several neurological disorders, making it a major threat to brain health.Luckily, turmeric's anti-inflammatory properties provide an all-natural solution.By curbing inflammation in the brain, regular turmeric consumption can be instrumental in preserving cognitive function.This leads to improved overall brain health by limiting inflammatory responses, making it a must-have in the diet for anyone wanting to safeguard their cognitive capabilities.

Antioxidant support Antioxidant properties supporting memory

Turmeric is loaded with powerful antioxidants that protect the brain from free radicals, which are infamously known to cause cellular damage over time. These antioxidants easily neutralize these damaging molecules, helping keep brain cells healthy. This activity promotes healthy cognitive function and is crucial for memory preservation as we grow older, making turmeric an important ingredient for long-term brain health.

Dietary tips

Incorporating turmeric into your diet

Adding turmeric to your diet can be as simple as it can get. Use it as a spice in various dishes or brew it into tea for an easy daily intake. Combining turmeric with black pepper enhances curcumin absorption (due to piperine present in black pepper), making it more effective at lower doses.

Turmeric to cinnamon: Common herbs and spices you shouldn't mix with your medicine

May 08, 2025 https://timesofindia.indiatimes.com/



Herbs and spices have long been considered a natural and safe way to flavor your food, aid digestion and support immunity. Spices like Turmeric, ginger, garlic, cinnamon, and basil, for

instance, are rich in antioxidants and anti- inflammatory compounds that may help reduce the risk of chronic diseases such as arthritis, Alzheimer's, and heart disease. While these centuries-old superfoods are still used as kitchen staple, and trusted for their potential to boost wellness and prevent chronic diseases like arthritis, Alzheimer's, and heart disease, one should exercise caution when combining them with certain medications.

Why do so many Americans have low vitamin D and magnesium?

In particular, too much of these 5 popular spices should be avoided when taking certain medications. People on blood thinners, blood pressure medicines, and heart rhythm drugs specially need to be careful. Take a look.

Cinnamon



A pinch of cinnamon may make your curry or tea flavoursome, but think twice before increasing its consumption, or taking a cinnamon supplement without a doctor's advice, as a new study has found it may

interact with your medicine and lessen its effect.

A recent study published in Food Chemistry: Molecular Sciences has raised new concerns about how concentrated forms of cinnamon such as supplements or essential oils may interfere with the body's ability to process certain prescription medications. Researchers from the University of Mississippi's National Center for Natural Products Research simulated human digestion and investigated how cinnamon and its key chemical components like cinnamaldehyde, cinnamic acid, and cinnamon oil affect the body's xenobiotic receptors. These receptors help regulate how drugs are metabolized and cleared from the body. It was found that cinnamaldehyde and cinnamic acid activated these drug-processing receptors, which could lead the body to break down medications more quickly than intended. This may result in reduced drug effectiveness, excially for medications that require steady levels in the bloodstream to be effective.

Ginger



Any spice added in limited quantity to food is unlikely to cause any harm. It's the overdose of it that one must be cautious about. Ginger in recommended amounts is known to ease nausea,

reduce inflammation, boost digestion, and control cholesterol and blood pressure. However, excess of this beneficial spice, can harm your health, especially if you are on blood thinners.

People on anticoagulant therapy - blood thinners such as warfarin, aspirin and others should seek advice from their healthcare experts regarding their ginger consumption. While having a cup of ginger tea or using it in your recipe, may not be harmful, too much of it can be risky.

Besides, large amounts of ginger may affect insulin and lower blood sugar. That's said, there is no harm in adding a little bit of ginger in your daily diet.

Licorice

Licorice root, not to be confused with licorice-flavored candy, can interact with a wide range of medications and may pose serious health risks if not consumed with caution. It has been shown to raise blood pressure and interfere with heart and blood pressure medications.

The herb may also affect how the liver processes various drugs, including common pain relievers and anti-inflammatory medications like celecoxib (Celebrex), diclofenac (Voltaren), and ibuprofen (Advil, Motrin), as well as medications like glipizide for diabetes and fluvastatin for cholesterol.

Women taking oral contraceptives have reported increased blood pressure and lowered potassium levels when combining them with licorice. It can also intensify the effects of certain antidepressants and corticosteroids, leading to heightened side effects. In people using stimulant laxatives, licorice can exacerbate potassium loss, which may be harmful. Additionally it may interfere with blood sugar levels in those taking insulin or diabetes medications, and reduce the effectiveness of blood thinners, increasing the risk of clotting.

St John's Wort

Commonly taken as a natural remedy for mild to moderate depression, St. John's Wort can significantly interfere with many medications, says study. It can reduce the effectiveness of antidepressants, leading to potential worsening of mood symptoms. It may also lower the efficacy of birth control pills, increase the risk of unplanned pregnancy, and affect the performance of blood thinners, immunosuppressants, and certain heart medications. This herb speeds up how the liver breaks down drugs, which can reduce their concentration in the body and make them less effective.

Turmeric



Turmeric in your curry is fine, but you should think twice when taking supplements. Too much of it can interact with your medicine. This happens due to the spice's active component called curcumin, which

may pose risks when combined with certain medications.

One key concern is its potential to increase bleeding risk when taken alongside blood thinners such as warfarin, aspirin, or clopidogrel, says study. While turmeric is generally safe to add in your food, concentrated supplements can amplify these effects, making it important for those on anticoagulants or upcoming surgeries to consult a healthcare provider before use.

In all, herbs and spices are a wonderful addition to your everyday food and can boost your immunity against seasonal infections. But one should be careful while consuming them in excess. Herbal supplements should be taken strictly on advice of your healthcare expert.

Nutritionist says add two fibre-rich spices to your food to 'stabilise blood sugar'

5 MAY 2025 https://www.getsurrey.co.uk/news/

A nutritionist has revealed that adding two fibre-rich spices to your food could help "stabilise" your blood sugar levels. These tasty ingredients could also help keep your energy levels up.

A certain amount of sugar, or glucose, in the blood is needed to provide our cells with energy. This glucose comes from the food and drinks we eat and drink throughout the day.

When we eat, a hormone called insulin is temporarily increased in the body. This helps the body to absorb glucose from the blood, so it can be used as energy. But if your body does not have enough insulin to control this sugar, which occurs in diabetics, the sugar will stay in your bloodstream. This can be damaging to your blood vessels. You can also experience high blood sugar levels if you're not diabetic, including if you eat a very sugary or carb-heavy meal. This could not only cause health issues in the long-run but can lead to energy crashes later in the day.

With this in mind, Katie Murray, a nutritionist at supplement brand AltruVita, shared her tips for balancing your blood sugar and avoiding unwanted sugar crashes. She urged people to include fibre-rich foods and spices like turmeric and cinnamon in your diet, as they help stabilise blood sugar levels and keep energy steady throughout the day.

Turmeric

According to a study published in Diabetes Care journal, a compound found in turmeric called curcumin may help manage existing diabetes by reducing blood sugar levels and improving metabolic profiles. Other studies indicate that curcumin can enhance insulin sensitivity, meaning the body's cells respond better to insulin, helping to regulate blood sugar levels.

And some research even suggests that curcumin may help prevent or delay the development of type 2 diabetes. Research published in 2019 concluded: "The combination of metformin with curcumin decreased dyslipidaemia and TBARS levels in diabetic rats...

"These findings indicated that curcumin combined with metformin... might be a promising strategy for combating diabetic complications, mainly the cardiovascular events."

Cinnamon

Separate to this, a clinical study published in the Diabetes Care journal in 2003 suggested that cassia cinnamon (cinnamon bark) improves blood glucose and cholesterol levels in people with type 2 diabetes. It may also reduce risk factors associated with diabetes and cardiovascular disease. An analysis published in the American Journal of Clinical Nutrition in 2007 showed that six of cinnamon slows stomach emptying and significantly reduces hyperglycaemia after meals without affecting satiety.

Katie provided other advice for managing your blood sugar through diet. She said: "When blood sugar levels are unstable, you're more likely to experience energy crashes throughout the day.

"I always recommend balancing every meal and snack with a good source of protein. This can make a huge difference in keeping your energy stable. For example, if you have oats, fruit, and honey for breakfast, add some Greek yoghurt for protein. A mid-morning snack could be crudités with hummus or fruit with a handful of nuts or nut butter, and lunch or dinner should always include high-quality protein sources like fish, poultry, or lean meat alongside wholegrains like sweet potatoes or quinoa." She added: "If you're like me and have a sweet tooth, pairing a few cubes of dark chocolate with some nuts or Greek yoghurt can help prevent a sugar spike late at night and keep your energy levels more balanced."

RESEARCH NEWS

Spice has similar 'anti-diabetic' effects to Metformin, says expert

May 4, 2025 https://www.the-express.com/

This "powerhouse" spice has anti-inflammatory properties due to its active compound, according to a health expert

Health aficionados take note — a common kitchen spice is being touted for its ability to help manage blood sugar, making it a potential boon for those dealing with or at risk of type 2 diabetes.

Turmeric, hailed as a "powerhouse" in your spice rack, stands out not only for its anti-inflammatory prowess but also due to curcumin, its active ingredient. Like Metformin, which acts to reduce blood sugar by curtailing glucose production in the liver and increasing the body's insulin sensitivity, curcumin performs comparably — it can obstruct hepatic gluconeogenesis, or the process by which the liver synthesizes glucose from non-carbohydrate sources, Dr. Eric Berg, DC, an authority on ketogenic diets, low-carb approaches, and intermittent fasting, said: "Curcumin has anti-diabetic properties and effects similar to Metformin." In addition, curcumin is known to boost insulin sensitivity, enhancing how cells respond to insulin and leading to better glucose usage.

What's the difference between turmeric and curcumin?

Turmeric and curcumin, while closely related, are not the same thing. Turmeric is a plant that doubles as a spice, often found in supplements, while curcumin is a compound - specifically a type of curcuminoid - found within turmeric. It's curcumin that gives turmeric its distinctive yellow color. Both turmeric and curcumin are commonly used as spices in curry powders, mustards, and various other dishes.

What is type 2 diabetes?

Type 2 diabetes is a chronic condition where the body either doesn't produce enough insulin or the insulin it does produce fails to work effectively, leading to high blood sugar levels. This state, often referred to as insulin resistance, can result in complications such as heart disease, kidney problems, and nerve damage.

Insulin, a hormone produced by the pancreas, is crucial for allowing glucose from food to enter cells for energy. When the body doesn't make enough insulin or when cells resist its effects, glucose builds up in the bloodstream.Over time, this high blood sugar can damage blood vessels and nerves, leading to serious health issues.

So, why is curcumin beneficial for blood sugar levels?

Diabetes is often associated with persistent inflammation and oxidative stress. The anti-inflammatory and antioxidant properties of curcumin can help tackle these issues. It has the potential to enhance the activity of antioxidant enzymes, further mitigating oxidative stress in diabetes models.

Curcumin could potentially improve insulin sensitivity by increasing the production of proteins that aid glucose absorption into cells. Moreover, it might help reduce insulin resistance, a key feature of type 2 diabetes.

What do the studies reveal?

A study by the National Institutes of Health suggests that curcumin might assist in controlling established diabetes by lowering blood sugar levels and improving metabolic profiles. Additional research points to curcumin's ability to boost insulin sensitivity, thus aiding better blood sugar regulation.Some findings also imply that curcumin could potentially prevent or delay the onset of type 2 diabetes.Research from 2019 deduced: "The combination of metformin with curcumin decreased dyslipidemia and TBARS levels in diabetic rats... These findings indicated that curcumin combined with metformin... might be a promising strategy for combating diabetic complications, mainly the cardiovascular events."

More recent research from December 2024 indicates: "The combination of metformin and curcumin demonstrates superior efficacy in improving lipid profiles [and] glucose metabolism."The studies suggest a synergy between Metformin and curcumin, where "curcumin exerts synergistic anti-inflammation with metformin with no potential adverse effects".

Published in Pharmacia, another piece of research states: "Curcumin is comparable to metformin."

This conclusion stems from a study concentrating on the use of curcumin to treat Polycystic Ovary Syndrome (PCOS) in rodents. Further investigation into the relationship between gut microbiota and non-alcoholic fatty liver disease (NAFLD) noted that "both curcumin and metformin have a therapeutic effect against NAFLD and play a role in modulating the gut microbiota."

Curcumin, the active compound in turmeric, has piqued scientific interest for its potential to prevent and treat various types of cancer. So far, few adverse effects have been reported from using curcumin-enriched products.

But can curcumin tackle cholesterol as well?

Dr Berg weighs in on the subject, suggesting that this spice could be a gamechanger in managing cholesterol. He explained: "Research has shown that curcumin has benefits similar to statins and can help reduce LDL cholesterol and triglycerides."

And indeed, some research backs up the claim that curcumin can influence glucose tolerance and lipid profiles. For example, a 2019 study found that curcumin improved insulin sensitivity and lipid profiles in rat models of type 2 diabetes.

So what should you keep in mind?

Studies on animals highlight curcumin's ability to dramatically bring down blood sugar levels and boost insulin sensitivity. Moreover, human research shows that curcumin supplements could enhance blood sugar control, benefitting individuals with prediabetes or diabetes.

While animal-based research is encouraging, more studies in humans are essential to fully grasp curcumin's impact on diabetes management. If you're on prescribed medication for your blood sugar, your doctor's guidance is paramount—never alter your regimen without professional advice. Considering curcumin supplements?

It's wise to first consult with your GP.

It's crucial to be aware that curcumin supplements can interfere with specific medications, including blood thinners. Therefore, it's recommended to consult a healthcare professional before starting any new supplement regimen. While generally safe, high doses of curcumin may cause minor digestive issues in some individuals. For more detailed information, refer to the NHS website.

Curcumin extract supports skin health and radiance in new study

6-May-2025 https://nutraceuticalbusinessreview.com/

The nutricosmetic enhanced skin appearance by reducing wrinkles and facial skin imperfections, while also improving skin luminosity

A novel study conducted by the nutraceutical division of Lubrizol has found that its beauty from within-focused curcumin ingredient, CURCUSHINE, can improve skin apperance and enhance radiance.

Published in the journal Agro FOOD Industry hi-tech, the study assessed how daily supplementation with the microencapsulated, anti-ageing Ayurvedic extract impacted facial skin health parameters — including luminosity, appearance of wrinkles and imperfections, redness and markers of oxidative stress.1

The results of this study highlight the wide-spanning potential of curcumin in nutricosmetic applications

Curcumin: the star of the show?

Curcumin, a plant-based bioactive ingredient and Ayurvedic staple, has a long history of use in natural health.

Touted for its anti-inflammatory and antioxidant properties, the nutraceutical has previously been acknowledged in a diverse range of health applications, including cognition, metabolic health, active nutrition and immune balance.

Now, the nutraceutical is soaring in popularity within the beauty from within sector — with research suggesting it can tackle everything from skin inflammageing to wrinkles.

According to the FMCG Gurus' "Navigating Beauty from Within, 2025" report, there has been a market shift towards approaching beauty through nutricosmetics, as they can promote inner radiance and outer glow. "It's clear that consumers are increasingly interested in supplements that encourage a radiant complexion, hair growth and overall outer appearance," notes Isabel Gómez, Global Marketing Manager for Lubrizol Nutraceuticals.

There's also been a major emphasis on preventive measures for ageing, with a proactive approach now becoming popular in younger adults — including Gen Z and Millennials.

"Prejuvenation, the concept of maintaining a youthful appearance and preventing the signs of ageing before they occur, has really risen as a trend, and ingredients like curcumin are great for this purpose," Gómez states.

However, curcumin in its natural form often exhibits a low solubility and bioavailability profile, meaning more efficacious, encapsulated forms are rising in popularity. To assess how its microencapsulated curcumin form, CURCUSHINE, could benefit skin parameters, Lubrizol conducted a study with 63 healthy female volunteers aged between 21 and 50 over a 42 day study period.

Curcumin improves skin health

After daily supplementation with either 2g of CURCUSHINE or a placebo for 42 days, participants taking the nutraceutical experienced:

Significant improvements in skin appearance

A reduction in the appearance of winkles

A decrease in wrinkle volume by 10.32% on average

A 19% increase in skin luminosity

An 8% reduction in brown spots

A boost in skin homogeneity (69%)

According to Lubrizol, a previous in vitro study has also highlighted the superior antioxidant and protective effects of CURCUSHINE on human dermal cells — suggesting its protective capacity on key skin health proteins such as collagen and elastin.

"We believe that CURCUSHINE's potential in supporting skin rejuvenation is mostly down to the microencapsulation technology used, which enables curcumin to be easily absorbed within the body," comments Gómez.

"It's antioxidant and anti-inflammatory properties can be seen through a noticeable improvement in skin luminosity and improvements in skin tone uniformity — along with a reduction in harmful reactive oxygen molecules and inflammation," adds Alan Connolly, Lubrizol's Nutraceuticals R&D Manager.

"We believe that these mechanisms contribute to the modulation of collagen synthesis, though further studies will need to be conducted to confirm this," he states.

Due to its water dispersibility, CURCUSHINE can be easily incorporated into a range of nutraceutical and nutricosmetic applications — including tablets, capsules, gummies and powder sachets — as well as functional food and beverage products.

Excessive cinnamon may interfere with some medications, study shows

May 7, 2025 https://www.accuweather.com/

While small amounts of cinnamon can offer health benefits, researchers say using it too often or in high amounts may lead to drug interactions.

Consuming too much cinnamon might affect how your body absorbs some medications, new research shows.

The study, published in the June issue of the journal Food Chemistry: Molecular Sciences, looked at how cinnamon and its key ingredients affect the way the body processes drugs, The Washington Post reported.

While small amounts of cinnamon can offer health benefits, researchers say using it too often or in high amounts may lead to drug interactions.

"We know there's a potential for cinnamaldehyde to activate these receptors that can pose a risk for drug interactions," lead researcher Bill Gurley, principal scientist at the University of Mississippi's National Center for Natural Products Research, told The Post.

Researchers simulated digestion to study cinnamon oil and its key compounds: cinnamaldehyde and cinnamic acid.

They found that both could activate the body's xenobiotic receptors. These are sensors that help control how the body processes medications. Overuse of cinnamon could cause the body to clear some drugs too quickly, making them less effective, The Post reported.

The study didn't say exactly how much cinnamon is too much, but researchers warned that concentrated forms, like supplements, carry more risk. They advise patients to check with their doctor before using cinnamon supplements or other similar products.Cinnamon has become more popular in recent years, especially among people with type 2 diabetes.

In fact, a 2024 report predicts the global cinnamon market will grow by \$412.9 million between 2024 and 2028, partly because of its use in health and

pharmaceutical products.More studies are needed to fully understand how cinnamon may interact with medications.

"That's what could happen, but we won't know exactly what will happen until we do a clinical study," Gurley said.

BIODIVERSITY

Are agricultural pesticides an environmental threat?

5-May-2025 https://www.eurekalert.org/



A University of Helsinki study demonstrated that pesticides can negatively affect non-target species living in agricultural environment. However, the effects varied greatly depending on the substance

tested.Intensive farming is one of the biggest factors contributing to biodiversity loss. While prior research has focused primarily on the effects of habitat loss and fragmentation, intensive farming also has other environmental effects, including the use of pesticides in agricultural environments.

A recent study looked into the effects of two pesticides on the Glanville fritillary butterfly, which often lives in such environments. The study aimed to determine how short-term exposure in the larval stage affects the growth rate of larvae and the reproductive success of adult butterflies.

The study focused on one fungicide and one herbicide, as well as a mixture of both. The fungicide in particular increased the mortality rate of larvae and slowed down development already after a short exposure time. The mixture of the two substances reduced the harmful effects of the fungicide on larval development, although it remained slower than in larvae that received a control treatment. It also negatively affected the reproductive capacity of adult butterflies. "Pesticides are widely used in agriculture, and new products are constantly being introduced to the market. In spite of environmental regulations and laboratory testing for toxicity levels, we know relatively little about how different pesticides affect non-target species in the wild," says Doctoral Researcher Ulla Riihimäki from the Faculty of Biological and Environmental Sciences.

Systematic monitoring does not extend to residues in nature

According to the researchers, different pesticide types can cause very different reactions in non-target organisms.

"It's important to more closely monitor the quantity of pesticides in nature and further investigate their potential effects on wildlife. EU legislation should also pay more attention to protecting terrestrial wildlife alongside preventing waterbody contamination," Riihimäki points out.

"The use of pesticides is strictly regulated, and the approval of new active substances always requires a risk assessment. The concentration of pesticide residues in food is monitored, and they must not exceed the reference values. To a degree, pesticide residues are monitored also in waterbodies and groundwater. However, residues found in nature are not systematically monitored, and it is difficult to estimate the quantities to which various wildlife species are exposed," says Lotta Kaila, DSc (Agriculture and Forestry), one of the authors of the article.

"Further research and closer monitoring are necessary to protect biodiversity and ensure that pesticide use does not harm organisms that it does not specifically target," says Professor Marjo Saastamoinen, University of Helsinki, and whose research group conducted the study.

Analytical method provides fresh insights into agriculture's impact on insect decline

May 7, 2025 https://phys.org/



Agriculture's impact on insect diversity is more severe than previously thought, according to a new study from the Julius-Maximilians-Universität Würzburg.

It has long been known that agriculture contributes to the decline in insect biodiversity. The loss of host plants, frequent mowing, and pesticide use all deprive many species of their habitats.

Now, a research team from the Julius-Maximilians-Universität Würzburg (JMU) has discovered—using innovative analytical methods—that the impact of agricultural land use on insect diversity is even more dramatic than previously assumed. The findings are based on an analysis of insect species from 400 families collected across a wide range of habitats in Bavaria.

The study was led by Professor Jörg Müller, Chair of Conservation Biology and Forest Ecology at JMU. The results have been published in the journal Proceedings of the Royal Society B: Biological Sciences.

Forty-four percent drop in insect species diversity on farmland

Samples were collected using insect traps in both agricultural areas and nearnatural habitats. The animals' genetic material was examined using DNA metabarcoding—a method that enables rapid identification of all species present in a given sample. For analysis, the researchers applied specially tailored statistical tools optimized for the unique properties of metabarcoding data, leading to more precise results.

One surprising outcome: a higher proportion of the actual species present in agricultural areas was detected, compared to the more diverse, near-natural habitats. In other words, sampling in farmland was more complete. After adjusting for these differences, the researchers identified a decline of up to 44% in total insect species diversity in agricultural landscapes.

Study highlights urgent need for biodiversity-sensitive land use

But that's not all: for the first time, the new methods also revealed a loss of nearly 30% in evolutionary diversity—that is, the range of evolutionary relationships among <u>species</u>. This suggests that previous studies have likely underestimated the impact of agriculture on insect diversity—due to two key reasons.

First, because the completeness of insect community sampling in farmed landscapes is much higher, making differences appear smaller than they actually are. And second, because little data has been available on phylogenetic—or evolutionary—diversity at this scale until now. The new method allows researchers to systematically capture this often-overlooked dimension of biodiversity—and it too shows significant losses.

"This study underscores the urgent need for biodiversity-sensitive land use. A continued decline in insect diversity could have far-reaching consequences for the health and stability of ecosystems," says Dr. Mareike Kortmann, lead author of the study. At the same time, the method provides a new, practice-oriented tool to more effectively monitor ecological changes in complex insect communities.

Modern farming is causing many insect species to collapse

05-08-2025 https://www.earth.com/news/



For decades, farming has chipped away at insect biodiversity, often in ways less obvious than bulldozing forests. Frequent mowing, pesticide use, and habitat loss converge to create a hostile

landscape for countless insect species.Now, a research team from the Julius-

Maximilians-Universität Würzburg (JMU) has thrown new light on just how severe the damage really is.

Insect decline in farmlands

In Bavaria, a team led by Professor Jörg Müller wanted to look past assumptions. From forests to farmland, the researchers studied 400 insect families. But they didn't just count what they saw.

They used DNA metabarcoding – a technique that scans genetic material from environmental samples. Combined with precise statistical tools, this allowed the team to detect not only the insects themselves but also the hidden patterns in their decline.

The results, published in the journal *Proceedings of the Royal Society B*, revealed a stark contrast between agricultural and near-natural habitats. What they found changes the story on insect loss – and sharpens its urgency.

Farming and insect diversity

The researchers used Malaise traps to catch insects from a range of environments. Farmland samples, surprisingly, gave the clearest data.

These landscapes, open and simplified, make it easier to catch and identify insect species. Yet even with this advantage, the results were grim.

After adjusting for how completely each sample captured the existing diversity, the researchers recorded a 44 percent decline in total insect species diversity on farmland.

This isn't a seasonal dip. It's a structural collapse, cutting across species lines. Farmland has become less of a home for insects and more of a barrier to their survival.

Unseen collapse in insects

Counting species wasn't enough. The team introduced a new method to standardize how completely each habitat's insect community had been sampled. That meant creating fair comparisons across very different environments. They filtered out sequencing errors, focused on real trends in species presence, and sharpened the lens on insect biodiversity.

The method accounted for both how many different kinds of insects were present (taxonomic diversity) and how distantly related those insects were from one another (phylogenetic diversity).

What they saw was not just fewer insects – but fewer kinds of insect lineages, going back through evolutionary time.

Farming erases insect history

When insects disappear, ecosystems don't just lose pollinators or prey. They lose deep genetic history. The JMU team found nearly a 30% reduction in evolutionary diversity in farmland insects.

This means entire branches of the insect family tree are vanishing – lineages shaped over millions of years, wiped away in a few decades. Such a loss affects ecosystem resilience, narrowing the genetic pool that might once have buffered against future environmental shifts.

"This study underscores the urgent need for biodiversity-sensitive land use. A continued decline in insect diversity could have far-reaching consequences for the health and stability of ecosystems," stated Dr. Mareike Kortmann, the study's lead author.

Biodiversity crisis in agriculture

Forests and semi-natural habitats still support varied insect life. They offer shade, cover, and food webs rich with interactions. Agricultural lands, in contrast, have become biodiversity hotspots in reverse. Instead of buzzing life, they teem with absence. Dominant insect species – those you'd expect to be hardy survivors – are dropping fastest in taxonomic diversity. Meanwhile, rare species face a deeper erasure. Their entire evolutionary lineages are disappearing. Farmland is not just hostile to insects. It's selectively erasing their past, present, and future.

Action needed for insects

This study introduced a powerful new toolkit for understanding insect decline and extinction. By combining genetic analysis, statistical rigor, and evolutionary context, researchers can now draw a clearer map of biodiversity loss and fragmentation. But the view it reveals is bleak. Knowing more means little if it doesn't drive action. The researchers call for focused conservation efforts – especially in farmlands where both common and rare insects edge closer to disappearance. They have made the warning unmistakable. The question now: will we change course before the silence spreads?

Vertical Farming to increase yields and reduce environmental impact

5/5/2025 https://www.tum.de/en/news-and-events/all-news

Vertical farming can do more than lettuce. A research team headed by TUMCREATE, a research platform in Singapore, led by the Technical University of Munich (TUM), has investigated the cultivation of six food groups in vertical farming: Crops, algae, mushrooms, insects, fish and cultivated meat. In this study, the researchers show the positive effects of vertical farming on both yield and environmental impact and underline its role in future food security.

Vertical farming team, Dr Vanesa Calvo-Baltanas, PhD candidate Jooseop Park and Prof. Senthold Asseng with one of the vertical farm units dedicated to the cultivation of soybean at TUMCREATE, Singapore. (Israel Tan Si Lie/TUM) Under certain circumstances, traditional agriculture reaches its limits for instance after extreme weather events or in areas with a high population density and thus demand. "Vertical farming is a valuable addition here: Food can be grown close to consumers, independent of the weather and using space efficiently", explains Dr. Vanesa Calvo-Baltanás, the lead researcher of the publication, working at the TUMCREATE research platform in Singapore. In this study, she and other researchers investigated the potential of vertical farming for food security. The team presents theoretical estimations backed by previously published experimental data. Based on these data, the researchers established a quantitative framework to evaluate the yield and potential environmental impact of controlled environment agriculture, such as vertical farming.

Urban food production with Proteins4Singapore

The study offers insights into the potential of various food groups in a 10-layer vertical farming system: crops, algae, mushrooms, insects, fish and cultivated meat. Compared to field crops, these foods can increase the protein yield per area nearly three hundredfold for crops and over 6,000-fold for mushrooms and insects. The study findings show that this total and protein yield increase through controlled environment agriculture systems offers benefits in environmental impact. Across all food groups, controlled environment agriculture reduces the use of land, and eliminates the need for disease measures such as pesticides and antibiotics.

The research was carried out as part of the Proteins4Singapore project. The project aims to research sustainable and functional proteins to supply urban areas such as Singapore. With its "30-by-30" strategy, the state aims to produce 30% of its nutritional requirements locally by 2030. The study results confirm that vertical farming can present a resource-efficient part of this strategy.

Circular and efficient resource use

"The potential of vertical farming is far from exhausted," emphasizes Senthold Asseng, Professor of Digital Agriculture at TUM and a Lead Principal Investigator at TUMCREATE. According to the researchers, farming these novel food groups vertically may have further optimization potential besides their yield. For example, mushrooms and insects could help close resource cycles with indoor crops. They process the waste products of crop processes and make them available again as edible and nutritious food. Mushrooms and insects are also examples of foods that require little light. Cultivating these foods is particularly interesting as they reduce energy consumption and, thus, associated costs. This overcomes the main disadvantage of vertical farming and provides valuable nutrients.

Acceptance and promotion

The biggest challenges for controlled environment agriculture food systems are the high energy demand required for cultivation and the social acceptance. Certain foods that offer advantages in vertical farming, such as algae and insects, are currently not generally accepted by many consumers. "Controlled environment agriculture can revolutionize food production. However, technological advances, interdisciplinary research to tackle energy issues, policy incentives and public engagement are needed to realize its full potential," says Dr. Calvo-Baltanás. She emphasizes that the study provides a framework for policymakers, industry, and researchers to make informed decisions for sustainable food production.

CLIMATE CHANGE

Indian agriculture's response to global warming

May 02, 2025 https://www.hindustantimes.com/



The impact of global warming is no longer a distant threat—it is a daily reality felt in the parched fields of Rajasthan, the flood-hit rice belts of Punjab, and across India's climate-

vulnerable agri-ecosystem. Agriculture, the backbone of India's rural economy and a livelihood for more than 50% of the population, is increasingly at the mercy of erratic rainfall, prolonged droughts, unseasonal hailstorms, and rising temperatures. Though India is only a marginal contributor to global emissions, it bears a disproportionate burden of climate-induced agricultural vulnerability. The Intergovernmental Panel on Climate Change (IPCC) has already flagged India's agricultural sector as highly sensitive to climate variability. Now, with 310 out of 651 agricultural districts classified as 'highly' or 'very highly' vulnerable, this crisis demands urgent and collective action.

Fortunately, the Indian government is not standing still. Through the National Action Plan on Climate Change (NAPCC) and its embedded National Mission for Sustainable Agriculture (NMSA), a strategic policy framework aims to improve ecological sustainability, climate resilience, and water-use efficiency. But are these measures enough?

Let's take a closer look. The Per Drop More Crop initiative has introduced micro-irrigation to address water stress. The Rainfed Area Development Programme promotes integrated farming systems to reduce climate risk. Soil health is being revived through schemes encouraging organic and judicious fertiliser use. The Mission for Integrated Development of Horticulture and the National Bamboo Mission further reinforce efforts for sustainable agriculture.

Perhaps most crucially, the Pradhan Mantri Fasal Bima Yojana (PMFBY) and the Weather-Based Crop Insurance Scheme are shielding farmers financially from unpredictable crop losses. While these insurance schemes are essential, adaptation—not just risk compensation—must be our long-term goal.

India's scientific establishment, through the Indian Council of Agricultural Research (ICAR), has pioneered the National Innovations in Climate Resilient Agriculture (NICRA) project. With over ₹1,060 crore allocated, NICRA focuses on climate-resilient technologies, district-level risk assessment, and building adaptive capacity among farmers.

A key achievement under NICRA is the development of 2,900 new crop varieties over the past decade, with over 2,600 designed to tolerate biotic and abiotic stresses such as drought, flood, salinity, and extreme temperatures.

These scientific breakthroughs represent India's readiness to adapt at the genetic level of agriculture.

Furthermore, 448 Climate Resilient Villages (CRVs) have been piloted across 28 states and union territories. In Rajasthan alone, 35 CRVs across 13 districts are helping farmers adopt innovative practices—like zero tillage, direct seeding of rice, and water-saving irrigation—to withstand climatic extremes.

Despite these policy and scientific advances, systemic challenges persist. Awareness and adoption of climate-resilient technologies remain low in many vulnerable regions. Insurance coverage is uneven, and schemes like PMFBY often face implementation bottlenecks. The fragmented landholding pattern, absence of robust climate data at the farm level, and limited extension services further slowdown impact.

Additionally, the climate crisis exacerbates farmer distress in states like Punjab, where drought and desertification are altering soil profiles and cropping patterns. Such shifts threaten not only food security but also the socio-economic fabric of rural India.

To complement government-led missions, India's agri-startup ecosystem is rapidly emerging as a powerful enabler of climate-resilient agriculture. With over 2,000+ agri-startups across the country, this new generation of innovators is deploying AI, IoT, remote sensing, and satellite-based analytics to provide real-time, hyperlocal advisories on weather forecasting, irrigation cycles, and soil health management.

From low-cost drip systems to climate-smart greenhouses, and from bio-based inputs to precision farming solutions, startups are democratising access to climate innovation while accelerating on-ground adoption.

The ministry of science and technology and the ministry of education have spearheaded landmark investments to establish Technology Innovation Hubs (TIHs) and Centers of Excellence (CoEs). These initiatives represent a bold, structured approach to funding cutting-edge research, deep-tech startups, entrepreneurial capacity building, human skilling, and global-industry partnerships. Programmes like the National Mission on Interdisciplinary Cyber Physical Systems (₹3,660 crore) and the CoE for AI in Agriculture, Healthcare, and Sustainable Cities (₹990 crore+) are at the heart of this transformation.

At the centre of this movement is iHub AWaDH at IIT Ropar, supported by the Department of Science and Technology (DST) under NM-ICPS. With a budgetary outlay of ₹110 crore+, iHub AWaDH has built one of India's most diverse deep-tech portfolios in agritech and water-tech, now comprising 140+ startups, collectively valued at over ₹1,300 crore.

These startups have raised ₹102 crore+ in external investments, with ₹17 crore deployed internally through government-backed funding programs like DST NM-ICPS, Startup India Seed Fund, MeitY Startup Hub, and CSR Funds from HDFC. These numbers testify to the ecosystem's growing depth and credibility. Initiatives like SAMRIDHI, SPRINT, WATER Innovation Challenge, the WISE Fund (supporting women-led climate tech ventures), and ATMAN (focusing on agri-deeptech acceleration) demonstrate how startup innovation is being seamlessly integrated into national policy frameworks.

Moreover, the establishment of 12 Cyber Physical Systems (CPS) labs across 9+ states, under the NM-ICPS mission, and programmes like SPRINT (12 editions) are giving student innovators, agri-tech entrepreneurs, and rural startups access to prototyping, experimentation, and validation infrastructure—through grants, mentorship, access to networks, and labs—thus bridging the last-mile gap in climate technology access.

Adding another layer of institutional commitment, the Ministry of Education (MoE) launched a ₹990 crore+ Centres of Excellence (CoE) programme, with a dedicated CoE on AI in agriculture awarded to IIT Ropar under the banner of Annam.ai, with a specific budget of ₹330 Cr. This CoE is tasked with revolutionising agriculture using AI-powered tools across biodiversity, nutrient intelligence, crop health, and livestock monitoring.

India's response to climate threats in agriculture must now shift from fragmented schemes to a national climate-smart agriculture mission. This includes:

• Mainstreaming climate resilience in all agri-schemes—from PM-KISAN to PMFBY.

• Boosting public-private partnerships to scale up innovations in droughtresistant crops and precision farming.

· Expanding CRVs as models of best practice in every vulnerable district.

 \cdot Strengthening agri-infrastructure for water storage, solar irrigation, and resilient supply chains.

• Investing in data and digitisation to enable real-time agro-advisory services based on hyperlocal weather forecasting.

· Upskilling extension workers to become climate educators.

• Deploying more funds, establishing CPS Labs, and expanding SPRINT programmes nationwide across other institutions and hubs.

Above all, climate literacy among farmers must become a national priority. Awareness is the first line of defence—and our farmers deserve timely, credible, and actionable information.

India cannot afford to let its agricultural sector remain the frontline victim of a crisis it didn't cause. As we march towards the vision of Viksit Bharat@2047, climate-resilient agriculture must be at the heart of this development narrative. It is time to turn every village into a climate-resilient unit, every farmer into an empowered change-maker, and every policy into a shield against climate shocks. With the 3I3P model—innovation, investment, implementation, and programme-policy process—India can rise as a global model of sustainable and climate-smart agriculture.

FAO-PAU dialogue stresses climateresilient agriculture

May 28, 2025 https://www.tribuneindia.com/

As part of the Green Climate Fund (GCF) Readiness Project, led by the Food and Agriculture Organisation (FAO) of the United Nations, a high-level delegation from FAO India visited Punjab Agricultural University (PAU), Ludhiana, to initiate stakeholder consultations for the development of the Climate Resilient Agriculture Investment Plan (CRAIP) for the state.

The interactive session took place in the committee room of the Vice-Chancellor and brought together experts from the PAU and the visiting team to deliberate on investment opportunities and strategies for climate-resilient agriculture in the region.

The FAO team was led by Vamsidhar Thimmareddygari and included Dr Nimisha Mittal, Nupur Prasad, and Ankita Borah. The discussions focused on PAU's ongoing interventions in climate-smart agriculture, future priorities and ways to foster convergence with national and international climate finance frameworks.

Welcoming the delegation, Dr Satbir Singh Gosal, Vice-Chancellor of the PAU, emphasised the need for long-term collaboration between global agencies and state-level institutions. "Punjab is at the frontline of India's agricultural transformation. While we have made strides in productivity, our next frontier is resilience to climate variability, depleting water resources and sustainability challenges. We look forward to contributing robustly to the CRAIP with our science-backed, field-tested solutions," he remarked.

Speaking on behalf of FAO India, Vamsidhar Thimmareddygari outlined the broader vision of the GCF Readiness Project. "Our mission is to co-develop a practical and inclusive investment roadmap for climate-resilient agriculture. Engagements such as these are critical in ensuring that these plans reflect local realities and scientific rigour," he said.

He appreciated PAU's leadership in agricultural innovation and highlighted the need to integrate such expertise into climate finance mechanisms. The FAO team underscored the need for a granular analysis of agro-climatic conditions of the state, determining the adaptive capacity.

Dr AS Dhatt, Director of Research at the PAU, provided an overview of the university's research portfolio, including ongoing efforts in crop diversification, conservation of agriculture, climate-resilient technologies, trait-specific varieties and sustainable resource management. "We are aligning our research focus with climate-smart priorities and would be keen to explore investment models that support scalable solutions for state farmers," he said.

Dr Pavneet Kaur Kingra, head, Department of Climate Change and Agricultural Meteorology, presented the university's recent work in agromet advisory systems, modelling climate impact on crops and deployment of early warning tools. "There is a significant scope for technology-led adaptation strategies. Collaborating under CRAIP can bring in both financial and institutional support to mainstream these innovations," she observed. Dr Hari Ram, head of Agronomy, detailed the crop residue management technologies for climate resilience such as the use of mulch and specific crop rotations.

The GCF Readiness Project, titled 'Agriculture Sector Readiness for Enhanced Climate Finance in India', will conclude by January 2026 and is being implemented in close collaboration with the Ministry of Environment, Forest and Climate Change and the Ministry of Agriculture and Farmers Welfare. Punjab is one of the four focus states, alongside Madhya Pradesh, Odisha and Chhattisgarh.

NUS studying climate change impacts on Asean's agriculture sector to enhance food security: Grace Fu

May 28, 2025 https://www.straitstimes.com/



SINGAPORE - Researchers from Singapore are working with Asean countries to study the impact of climate change on the region's agriculture sector, said Minister for Sustainability and the Environment Grace Fu on May 28.

The study by the NUS Tropical Marine Science Institute will help countries better manage climate risks, so that the region can plan its responses to climate change impacts on crop production at national and local levels, she added. The study, which was started in 2024, is expected to be completed in the second quarter of 2026, and will help to boost the region's food security, she said. Ms Fu was speaking at the Singapore Dialogue on Sustainable World Resources, organised by the Singapore Institute of International Affairs.

The event at One Farrer Hotel gathered policymakers, industry experts and thought leaders to discuss how Asean's agricultural commodities industries can help to tackle emerging sustainability and economic challenges.

In response to queries from The Straits Times, the Ministry of Sustainability and the Environment said Singapore had proposed conducting the study on climate change impacts on South-east Asia's agriculture sector at the 45th Asean Ministers' Meeting on Agriculture and Forestry held in Malaysia in October 2023.

The objective of the study is for Singapore to partner the region in strengthening the resilience of its food production systems, the ministry added The study involves applying climate projections by the Centre for Climate Research Singapore to assess the projected physical impacts of climate change on five agriculture crops – maize, rice, cassava, sugar cane and soya bean. The findings will provide Asean countries, which have been providing data to the researchers, with an analysis of the future impacts of climate change in the region and their potential impact on agriculture production such as yield, productivity and cultivation area.

The study will also propose mitigating measures that Asean nations can take to address the impact of climate change on the five crops.

In her keynote address, Ms Fu also said that the rules-based multilateral system is under pressure, with protectionism rising and trade barriers and supply chain disruptions becoming more frequent. Asean countries can collaborate more to advance the bloc's interest.

"As climate change intensifies amidst these uncertain times, the need for greater Asean cooperation to address the challenges faced by our region is more salient than ever," she said.

The production of agricultural commodities in Asean, which is a large economic driver for the region, is one such area of cooperation.

Asean countries are among the world's largest producers of agricultural commodities such as palm oil and rubber, said Ms Fu, who is also Minister-incharge of Trade Relations.

The agriculture, forestry and fishing industries collectively contribute to about 10 per cent of Asean's gross domestic product and remain a primary source of jobs for many people across the region, she added.

Singapore is working closely with regional partners to develop climate-resilient crops and sustainable farming practices, Ms Fu said.

For example, Temasek Life Sciences Laboratory has developed climateresilient rice varieties that are more resistant to droughts and floods.

Extreme weather events such as floods, storms and heatwaves have damaged crops in the region. El Nino events – which bring drought and warmer

temperatures to South-east Asia – have led to drought and increased wildfire risk in countries like Indonesia.

In 2023, rice output in Indonesia was reduced due to severe drought, leading to the rising prices, requiring increased imports of rice and threatening food security.

Meanwhile, more than 250,000ha of crops, including rice, vegetables and fruit trees, were destroyed across typhoon-hit northern Vietnam when Typhoon Yagi made landfall along Vietnam's east coast in September 2024.

The agricultural sector is affected by climate change impacts, but it is also a contributor of planet-warming emissions.

Citing a UN study, Ms Fu said the various steps of farming, transportation, consumption and disposal of agriculture emit a third of all human-caused greenhouse gas emissions.

Sustainable agribusiness and forestry practices are pivotal in climate action and conserving resources, Ms Fu said.

For example, the risk of deforestation and transboundary haze can be reduced by avoiding unsustainable farming practices, such as burning stubble and slashand-burn techniques, she added. Such farming practices also contribute to the release of greenhouse gas emissions driving climate change.

Transboundary haze has been a recurring issue in the region.

Ms Fu said countries in the region have taken steps to curb emissions from this sector.

Thailand, Laos and Myanmar, for example, have a joint Clear Sky Strategy 2024-2030, which was launched in October 2024 to address cross-border haze and air pollution affecting South-east Asia.

She noted that Indonesia has also made efforts to reduce deforestation through legislation and continued monitoring, while Malaysia has the Sustainable Palm Oil Certification Scheme to raise sustainability standards in its palm oil industry. There are also business advantages when it comes to practising sustainable agriculture, Ms Fu said, citing various compliance measures imposed by countries to ensure that agricultural commodities are grown in a sustainable way.

For example, since 2016, the Singapore Government has been buying paper that carry the Singapore Green Label, which assures that suppliers practise sustainable forestry management.

The EU has also announced its plans to introduce regulations on deforestationfree products, requiring firms that want to export to the EU to comply with them, she said. The regulations help ensure that the products its citizens consume do not contribute to deforestation or forest degradation worldwide.

Ms Fu added that sourcing from suppliers that practise sustainable agriculture reduces the risk of supply disruptions caused by environmental events or regulatory changes. It also helps companies reduce reputational risk by ensuring that operations are environmentally responsible, she added.

"Singapore remains committed to supporting sustainable agribusinesses despite not having a significant traditional agriculture industry," she said, adding that the Republic is a finance hub for many agribusinesses and commodity trades in the region and that it is growing its local agri-tech sector.

"Climate change waits for no one. We need to maintain the momentum of climate action in spite of the global headwinds and keep a steady course in achieving the green transition."

Genetically enhanced crops could help fight climate change

05-08-2025 https://www.earth.com/



Crops with genetically enhanced root systems could potentially help remove carbon dioxide from the atmosphere. The idea seems simple: grow crops with bigger roots that can store more carbon dioxide under the soil. But can this

actually help with the fight against climate change? A new study says yes – but with some caveats. In a new report from researchers at the University of California San Diego, scientists explain how genetically enhanced crops with larger root systems could become a practical way to remove large amounts of carbon dioxide from the atmosphere.

The researchers, based at Scripps Institution of Oceanography and the School of Global Policy and Strategy, also explored how this method compares to other carbon removal strategies.

Why we need rapid carbon removal

According to estimates from the Intergovernmental Panel on Climate Change (IPCC), the world must remove between five and 16 billion tons of carbon dioxide every year to have a shot at keeping the climate stable. That's in addition to reducing how much we emit in the first place.

If we don't act fast, the world could see widespread disasters, including severe storms, failing crops, worsening disease outbreaks and flooding due to rising sea levels.

So far, however, there hasn't been much research on how fast carbon removal methods could realistically scale up in the real world and help to bring the climate back into balance.

A closer look at carbon-enhanced crops

That's where carbon-enhanced crops come in. These genetically modified plants have larger root systems designed to store more carbon in the soil.

The researchers ran a detailed analysis of how much carbon these crops could help remove if widely adopted. They found that, within a period of 13 years of rollout, these crops could remove between 0.9 and 1.2 gigatons of CO2 annually.

That's about seven times the total amount of carbon offsets that are currently supplied to the global market.

"There is a consensus in the scientific community that we will have to scale CDR [carbon dioxide removal] substantially to reach net zero – on top of drastically reducing our greenhouse gas emissions," said lead author Daniela Faggiani-Dias.

"Yet, research on how CDR can realistically scale – considering not only technical limits, but also scale-up speed and feasible pathways – is very thin. And this is what is new about our study."

"We provide a detailed analysis of the CDR scaling challenge and propose a framework to estimate how quickly and to what extent emerging, highly uncertain technologies might scale.

According to Faggiani-Dias, even though the analysis focuses on carbonenhanced crops, the framework is generalizable across CDR approaches and helps to surface key uncertainties in scale-up potential.

Learning from past technological advances

The team looked to the past to understand how fast new technologies typically spread. They studied how other agricultural advances – like hybrids, pesticides, fertilizers, and crop rotation – caught on over time.

One of the most relevant comparisons was with genetic modification. Like carbon-enhanced crops, genetically modified crops promised benefits to farmers and the agricultural supply chain. But the rollout wasn't smooth. In countries that allowed genetically modified crops, it took about 11 years to go from early adoption to widespread use. Even then, only 13% of the world's farmland currently grows these types of crops. Regulations and public concerns have slowed wider acceptance.

The researchers say carbon-enhanced crops could face the same hurdles unless there are strong incentives, such as carbon credits, for countries that use them.

Why crops may be the fastest fix

Compared to other carbon removal strategies – such as storing carbon in rock or filtering it from air or oceans – enhanced crops have a head start. They can be adopted using existing farm infrastructure and technologies.

Farmers are already familiar with trying new crop techniques, and there's a built-in industry ready to support new seed technologies. Plus, the soil is often depleted of carbon, making it a good place to store more.

Other strategies would potentially require the establishment of entirely new industries before they could be successfully implemented at scale. This could take years to test and verify, considering that some of these strategies are still in their infancy.

That's why crops with enhanced roots are seen as one of the fastest and most realistic tools for carbon removal – although they would still not be effective enough on their own.

Crops are only part of the solution

Faggiani-Dias emphasized that this approach is just one piece of the climate solution puzzle. She noted that the benefit of carbon-enhanced crops could be significant, but not enough on its own. According to Faggiani-Dias, these efforts should be seen as just one component of a broader strategy to decarbonize the global economy.

ORGANIC FARMING

Ex-ISRO Scientist Turns Farmer, Earns Rs 15 Lakh/Year with Organic Dates

May 1, 2025 https://thebetterindia.com/



Born into an agricultural family in rural Karnataka, Divakar Channappa's father always wanted him to excel in life but away from his farming roots.

Hailing from a small village Begur, Divakar

recalls, "Our village lost its existence with an unprecedented expansion of Bangalore city. With this, farming became unprofitable for us. My father was forced to buy land around 100 km away from the city to continue farming. He never let us visit the land as he wanted us to move to Bangalore for better education."

Divakar, who went on to become a project scientist with ISRO, remained completely disconnected from his farming roots until 2009 when his father suffered a stroke that left him paralysed. That is when Diwakar chose to move to his village.

"In the first year I spent with my father, I understood that I did not wish to lead the city life. During the same time, I happened to read a book called 'One Straw Revolution' by a Japanese farmer Masanobu Fukuoka. On the fourth day of reading the book, I gathered the courage to go to the farm that my father kept hidden from us," says the 46-year-old. Soon after, Divakar turned to farming and never looked back. His journey led him to transition from cultivating local crops to growing dates, a desert crop, in Karnataka! He currently earns Rs 6 lakh per acre.

Finding his life's calling

After completing his higher education in social work, Divakar worked with several non-profit organisations and was a visiting faculty at Tumkuru University. In 2008, he got an opportunity to work as a project scientist for a social development project with ISRO (Indian Space Research Organisation) in Bengaluru.

After his father's stroke, he quit his job and city life to move to his village and become a farmer. "More than anyone, my in-laws were very upset about my decision. They had got their daughter married to a person who was a professor and worked with ISRO. They were disappointed with me. But I had understood my life's calling," he says.

Initially, Divakar cultivated crops like ragi (millets), tur dal (pigeon pea), and corns like local farmers. For this, he invested about Rs 22,000 and earned Rs 33,000 — a profit of Rs 11,000 — extremely less earnings compared to the previous works.

"This is when my mother reminded me why my father did not desire a farming profession for me. She reminded me of the responsibilities of my newborn daughter and said I had established an identity for myself in the city but I seemed to lose it all because of farming. This bothered me for a long time," he says.

In a bid to stand out in the farming crowd, Divakar wanted to grow a unique crop. So, he turned to cultivating dates — a crop grown in the hot desert of countries like Egypt, Saudi Arabia, and Oman.

Cultivating a desert crop in Karnataka

Before taking up date cultivation, Divakar remembered meeting a date farmer at the Krishi Mela organised in Bengaluru. "This farmer from Tamil Nadu was distributing leaflets on how to grow dates in India. Back then, I had mocked him asking how a desert fruit could grow in this part of the country?" It took Divakar six months to trace the farmer. He went to Tamil Nadu to learn the nitty-gritty of date farming. "This farmer had been successfully growing dates there. As the climatic conditions of our villages were somewhat similar, I decided to cultivate dates too," he says.

"It is a misconception that one could grow dates only in desert conditions. All that a date tree needs is a lot of moisture and ample sunlight. One requires 40-45 degrees ideal temperature but our region gets a maximum of 38 degrees temperature in summer," he adds.

Anyway, Divakar went ahead and bought 150 saplings for Rs 3,000 each. It cost him a hefty initial investment of Rs 4.5 lakh. "Given that the saplings were expensive and I had to grow them without desert conditions invited a lot of questions. People laughed at me and asked if I intended to create a desert on my farm," recalls Divakar.

To grow dates, the farmer dug 2×2 feet pits in his farm and added river sand. He nourished it with neem and castor cake, vermicompost, and panchgavya before planting the saplings.

hile other farmers kept on with their traditional crops, Divakar did not get any yield. "Nobody believed me whenever I told them these were date trees. I was also called a fool and asked several questions. I had no answers to them," he says.

It was only after four and a half years that Divakar saw the first flowering; his joy knew no bounds. Initially, he was able to extract 800 kg of dates from his 2.5-acre farm. Today, he gets up to five tonnes of produce. Priced at Rs 375 per kg, he is able to generate Rs 6 lakh income in an acre of date farm.

Along with getting a bountiful harvest, cultivating dates earned him immense recognition.

"After I showed people that we could grow dates in a region like Karnataka, I was reached out by many journalists. When one of my interviews was aired on television, my father-in-law visited my farm. To my knowledge, I am the first date farmer in the state and the first farmer to cultivate dates organically in South India," says Divakar.

Although a matter of great pride for Divakar, the journey to switch to farming was never an easy choice. "Switching from a job at ISRO, teaching at a university, and living in a city like Bangalore to suddenly becoming a farmer in a village didn't make sense financially," he says.

Divakar had understood that farming could fulfil all his needs but not all his wants as there's no end to it. "For about four yields, I was unable to balance my investment and earnings. It is only in the last three years that I can sustain my family and my farm with 2.5 acres of date cultivation," he says.

Meanwhile, pointing toward today's generation, Divakar says, "People these days find it exciting to quit current jobs and take up farming. Many people come to me and enquire about investment and profit. Farming comes with its own set of challenges and without any guaranteed success irrespective of best practices one adopts. Farming is not a real-estate business that you will get double the investment in a brief period."

"For me, inner peace was more important than monetary terms. I am grateful to lead a slow and simple life as I had imagined after my father's paralysis," he adds.

The State That Did It First: How Sikkim Went 100% Organic & Changed Indian Farming

May 21, 2025 https://thebetterindia.com/



In most parts of India, the legacy of the Green Revolution still lingers — characterised by heavy use of chemical fertilisers and pesticides. But tucked away in the eastern Himalayas, one state

quietly took a different route.

Welcome to Sikkim. Known for its snow-capped mountains and peaceful monasteries, this small northeastern state also holds a powerful environmental milestone: It is India's first fully organic state.

There were no viral campaigns or sweeping national mandates. Just a bold vision, clear policy, and the will to see it through. What began in 2003 as a state's commitment slowly transformed into a grassroots revolution that reshaped farming, protected the environment, and inspired the world.

The seed of a bold idea

In 2003, then Chief Minister Pawan Kumar Chamling made a landmark announcement: Sikkim would go 100% organic.

This wasn't a reaction to a crisis. It was a preemptive move against environmental degradation, declining soil health, and the long-term harms of chemical-based agriculture. By choosing to ban the import and use of chemical fertilisers and pesticides, Sikkim declared its intent to farm with nature, not against it.

How the Sikkim Organic Mission changed the game

The true transformation began in 2010, when the state launched the Sikkim Organic Mission. This wasn't just a farming policy; it was a comprehensive shift in how food was grown, certified, and marketed.

More than 750 agriculture officers were trained.

Village-level training and demonstration farms helped spread awareness.

Compost pits and vermicompost units were created at scale.

Certification systems ensured every farm plot was documented and monitored. By 2015, all of Sikkim's 75,000 hectares of farmland had been converted to certified organic. Over 66,000 farming families were now part of the organic ecosystem.

Overcoming scepticism and real challenges

The transition wasn't smooth. In the early years, many farmers saw a drop in crop yields. Some were unsure whether they could access reliable markets for organic produce.

But the state stood by them. Farmers received subsidies, organic input kits, and marketing support. Institutions like the Agriculture Technology Management Agency (ATMA) helped bridge knowledge gaps.

Even infrastructure saw an upgrade. Roads, storage facilities, and collection centres were strengthened to ensure organic produce could reach markets effectively.

The result? Farmers who were once hesitant became champions of sustainable farming.

What changed on the ground?

The impact of the transition was felt far beyond the fields:

Environmental gains: Healthier soil, better water retention, and a noticeable return of birds, insects, and pollinators. In fact, pollinator-dependent crops like cardamom have seen yield increases of over 23%.

Economic uplift: Organic produce fetched better prices, increasing farm incomes.

Tourism boost: Between 2014 and 2017, tourist arrivals increased by over 50%. Sikkim became a magnet for eco-conscious travellers drawn to its clean air, healthy food, and organic farms.

Social transformation: Women in rural communities found new livelihood opportunities through organic farming and agro-tourism. This shift enhanced their roles in decision-making and brought added dignity and income into households.

Educating the next generation

To ensure that organic farming isn't just a policy but a way of life, Sikkim has also integrated sustainability into its education system. Organic farming concepts are part of the school curriculum, and training centres have been set up to equip youth with skills in eco-agriculture.

These efforts not only secure the organic movement's future but also open up employment avenues for the next generation.

Recognition that echoed worldwide

In 2018, Sikkim was awarded the prestigious Future Policy Gold Award by the UN Food and Agriculture Organization (FAO), beating 51 other policies across the globe.

What set Sikkim apart was not just its organic farming achievement. The FAO praised its holistic model — covering education, biodiversity, ecosystem restoration, and institutional support.

Sikkim wasn't just growing food without chemicals. It was nurturing an entire ecosystem around sustainable living.

A model for the rest of India (and beyond)

Inspired by Sikkim, several other states—including Kerala and Andhra Pradesh—have since launched their own natural or organic farming missions. International delegations, too, have visited Sikkim to learn from its journey. While challenges remain, such as competition from non-organic produce and the need for wider market access, Sikkim's example proves that it's possible.

With proactive leadership, community engagement, and long-term planning, a sustainable farming future is not just a dream. It is not just a success story. It is a reminder that sustainable futures can be built— one policy, one farm, and one community at a time.

Organic Farming Yields Handsome Profits For Jabalpur Farmers

May 01, 2025



https://www.freepressjournal.in/

Farmers of the district are taking an interest in organic farming and getting certification of their farm from the government agency.

A farmer Vinay Singh got an organic certification for his entire 52-acre farm land

from the Madhya Pradesh State Organic Certification Agency yesterday.

He takes the lead to other farmers in the district in carrying out organic farming.

Under the government organic farming certification scheme, he got registered his farm in 2022, and after passage of three years, he got organic certification for the entire farm land of producing crops through organic mode.

So far 12 farmers from the district have gone for organic certification while the process to deposit fees for registration of five more farmers is finished.

Agriculture Department deputy director Dr S K Nigam said the benefit of securing organic certification is that the farmers can display the logo it on their product which will fetch them a better price.

Nigam cited example of Vinay Singh as this farmer is expected to earn an income of Rs 20-21 lakh from chilli crop in 9 months and expected to get a profit of Rs 5 lakh after deducting expenses.

Vinay is a master trainer under the Agricultural Technology Management Agency (ATMA Scheme) for sharing his experience with other farmers in the district and motivating them to adopt organic farming methods.

ICAR IN PRINT

Union Agriculture Minister Shri Shivraj Singh Chouhan Reviews Progress at ICAR-CCRI, Nagpur

25 May 2025 https://icar.org.in/



Shri Shivraj Singh Chouhan, Union Minister for Agriculture & Farmers' Welfare and Rural Development, visited the ICAR-Central Citrus Research Institute (ICAR-CCRI), Nagpur, today and chaired a comprehensive review meeting to assess the institute's

progress and future plans.

Addressing the gathering, Shri Chouhan lauded ICAR-CCRI for its significant contributions to citrus research and development in India. He emphasized the need to enhance the institute's outreach and foster deeper collaborations with citrus growers across the country.

Underscoring the critical role of citriculture in boosting farmers' income, the Minister urged technology-driven, farmer-centric interventions to tackle the key challenges in citrus cultivation. He asked the scientists to focus on increasing productivity, developing export-quality varieties, expanding the production of clean planting material, and promoting value-added processing of citrus waste and juices.

Shri Chouhan also urged for active involvement of ICAR-CCRI scientists in the upcoming Pre-Kharif Campaign under the Viksit Krishi Sankalp Abhiyan, scheduled from 29 May to 12 June 2025. He highlighted that the campaign aims to bridge the gap between scientific research and grassroots farming, ensuring that innovations effectively reach the farmers to transform Indian agriculture.

Dr. Dilip Ghosh, Director, ICAR-CCRI, presented a detailed report on ICAR-CCRI's recent achievements, ongoing research activities, and its strategic roadmap aligned with the national development vision Viksit Bharat @ 2047. Key highlights included the development of improved citrus varieties, sustainable production technologies, value addition initiatives, and farmeroriented capacity-building programs.

Dr. V. B. Patel, Assistant Director General (Horticultural Sciences), ICAR, along with the institute's scientists and staff, were also present.

In recognition of excellence in citrus cultivation, five progressive citrus farmers from Maharashtra, Madhya Pradesh, and Chhattisgarh were felicitated by the Minister for their exemplary adoption of ICAR-CCRI technologies and outstanding achievements in the field.

The visit concluded with an interactive session where the Minister engaged with scientists on emerging innovation areas and the future direction of the citrus sector in alignment with the Viksit Bharat @ 2047 goals. He also toured the institute's citrus nursery and appreciated the ongoing efforts in producing high-quality, disease-free planting material.

Bank of India signs MoU with ICAR-CIFT, Kochi

28-05-25 https://www.psuconnect.in/



New Delhi: Bank of India has signed an MoU with ICAR-Central-Institute-of-Fisheries-Technology is a technology Institute in India, under Indian Council of Agriculture Research, which caters to the entire spectrum of fisheries from harvest to post-harvest

operations and also provides technologies and services to the fishing and fish processing industries in the areas of craft and gear, processing, including product development, packaging, waste utilization, nutrition, microbiology and biotechnology, engineering, quality assurance, and extension.} on 26.05.2025 in the presence of Mr. Ashok Kumar Pathak, Chief General Manager, Mr. Nakula Behera, General Manager of Bank of India and Dr. George Ninan, Director ICAR-CIFT, Kochi.

This collaboration between the two entities will help in achieving crucial financial support and sustainable development goals in Aquaculture sector.

ICAR-KVK to launch pre-Kharif season prog for 16K farmers in Garo Hills

May 27, 2025

https://highlandpost.com/



The Indian Council of Agricultural Research (ICAR) is set to launch a nationwide outreach campaign titled 'Viksit Krishi Sankalp Abhiyan' (VKSA), scheduled to take place during the pre-Kharif season from May 29 to June 12, 2025.

This campaign is designed to bridge the gap between agricultural research institutions and the farming community by bringing scientific knowledge and technologies directly to farmers' fields.

As part of this national initiative, ICAR-KVK West Garo Hills will organise a VKSA programme in collaboration with the District Agriculture Office, District Horticulture Office, and District Animal Husbandry Department and Central Agricultural University (CAU). The campaign aims to reach approximately 16,200 farmers across around 108 villages in the Garo Hills.

Every day three dedicated teams, each consisting of one Subject Matter Specialist (SMS), one scientist from an ICAR institute, one scientist from CAU, one official from the District Agriculture Office, one from District Horticulture Office and one from Animal Husbandry, will visit three villages each. Collectively, these teams will cover nine villages per day, engaging with nearly 1,350 farmers daily.

The primary objectives of the campaign include raising awareness about modern agricultural technologies and new seed varieties; encouraging the use of soil health cards for informed decisions on crop and input management; promoting good agricultural practices (GAPs) and the efficient use of fertilisers; disseminating information on government schemes and agricultural policies; and collecting farmers' feedback, including local innovations and traditional practices, to inform future research directions.

IISR IN PRINT

Symposium on recent trends in Omics at ICAR-IISR headquarters in Kozhikode

May 07, 2025 https://www.thehindu.com/

ICAR–Indian Institute of Spices Research (IISR) is hosting a National Symposium on 'Recent Trends in Omics in Plant Biology' from May 20 to 22 at its headquarters in Kozhikode.

The event is being organised by the institute's Bioinfirmatics and Integrative Genomics Facility, with financial assistance from the Department of Biotechnology, Ministry of Science and Technology

Parliamentary delegation visits spices research station in Kodagu

May 24, 2025

https://www.thehindu.com/



The Parliamentary Standing Committee on Agriculture, Animal Husbandry, and Food Processing, headed by Charanjit Singh Channi, a member of the Lok Sabha, visited the ICAR-

Indian Institute of Spices Research (IISR), Regional Station, at Appangala in Kodagu on Friday.

The delegation comprised 12 members of the Lok Sabha, four members of the Rajya Sabha, and officials from the Lok Sabha Secretariat. During the visit, the institute organised an exhibition highlighting the latest varieties and

technologies in spice cultivation developed by the ICAR-IISR. Mr. Channi, the chairman of the committee, inauguratd the exhibition.

A meeting was convened, where R. Dinesh, Director of ICAR-IISR, Kozhikode, presented a comprehensive overview of the activities and achievements of the institute.

The committee had discussions with the scientists and officials from the ICAR-IISR. Officials present at the event included Sudhakar Pandey, ADG (FVS&MP), ICAR, New Delhi, S.J. Ankegowda, principal scientist and head, ICAR-IISR, Regional Station, Appangala, and senior officials and staff from the ICAR-IISR and its regional station.

The event also featured an insightful interaction with Prema Ganesh, a progressive farmer from Maragodu, who shared her experiences regarding spice farming in Kodagu.

GENERAL

Scientists find 'mutant' gene behind foul-smelling species of wild ginger

8 May 2025



https://www.theguardian.com/

The foul smell of some species of asarum, or wild ginger, is caused by a chemical called dimethyl disulfide (DMDS). Photograph: Botany vision/Alamy With a smell of rotting flesh the flowers of certain species of wild ginger are unlikely

to be used in a wedding bouquet – although they are irresistible to carrionloving flies. Now researchers say they have worked out how the sulphurous scent is produced.

Scientists say the odour is down to small changes in an enzyme that prevents bad breath in humans.

"Some organisms have an extraordinary trait which is seemingly difficult to evolve, but such characteristics can evolve in a simpler manner than one would imagine," said Dr Yudai Okuyama, the first author of the research from the National Museum of Nature and Science in Japan.

Writing in the journal Science, Okuyama and colleagues reported how they first investigated the origins of a key chemical known to be behind the sulfurous smell produced by some species of Asarum, or wild ginger.

This chemical, called dimethyl disulfide (DMDS), is thought to be produced from a substance called methanethiol. Methanethiol is known to cause bad breath in humans and is formed in plants and animals as the amino acid methionine is broken down.

The researchers confirmed this by feeding a form of methionine labelled with carbon-13 atoms to a species of wild ginger, A. fudsinoi, and found the DMDS released also contained carbon-13. The team then looked at an array of different species of Asarum to identify genes whose activity varied with the amount of DMDS produced.

The work led to the identification of a gene that gives rise to a selenium-binding protein. Such proteins are found across the plant and animal kingdom, and typically convert methanethiol into less harmful substances. In humans this mechanism prevents halitosis. The researchers found the "normal" version of this gene was present in all of the plants and animals they considered, including the various species of Asarum. However, they found the latter also had a mutant form of the gene that produces a protein that turns methanethiol into DMDS. This mutant gene is more active in foul-smelling species.

The team said the change in function appeared to be down to a small number of mutations in the gene, with only two or three changes in the amino acids of the protein needed for the shift to occur.

Further work showed Eurya and Symplocarpus plants also have seleniumbinding proteins that can turn methanethiol into DMDS, explaining why some species smell bad, with the team noting they appeared to have evolved independently.

However, not all foul-smelling plants produce their scent in the same way: the team found species of Amorphophallus – a group that includes a plant known as the "corpse flower" – did not have a selenium-binding protein that converts methanethiol into DMDS.

"We think some similar enzyme that belong[s] to a different protein family might be responsible for the step," said Okuyama.

AI Meets Agriculture: Odisha Farmers to Benefit from Smart Farming Solutions!

May 6, 2025 h

https://pragativadi.com/



The Odisha Government is leveraging artificial intelligence (AI) to provide farmers with timely and accurate agricultural data.

The initiative aims to reduce crop losses and boost production, ensuring farmers receive

essential information at their fingertips.

During a presentation at the Lok Seva Bhavan Conference Hall, representatives from AMNEX, a company specialising in AI-driven agricultural solutions, showcased their expertise in analysing geographical data to enhance farming practices. The session was attended by Deputy Chief Minister and Minister of Agriculture and Farmers' Empowerment, Kanak Vardhan Singh Deo, along with key officials from the Agriculture Department.

Deputy Chief Minister Singh Deo emphasised the importance of technology in strengthening the agricultural sector, stating, "Farmers are the backbone of our country, and we are committed to providing them with timely agricultural information to minimise losses and maximise productivity."

Odisha has emerged as a leader in digital agriculture, with Principal Secretary Dr. Arabinda Kumar Padhee highlighting the state's efforts to transform farmers into prosperous agricultural entrepreneurs through AI-driven solutions. AMNEX has previously collaborated with the Agriculture Department on projects such as AgriStake-Digital Crop Survey and Farmers Registry. Additionally, the company is providing technical assistance for 33 crops in partnership with the Union Ministry of Agriculture.

The meeting was attended by Director of Agriculture Shri Shubham Saxena, Director of Horticulture Nikhil Pawan Kalyan, and AMNEX representatives Parichay Kumar Das, Nitish Thakkar, Jayendra Puwar, and Anand Parija.

Belagavi start-up launches AI-based agriculture app SBOF Agrosmart

May 06, 2025 https://www.thehindu.com/



Belagavi-based SBOF Agrosmart Private Limited has launched SBOF Agrosmart, which is being billed a India's first AI-based all-in-one agriculture app. It will provide allround support to farmers and could lead to a

revolution in agriculture, according to start-up founders Savio Pereira and Swati Pereira.

Farmers across India are facing increasing uncertainty — climate change, market price fluctuations, pest & disease outbreaks, lack of timely information, low-quality inputs, and difficulty accessing government schemes and modern tools.

SBOF Agrosmart attempts to bridge this gap through a smart, digital-first approach that delivers real-time, region-specific, and data-driven agricultural solutions. Backed by a decade of experience in fertiliser manufacturing and

agri-inputs, the company has come up with a futuristic platform powered by Artificial Intelligence, IoT, and expert-driven agriculture advisory services.

The app has an in-built chat bot for round-the-clock support in multiple languages.

PWD Minister Satish Jarkiholi launched the app in Belagavi in the presence of MLA Asif (Raju) Sait, BUDA Chairman Laxmanrao Chingale, DCC Bank President Appasaheb Kulgode, former minister Veerakumar Patil, former MLAs Sham Bheem Ghatge, Arvind Patil, and Kakasaheb Patil.

Artificial Intelligence takes root in Azerbaijani farming strategy

7 May 2025 https://www.azernews.az/



As global agricultural systems face mounting pressure from climate change, population growth, and resource scarcity, the integration of artificial intelligence (AI) into farming practices is no longer a futuristic concept - it is an urgent

necessity. Countries around the world are embracing AI-driven solutions to improve food security, optimize production, and increase resilience across the agricultural value chain. In this context, Azerbaijan is beginning to prioritize the development and deployment of AI in agriculture as part of its broader strategy for economic modernization and technological advancement.

Artificial intelligence offers tools that can transform traditional agriculture into a high-tech, data-driven industry. From predictive analytics and precision farming to automated disease detection and intelligent irrigation, AI has the potential to address long-standing inefficiencies and improve sustainability outcomes.

The Azerbaijani Ministry of Agriculture has announced that AI integration will be one of its primary focus areas in 2025. The ministry's current efforts highlight a strategic goal: to create meaningful collaboration between students studying AI and the country's growing network of agro-industrial enterprises.

After years of fragmented research and development, it has become clear that a gap exists between academic knowledge and commercial application. In response, the ministry aims to foster synergy between university researchers and large agroparks, with the goal of producing scalable, locally relevant AI applications that can be implemented directly in the field.

This push reflects a growing awareness that AI is not just a technology - it is a strategic tool for national competitiveness.

AI, by design, imitates human reasoning and learns from data to perform complex tasks - making it uniquely suited to agriculture's unpredictability. In Azerbaijan, the use of AI in key areas such as plant protection, yield forecasting, and resource management can yield measurable gains.

For example:

Computer vision systems can identify plant diseases at early stages.
Machine learning models can optimize fertilizer and water use.
AI-based spraying systems can distinguish between crops and weeds, reducing herbicide use and improving environmental outcomes.

These innovations are not just experimental - they are already proving effective in international markets. Applying them domestically could significantly boost Azerbaijan's agricultural productivity while supporting sustainability goals.

Despite the clear potential, the widespread implementation of AI in Azerbaijan's agro-industrial sector is constrained by several factors:

- Incomplete data infrastructure: AI relies on high-quality, structured data. At present, Azerbaijan lacks comprehensive agricultural datasets, particularly for modern farming methods like vertical farming and precision agriculture.

- Skills mismatch: There is insufficient coordination between AI education programs and industry needs, creating a talent gap.

- Institutional resistance: Some stakeholders are hesitant to adopt new systems that may disrupt established processes.

- Uncertain ROI: Many agribusinesses are reluctant to invest in AI due to the difficulty of quantifying its short-term financial benefits.

Overcoming these challenges will require a coordinated public-private effort, along with targeted investment in infrastructure, education, and regulatory frameworks.

AI as a business asset in agriculture

As AI emerges as the third major technological wave, following business process standardization and automation, it is increasingly viewed as a core business asset, not a peripheral tool.

In agriculture, AI can enhance customer interaction through:

- Chatbots that provide real-time support to farmers and customers via natural language processing.

- Centralized cloud platforms that store and analyze agricultural data, identifying patterns and anomalies.

- Data visualization tools that help farm managers make informed decisions based on real-time insights.

However, all of this depends on foundational technologies such asbroadband access, cloud computing, big data capabilities, and IoT (Internet of Things) infrastructure - areas where Azerbaijan must continue to invest.

Although sectors like healthcare, finance, and transport are currently leading in AI adoption, agriculture - especially agro-processing - is quickly emerging as a high-potential frontier. Experts argue that expanding AI's role in agriculture could yield outsized benefits in food production, economic diversification, and environmental management.

For Azerbaijan, this means rethinking agricultural development not just in terms of yields and exports, but also in terms of data readiness, innovation capacity, and cross-sectoral integration. The convergence of AI with other digital technologies - such as cloud services, broadband internet, and the Internet of Things - can transform conventional farming into an intelligent, interconnected ecosystem.

If implemented effectively, AI can help Azerbaijan not only modernize its agricultural sector but also become a regional leader in smart farming technologies.

MALAYALAM NEWS

5 ഏക്കറിലേക്ക് ഒരെണ്ണം മതി; വിളവ് കുതിച്ചുയരും; തമിഴ്നാട്ടിലും ഹിറ്റായി മലയാളിയുടെ സ്റ്റാർട്ടപ്

MAY 02, 2025 https://www.manoramaonline.com/



എപ്പോൾ വളം നൽകണമെന്നതാണോ, എങ്ങനെ വളം നൽകണമെന്നതാണോ പ്രധാനം? രണ്ടും പ്രധാനമെന്നു പാലക്കാട് എഐടിയുടെ ഭാഗമായി പ്രവർത്തിക്കുന്ന 'റെവിൻ കൃഷി' എന്ന സ്റ്റാർട്ടപ് സംരംഭത്തിന്റെ സിഇഒയും സഹ സ്ഥാപകനുമായ ശ്രീഹരി വിജയകുമാർ. ''നിർഭാഗ്യവശാൽ നമ്മുടെ കർഷകരുടെ ഊന്നൽ വളം കൊടുക്കുന്ന രീതിയിലാണ്. കൃഷി പരാജയത്തിന്റെ മുഖ്യ കാരണവും ഇതുതന്നെ''യെന്നു ശ്രീഹരി.

''നിങ്ങൾ മഞ്ഞൾക്കൃഷി ചെയ്യുന്നതായി കരുതുക. ഓരോ ഘട്ടത്തിലും വിളയ്ക്ക് ഏതൊക്കെ പോഷകങ്ങളുടെ കുറവുണ്ടെന്നും അതിനൊക്കെ ഏതു വളം നൽകണമെന്നും കീട, രോഗബാധ യഥാസമയം കണ്ടെത്തി ഉടനെടുക്കേണ്ട നടപടികളും ഒരു കൂട്ടർ നിർദേശിക്കുന്നു. മറ്റൊരു കൂട്ടർ പറയുന്നത് വളം-കീടനാശിനിപ്രയോഗം എളുപ്പമാക്കുന്ന ഹൈടെക് യന്ത്രങ്ങളെയും അതുവഴിയുള്ള അധ്വാന ലാഭത്തെയും കുറിച്ചാണ്. രണ്ടാമത്തെ കൂട്ടർ പറയുന്ന 'ഓട്ടമേഷനി'ലേ നിങ്ങൾ ശ്രദ്ധിക്കുന്നുള്ളൂ. ആദ്യത്തെ കൂട്ടർ പറയുന്നതൊക്കെ നിങ്ങൾ അവഗണിക്കുന്നു. വാസ്തവത്തിൽ വളം കൈകൊണ്ടു വിതറണോ ഡ്രോൺ വഴി വിതറണോ എന്നതു രണ്ടാമത്തെ കാര്യമാണ്. ഏതൊക്കെ വളം എപ്പോഴൊക്ക നൽകണമെന്നതാണ് വിളവും കൃഷിയുടെ ഭാവിയും തീരുമാനിക്കുന്നത്,'' ശ്രീഹരി പറയുന്നു. വിദേശങ്ങളിൽ ഇരു ഘടകങ്ങൾക്കും ഇന്നു തുല്യപ്രാധാന്യമാണുള്ളത്. നമ്മുടെ നാട്ടിൽ പക്ഷേ അധ്വാനം കുറയ്ക്കാനുള്ള യന്ത്രവൽക്കരണവും സ്വയംനിയന്ത്രിത (ഓട്ടമേഷൻ) സംവിധാനവുമാണ് പരമപ്രധാനമെന്ന് പല കർഷകരും കരുതുന്നു.

ഡേറ്റ, അതല്ലേ എല്ലാം!

ആദൃത്തെ വിഭാഗം മുന്നോട്ടു വയ്ക്കുന്ന വിവരാധിഷ്ഠിത കൃഷിരീതിയാണ് ഇനി വേണ്ടത്. കൃഷിയിടത്തിൽ ലഭിക്കുന്ന തത്സമയ ഡേറ്റ വിശകലനം ചെയ്തു തീരുമാനങ്ങളെടുക്കുന്ന ഈ രീതിക്കു മഹാരാഷ്ട്ര പോലുള്ള സംസ്ഥാനങ്ങളിലൊക്കെ വലിയ പ്രചാരമായി. കിറുകൃതൃമായ വിവരവിശകലനത്തിന്റെ അടിസ്ഥാനത്തിലുള്ള വളം-കീടനാശിനി പ്രയോഗത്തിന്റെ നേട്ടങ്ങൾ ചെറുതല്ലെന്ന് ഈ ടെക്നോളജി സംരംഭകൻ പറയുന്നു. ഇക്കാരൃത്തിൽ കർഷകരെ പ്രാപ്തരാക്കുന്ന സംവിധാനമാണ് ശ്രീഹരിയുടെ നേതൃത്വത്തിൽ വികസിപ്പിച്ച, ഐഐടിയുടെ സ്റ്റാർട്ടപ് സംരംഭമായ 'റെവിൻ കൃഷി.'

ഈ ഗ്രാമത്തിൽ വിളയുന്ന മാമ്പഴത്തിന് വില മൂന്ന് ലക്ഷം രൂപ, അറിയാം മിയാസാക്കി മാമ്പഴത്തിന്റെ വിശേഷങ്ങൾ

May 3, 2025 http://etvbharat.com/ml/kerala



ഖമ്മം: സാധാരണ ഒരു കിലോ മാമ്പഴത്തിന്റെ വിപണി വില 150നും 300നുമിടയിലാണ്. എന്നാൽ ദാ ഇവിടെ ഈ മാമ്പഴം ഒരു കിലോ നിങ്ങൾക്ക് വേണമെങ്കിൽ രൂപ ഒന്നും രണ്ടും ഒന്നും കൊടുത്താൽ പോരാ മൂന്ന് ലക്ഷം രൂപ വരെ നൽകണം.

രാജ്യാന്തര വിപണിയിൽ മൂന്ന് ലക്ഷം രൂപ വരെ വിലയുള്ള മിയാസാകി എന്ന ഇനത്തിലുള്ള ഈ മാമ്പഴത്തിന് ഹൃദ്യമായ രൂചിയും നല്ല ചുവന്ന് തുടുത്ത നിറവുമാണ്. ഇതിന് പുറമെ അതിമനോഹരവുമാണ്. തെലങ്കാനയിലെ ഖമ്മത്താണ് ഈ അപൂർവ ഇനം മാങ്ങ ഒരു കർഷകൻ കൃഷി ചെയ്ത് വിളയിക്കുന്നത്.

കോവിഡ് കാലത്താണ്, പേര് വെളിപ്പെടുത്താൻ ആഗ്രഹിക്കാത്ത ഈ കർഷകൻ ഈ അപൂർവ മാങ്ങയിൽ ഒരു പരീക്ഷണം നടത്താൻ തീരുമാനിച്ചത്. കാലിഫോർണിയയിൽ നിന്ന് ഒരു തൈക്ക് 12000 രൂപ കൊടുത്ത് മുപ്പത് മിയാസാക്കി മാവിൻതൈകൾ വാങ്ങി. ഇന്ന് ഇവയെല്ലാം തന്നെ കായ്ക്കുന്നുണ്ട്.

ഓരോ മാവിൽ നിന്നും മുപ്പത് മാങ്ങ കിട്ടി. അടുത്ത കൊല്ലം ഇത് 80 ആകുമെന്നാണ് പ്രതീക്ഷിക്കുന്നതെന്നും അദ്ദേഹം പറഞ്ഞു. ഒരു മാങ്ങയ്ക്ക് അരക്കിലോ ഭാരമുണ്ട്. സാധാരണ മാങ്ങകൾ പാകമാകുന്നതിന് ഒരു മാസം മുമ്പ് തന്നെ ഇവ പാകമാകും.

ഏതായാലും ലാഭകരമാണെന്ന് കണ്ടതോടെ അദ്ദേഹം 120 മാവിൻതൈകൾ കൂടി വാങ്ങിയിട്ടുണ്ട്. ആന്ധ്രാപ്രദേശിലെ കാദിയം നഴ്സറിയിൽ നിന്നാണ് ഒരു തൈക്ക് 3500 രൂപ വീതം കൊടുത്ത് അദ്ദേഹം 120 തൈകൾ വാങ്ങിയത്. ഇവ നട്ടു വളർത്താനായി അദ്ദേഹം ഒരേക്കർ സ്ഥലം നീക്കി വച്ചു. ഇപ്പോൾ തന്റെ തോട്ടത്തിൽ വളരുന്ന മാങ്ങകളൊക്കെ വീട്ടിലുള്ളവർ തന്നെ കഴിക്കുകയാണ്. വാണിജ്യാടിസ്ഥാനത്തിൽ ഉടൻ തന്നെ വിപണനം ആരംഭിക്കാനാണ് ലക്ഷ്യമിടുന്നത്.

എന്ത് കൊണ്ടാണ് ഇത്രയും വില?

ജപ്പാനിലെ മിയാസാക്കിയിലാണ് 1984ൽ ഈ മാങ്ങ ആദ്യമായി വിളയിച്ചത്. അസാധാരണമായ മധുരവും വെണ്ണപോലെയുള്ള ഇതിന്റെ പ്രത്യേകതകളും കടും ചുവപ്പ് നിറവും മാങ്ങയെ ഏറെ ഹൃദ്യമാക്കുന്നു. ആഗോളതലത്തിൽ തന്നെ ഉത്പാദനം പരിമിതമായതിനാലാണ് ഇതിന് 2.5 മുതൽ മൂന്ന് ലക്ഷം രൂപ വരെ വിലനൽകേണ്ടി വരുന്നത്. ഒപ്പം ആവശ്യക്കാരേറെയുണ്ടെന്നതും ഗുണമേൻമയും വില ആകാശം മുട്ടെ എത്തുന്നതിന് കാരണമായിരിക്കുന്നു.

വിറ്റാമിൻ സി, ഇ, എ, കെ തുടങ്ങിയവയുടെ ആന്റി ഓക്സിഡന്റുകളുടെയും കലവറയാണ് ഈ മാങ്ങയെന്ന് ജില്ല ഹോർട്ടികൾച്ചർ ഉദ്യോഗസ്ഥർ വിശദീകരിക്കുന്നു. ചർമ്മം, ആരോഗ്യം, അർബുദ പ്രതിരോധം, ഇൻസുലിൻ നിയന്ത്രണം തുടങ്ങിയവയ്ക്ക് ഇത് ഏറെ വിശേഷമാണെന്നും അവർ കൂട്ടിച്ചേർക്കുന്നു. അതേസമയം ഇതിന്റെ കൃഷി വലിയ വെല്ലുവിളികൾ നേരിടുന്നു. കീടങ്ങളുടെ ആക്രമണവും ഇല രോഗങ്ങളും വലിയ തോതിൽ ഇവയെ ബാധിക്കുന്നു. ഏതായാലും ഈ മാങ്ങ കൃഷി ചെയ്ത് പഞ്ചാബിൽ നിന്നുള്ള ഒരു കർഷകൻ ഇതിന് കാവൽക്കാരെ ഏർപ്പാടാക്കേണ്ടി വന്ന കഥ നേരത്തെ സാമൂഹ്യമാധ്യമങ്ങളിൽ വൈറലായിരുന്നു.

ഭീമൻ മാങ്ങ! ഈ മാന്തോട്ടത്തിലുണ്ടാകുന്ന മാങ്ങയുടെ ഭാരം 2.854 കിലോ - GIANT MANGO

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ഭുവനഗിരി: കാർഷിക രംഗത്ത് ഒരു പുത്തൻ കുതിച്ചു ചാട്ടം. അങ്ങ് തെലങ്കാനയിലെ ഒരു മാന്തോട്ടത്തിലുണ്ടായ ഒരു മാങ്ങയുടെ ഭാരം എത്രയെന്ന് അറിയാമോ? 2.854 കിലോ. അതായത് ഏതാണ്ട് മൂന്ന് കിലോയോളം. ഭുവനഗിരി പട്ടണത്തിന് സമീപമുള്ള അമേയ കൃഷി കേന്ദ്ര വികാസ് കേന്ദ്രയിലാണ് ഈ ഭീമൻ മാങ്ങയുണ്ടായത്. ഇവിടെയുള്ള ഓരോ മാവിലും ഉണ്ടാകുന്ന മാങ്ങയ്ക്ക് ഇത്രയും ഭാരമുണ്ടാകും.

കർഷകനായ ജിത്ത ബാല റെഡ്ഡി നട്ട മാവിലാണ് ഈ ഭീമൻ മാങ്ങകളുണ്ടാകുന്നത്. അഞ്ച് വർഷം മുമ്പ് ഓസ്ട്രേലിയയിൽ നിന്ന് ഇറക്കുമതി ചെയ്ത ആർടിഇ2 മാവിൻ തൈയാണ് ഇപ്പോൾ ഈ കൂറ്റൻ മാങ്ങകൾ സമ്മാനിച്ചിരിക്കുന്നത്.

പൊടിയാക്കി മാറ്റി കിലോയ്ക്ക് 600 രൂപയ്ക്കാണ് അദ്ദേഹം ഇത് വിൽക്കുന്നത്. ഏഴ് മാങ്ങകളുപയോഗിച്ചാൽ മാത്രമേ ഒരു കിലോ പൗഡർ നിർമ്മിക്കാനാകൂ. ഏതായാലും മാങ്ങ പ്രേമികളുടെയും കാർഷികരംഗത്ത് താത്പര്യമുള്ളവരുടെയും സംസാര വിഷയമായി മാറിയിരിക്കുകയാണ് ഈ ഭീമൻ മാങ്ങകളിപ്പോൾ.

കൃഷിയിടത്തിൽ പോകാതെ ഈർപ്പവും താപവും നിയന്ത്രിക്കാൻ 'അഗ്രോ ട്രാക്ക്'; വിജയമായി വിദ്യാർഥി സംരംഭം

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കാഞ്ഞിരപ്പള്ളി: നിയന്ത്രിത സാഹചര്യങ്ങളിൽ നടത്തുന്ന കൃഷിയിടത്തിലെ താപനിലയും മറ്റും ദൂരെയിരുന്ന് നിയന്ത്രിക്കാം. അവിടെ സ്ഥാപിച്ചിട്ടുള്ള അഗ്രോ സെൻസ് എന്ന ഉപകരണം വഴി ലഭിക്കുന്ന വിവരങ്ങൾ അഗ്രോട്രാക് എന്ന വെബ്ബിലൂടെ നിരീക്ഷിക്കാം. സംരംഭകന് കൃഷിയിടത്തിലെ സ്ഥിതി ദൂരെയിരുന്ന് അഗ്രോ ട്രാക് വഴി കൈകാര്യം ചെയ്യാനുമാവും.

അഗ്രോറ്റീൻ കേരള സ്റ്റാർട്ടപ്പ് കമ്പനിയാണ് അഗ്രോ ട്രാക്ക് എന്ന ഉത്പന്നം പുറത്തിറക്കിയത്. കൂൺ കൃഷി, മത്സ്യകൃഷി, ഹൈഡ്രോ പോണിക്സ്, ഗ്രീൻഹൗസ് തുടങ്ങിയ നിയന്ത്രിത കാർഷിക മേഖലയിൽ ഈ സംവിധാനം ഉപയോഗിക്കാം. കൃഷിയിടത്തിലെ താപനില, ഈർപ്പം തുടങ്ങിയ ഘടകങ്ങൾ മുൻകൂട്ടി നിശ്ചയിച്ച പരിധിക്കപ്പുറം പോയാൽ തത്സമയം അറിയിപ്പുനൽകും. നിയന്ത്രിക്കുകയും ചെയ്യാം.

കൂൺകൃഷി മേഖലയിൽ അഗ്രോ ട്രാക്ക് വിജയകരമാക്കിയിട്ടുണ്ട്. 1000 ചതുരശ്ര മീറ്ററിന് 25,000 രൂപയാണ് സ്ഥാപിക്കാനുള്ള ചെലവ്. ഇന്റർനെറ്റിനും മറ്റ് ചെലവുകൾക്കുമായി മാസം 250 രൂപയും ചെലവാകും. 2022-ൽ അമൽജ്യോതി എൻജിനിയറിങ് കോളേജിലെ പൂർവവിദ്യാർഥികൾ ചേർന്ന് സ്ഥാപിച്ച കമ്പനിയാണ് ഈ ഉത്പന്നം കണ്ടുപിടിച്ചത്.

കട്ടപ്പന സ്വദേശികളായ പ്രവീൺ അലോഷ്യസ്, അലോഷ് ജോണി, ക്രിസ്റ്റീൻ ജോസ് കുരുവിള, മാത്യു ജെയ്സ്, ആലപ്പുഴ സ്വദേശി കെ.കെ. ഓനെസിമോസ്, ചെങ്ങന്നൂർ സ്വദേശി ജൂബിൻ രാജ്, കോഴിക്കോട് സ്വദേശി അഭിനവ് ബാവോസ് എന്നിവർ ചേർന്നാണ് ഉത്പന്നം പുറത്തിറക്കിയത്.