

AGRI Titbits

Spices
Research news
Biodiversity
Climate change
Organic farming
ICAR in print
IISR in print
General
Malayalam news

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

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ICMR ADVISES CHOOSING WHOLE SPICES OVER POWDERED TO AVOID ADULTERATION

June 4, 2024 <https://thenorthlines.com/>



In a move aimed at enhancing food safety, the Indian Council of Medical Research has issued new dietary guidelines advising consumers to choose whole spices instead of powdered options. This comes as powdered spices are deemed more susceptible to adulteration.

The guidelines state that since ground spices can be adulterated more easily, whole spices which are uniform in size, color and texture are preferable. They also encourage purchasing certified products for additional assurance of quality and purity.

Experts have voiced concerns over health hazards stemming from adulterated powdered spices. Contaminants like heavy metals, artificial colors and excessive pesticide residues can potentially cause organ damage, allergic reactions or long-term ailments if consumed regularly.

Nutritionist Monika Vasudeva emphasizes inspecting spices for abnormal color or texture that may point to contamination. She also recommends procuring spices from trusted brands and checking for certifications. Grinding whole spices at home right before use helps retain nutrients while avoiding impure commercial powders.

Using whole rather than powdered spices offers several advantages. Whole spices maintain their natural oils and nutrients, imparting superior flavor and benefits. They also infuse complexity and aroma into dishes when cracked or ground fresh prior to cooking.

Health authorities face challenges in detecting sophisticated adulteration techniques through standard testing alone. Stricter quality norms, surveillance of sample testing and awareness about visual identifiers of adulteration are crucial to curb the practice. Opting for verified whole spices ensures a safer, more nutritious cooking experience for consumers.

SPICES BOARD IMPOSES RESTRICTIONS ON CARDAMOM RE-POOLING

JUNE 06, 2024

[HTTPS://WWW.THEHINDU.COM/](https://www.thehindu.com/)



Finally, the Spices Board has imposed restrictions on cardamom re-pooling (selling) at auction centres. This has been a long term demand of cardamom farmers in Idukki district.

According to officials, the Spices Board Director (Marketing) issued a circular stating that to reduce re-pooling, the cardamom pooled by licensed dealers in any auction shall not exceed 25% of the total quantity put to auction. The board directed licensed auction companies to enforce this rule. The current pooling quantity for dealers per auction was 25 tonnes, with two auctions a day.

In another circular, the board noted that many times the same dealer pooled the cardamom and then purchased the same lot back. This unethical practice by some dealers manipulates the system and adversely affects the interests of growers. The auctioneers are required to ensure that no dealer is allowed to purchase the same lot they pooled in any auction.

According to farmers, dealers buy cardamom on a credit basis at the auction and then re-pool the same cardamom in another auction, making a profit. This process has been ongoing.

As per court direction

Recently, the Vandanmedu Cardamom Growers Association, a cardamom producers' firm, approached the Kerala High Court seeking to stop the re-pooling. The Kerala Cardamom Dealers Chamber, a trader group, also approached the High Court demanding that traders be allowed 100% re-pooling at the auction. The court directed the Spices Board to study the issue and find a solution. Based on the court's direction, hearing was conducted with both groups, and restrictions were imposed.

Shine Varghese, general secretary of the Vandanmedu Cardamom Growers Association, said that the new Spices Board direction would help prevent cardamom re-pooling by some groups under the banner of auction centres. "The new restrictions will prevent the arrival of huge quantity of cardamom to the auction vendor groups. The earlier practice was that the seller and buyer were the same persons. Some dealers used the Spices Board platform for malpractice," he said.

Traders' concerns

However, Kerala Cardamom Dealers Chamber secretary Justin Thomas explained that the new restrictions by the Spices Board would negatively impact small-scale cardamom farmers in the future. "Cardamom Registration (CR) is mandatory for cardamom farmers to sell their cardamom in auction centres on this scale. Farmers without CR sell their products to local vendors. Around 1,500 small-scale vendors in Idukki are pooling their cardamom by buying from small-scale farmers. When the Spices Board restricted the pooling, the vendors had no option to sell the product and they reduced their purchases. The decision will negatively impact small-scale farmers," said Mr. Thomas.

However, Spices Board sources said that there was no limit on farmers in selling their products through the auctions. "CR-holding cardamom farmers can sell any quantity of cardamom through auction companies under the Spices Board auction," said a source.

CURCUMIN NANOPARTICLES SHOW PROMISE IN TREATING NEURODEGENERATIVE DISEASES

Jun 6 2024 <https://www.news-medical.net/>



Curcumin is a hydrophobic polyphenol found in the rhizome of *Curcuma longa*. The compound exhibits a range of biological properties, including anti-inflammatory, antioxidant, antiproliferative, anticancer, immunomodulatory, antimicrobial, anti-diabetic, and neuroprotective functions.

These pharmacological properties have made curcumin a promising candidate for treating neurodegenerative diseases, including Parkinson's Disease (PD), Alzheimer's Disease (AD), Huntington's Disease (HD), Multiple Sclerosis (MS), Amyotrophic Lateral Sclerosis (ALS), and prion disease.

Curcumin has been found to modulate a range of signaling pathways associated with the development of neurodegenerative diseases, including nuclear factor-erythroid 2-related factor 2 (Nrf2), serine/threonine kinase AKT, and transcription factor nuclear factor-kB (NF-kB).

However, certain factors restrict curcumin's clinical application, such as its low water solubility, poor stability, rapid metabolism, slow absorption rate, low bioavailability, and lower ability to cross the blood-brain barrier.

Curcumin-loaded biomimetic nanomedicines prepared with cell membranes and extracellular vesicles have been developed to overcome these shortcomings. Curcumin-loaded porous poly(lactic-co-glycolic acid) (PLGA) nanoparticles have been developed, and surface modification with red blood cell membranes has been done to increase drug release.

Curcumin-loaded exosomes have been developed to increase their ability to cross the blood-brain barrier and facilitate drug delivery in the brain to treat malignant glioma in mice.

Several nanocarriers, including liposomes, micelles, dendrimers, cubosome nanoparticles, polymer nanoparticles, and solid lipid nanoparticles, have been used to increase curcumin delivery in the brain. Chemical processes have been used to functionalize the surface of nanoparticles with brain-specific ligands, allowing for targeted delivery of curcumin in the brain with minimal adverse effects.

Curcumin nanoparticles in PD

PD occurs due to the loss of dopaminergic neurons in the substantia nigra. The major hallmarks of PD are dopamine deficiency in the brain and the formation of α -synuclein aggregation. PD is conventionally treated with dopamine prodrug, dopamine agonist, monoamine oxidase type B (MAO-B) inhibitor, β -blocker, and adamantine. However, prolonged use of these drugs has been found to cause adverse side effects.

Curcumin nanoformulations are emerging as a promising adjuvant therapy in PD. Various nanoformulations, including alginate–curcumin nanopreparation, lactoferrin nanoparticle curcumin, curcumin- and fish oil-loaded spongosome and cubosome nanoparticles, bovine serum albumin-based nanocurcumin formulation, and curcumin- and piperine-loaded glyceryl monooleate (GMO) nanoparticles, have been found to reduce oxidative stress, brain cell death, protein aggregation in animal models of PD.

Curcumin nanoparticles in AD

AD occurs due to the accumulation of misfolded β -amyloid protein and tau protein in the brain's neurofibrillary tangles.

As a therapeutic drug in AD, Curcumin has been found to reduce inflammation, activate neurogenesis, and inhibit misfolded protein accumulation. In in vitro cell culture models of AD, curcumin-encapsulated biodegradable PLGA nanoparticles have been found to reduce oxidative stress and inflammation and increase protein disaggregation.

In a transgenic mouse model of AD, curcumin-loaded brain-targeted nanoparticle PLGA-block-poly-ethylene glycol has been found to improve spatial learning and memory and reduce β -amyloid level and tau phosphorylation.

Curcumin nanoparticles in HD

HD is an autosomal dominant inherited disorder caused by a mutation in the Huntington gene (HTT). The disease is characterized by progressive loss of nerve cells in the brain, leading to motor and cognitive impairment and psychiatric symptoms.

In rat models of HD, curcumin-encapsulated solid lipid nanoparticles have been found to improve mitochondrial activity, reduce mitochondrial swelling, free radical production, and lipid peroxidation, and increase enzymatic and non-enzymatic antioxidant levels.

In a transgenic mouse model of HD, solid lipid curcumin nanoparticles have been found to improve learning memory and increase dendritic arborization and dendritic spine density.

Curcumin nanoparticles in ALS

ALS occurs due to the progressive loss of nerve cells in the spinal cord and brain. Riluzole is the only known treatment for AL that extends patients' survival in the early disease stages.

Mesenchymal stromal cells have been found to improve neural protection and replace dead motor neurons in the spinal cord in ALS patients. Curcumin-loaded inulin-D- α -tocopherol succinate micelles have been found to increase the therapeutic effects of mesenchymal stromal cells.

Curcumin nanoparticles in MS

MS is an inflammatory autoimmune disease that damages the myelin sheath of nerve fibers in the spinal cord and brain. Currently, there is no cure for this disease. Curcumin's antioxidant, anti-inflammatory, and antiproliferative properties have made it a promising candidate for treating MS. In animal models of MS, treatment with curcumin has been found to inhibit interleukin 12 (IL-12), which causes myelin damage.

Polymerized nanocurcumin particles and curcumin dendrosomal nanoparticles have been found to induce neuron remyelination in mice with MS. Curcumin dendrosomal nanoparticles have also been found to promote oligodendrogenesis.

Curcumin nanoparticles in prion disease

Prions are proteinaceous infectious particles that cause Creutzfeldt–Jakob Disease, Kuru Disease, and fatal familial insomnia in humans. Normal prion protein can be converted to its infectious isoform to trigger disease onset.

Curcumin has been found to inhibit prion fibril formation and conversion of normal prion protein to its infectious isoform.

THE 8 MOST IMPRESSIVE HEALTH BENEFITS OF TURMERIC

June 17, 2024 <https://www.realsimple.com/>

In recent years, turmeric's popularity has skyrocketed, thanks to its touted health benefits. "Turmeric is a vibrant yellow spice native to India and Southeast Asia that has been used for thousands of years for its medicinal properties," says Amy Davis, RD, LDN Registered Dietitian at FRESH Communications. This beautiful root from the *Curcuma longa* plant can be enjoyed ground, juiced, or in its natural root form in both sweet and savory dishes. But what does current-day research tell us about the health benefits of turmeric? And what are the best ways to use it at home? We've got you covered with the answers to these questions and more in this turmeric tell-all.

The Nutritional Profile of Turmeric

"Historically, turmeric has been used in traditional Indian medical systems, as a common spice, and as a food coloring," explains Davis. But when it comes to health benefits, you won't find significant amounts of macronutrients like carbohydrates, protein, or fat in this spice. Rather, turmeric is an excellent source of micronutrients like vitamins, minerals, and plant compounds, and this is where most of its health benefits spawn from. In terms of vitamins and minerals, turmeric contains impressive amounts of manganese, iron, potassium, and vitamin

C.1 “But turmeric also contains compounds called curcuminoids—with curcumin being the most prominent and well-researched,” says Davis. “These compounds belong to a class of polyphenols and have been shown to have antioxidant and anti-inflammatory effects.” In fact, curcumin is largely to thank for many of the benefits turmeric boasts. Its antioxidant properties positively affect nearly every body system.

The Top 8 Health Benefits of Turmeric

So, what *are* those benefits? “Ancient Chinese medicine typically used turmeric for skin, joint, and digestive treatments,” Davis adds. Let’s see how these claims stack up to the latest research, with the top eight evidence-based benefits of turmeric:

Turmeric Boosts Immune Health

As a rich source of vitamin C and plant compounds (also known as polyphenols) like curcumin, turmeric’s antioxidant and anti-inflammatory effects boost overall immune health. This is partly because antioxidants search out and eradicate free radical molecules that are at the root of many chronic and acute illnesses. In fact, a 2019 *Nutrients* article even found curcumin to be effective against cancer.

Turmeric Champions Heart Health

Another chronic illness that free radicals contribute to is heart disease, making turmeric a powerful preventative measure. Research has found the curcumin in turmeric to be protective against both atherosclerosis—plaque build-up on the arteries and veins that can lead to the development of heart disease—and overall heart disease risk. This spice may also help to manage high cholesterol levels in the blood, which can further contribute to atherosclerosis.⁷ The magnesium, potassium, and iron found in turmeric also support healthy heart rhythms and blood health.

Turmeric Aids Metabolic Health

For those with metabolic disorders like type 2 diabetes (or those looking to prevent them), turmeric is also a great addition. This is thanks to the fact that the

spice has been found to aid in the regulation of blood sugars and the inflammatory response, helping to treat or prevent these conditions.

Turmeric Helps to Improve Mental Health

Interestingly, turmeric is often turned to for mental health aid—and we have the evidence to support this practice. This benefit is due, in part, to curcumin's ability to increase brain-derived neurotrophic factor (BDNF) levels, BDNF plays an important role in behavior, learning, cognition, and memory, which bodes well for mood disorders like anxiety and depression. In fact, several studies have found this bioactive compound in turmeric to be effective in treating both conditions.

Turmeric Encourages Overall Brain Health

Speaking of brain health, turmeric may also help to ward off neurodegenerative disorders, like Alzheimer's disease and dementia. Curcumin's ability to increase BDNF levels certainly has a hand in this benefit, but there's also plenty of research to back these claims. One 2018 study found daily curcumin administration to be linked to improved memory, attention, and mood in older adults, thanks to decreases in amyloid and tau accumulation in the brain. Amyloid and tau are proteins that can build up in the brain and disrupt communication between brain cells, potentially leading to neurodegenerative conditions. Further research has also found a positive correlation between curcumin and Alzheimer's disease prevention.

Turmeric Promotes Joint Health

The anti-inflammatory nature of turmeric benefits joint health, too—especially for those dealing with concerns like arthritis. One 2021 study found turmeric supplementation to be nearly as effective as nonsteroidal anti-inflammatory drugs (NSAIDs) for individuals with osteoarthritis in the knees. Additionally, a 2022 paper found curcumin to be effective in treating osteoarthritis pain across the body.

Turmeric Supports Gentle Aging

Curcumin's (and thus turmeric's) antioxidant properties are also effective against signs of aging, such as fine lines, wrinkles, and dark spots. This has been

shown in several studies, including this 2021 review of the evidence available at the time of publishing.

Turmeric Improves Gut Health

And finally, turmeric may also support a healthy gut. This is thanks to its positive influence on the gut microbiome, helping to regulate and support this important system. The gut microbiome is a colony of trillions of microorganisms found largely in the colon that support immune, brain, and digestive health (among many other impressive benefits).

How Much Turmeric Should You have every day?

So, with all these exciting health perks of turmeric, you may be jumping at the chance to start including more of this spice in your meals and snacks. But how much should you be aiming for on a daily basis?

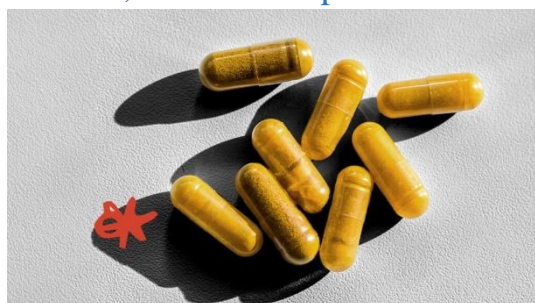
From what we know so far, you'll reap the most benefits by consuming no more than 12 grams of turmeric per day—equivalent to about 2.5 teaspoons. “Overdoing it with turmeric may cause diarrhea, constipation, or vomiting, and excessive turmeric supplementation may interfere with certain medications,” says Davis. Considering this, it's important to consult with your healthcare provider before significantly increasing your turmeric intake if you have any pre-existing conditions.

Ways to Use Turmeric At Home

There are so many delicious dishes that can help you add more turmeric into your routine. Its sweet, peppery flavor and brilliant yellow-orange color pair perfectly in curries, stir fries, casseroles, soups, stews, pasta, lattes, smoothies, homemade health shots, and even spiced baked goods! Some delicious and healthy prepared foods highlight this ingredient as well. “Though, it's important to note that turmeric is fat soluble and poorly absorbed alone. Therefore, it should be consumed with a source of fat and piperine (an active component of black pepper) to enhance absorption,” Davis notes. These prerequisites are pretty easy to achieve in all of the dishes we've mentioned here.

TURMERIC AND BLACK PEPPER SUPPLEMENTS LINKED TO LIVER INJURY IN SOME PEOPLE

June 28, 2024 <https://www.medicalnewstoday.com/>



The spice turmeric is a popular food supplement due to a molecule it contains called curcumin, which acts as a strong antioxidant.

it is also thought that it could be used to treat or prevent inflammatory conditions.

Turmeric's use has grown in popularity in the past decade or two, with people using it in the hopes that it improves symptoms of different conditions or prevents cancer.

Doctors have raised concerns about its safety after discovering a small group of patients have experienced liver injury after taking turmeric supplements.

Turmeric supplements have been linked to a number of cases of liver injury, most recently in a United States-based study.

Previous research from Italy and published case studies have linked turmeric supplementation, or supplementation with its active compound curcumin, to liver injury. This latest research shows rates of liver injury linked to turmeric could be increasing.

The latest study, published in *The American Journal of Medicine* in 2023, looked at the turmeric-associated liver injury cases recorded in the US by the US Drug-Induced Liver Injury Network (DILIN) between 2004 and 2022.

The researchers discovered 10 cases of turmeric-associated liver injury, all after 2011 and six of which occurred since 2017. Five patients were hospitalized, and

one patient died of acute liver failure. The authors identified a risk associated with taking turmeric and black pepper supplements together.

Jay Hoofnagle, MD, Trusted Source one of the study's authors and director of the Liver Disease Research Branch in the NIDDK Division of Digestive Diseases and Nutrition who oversees the DILIN, told Medical News Today in an interview:

“So the question we're always asked is, how come now, suddenly you're seeing this? And that's a very important question. Why? One reason is that it's being used by millions of people now.”

“But the other reason is turmeric is a spice, right? It is not absorbed. You don't absorb pepper. Your body doesn't absorb it. You don't absorb curry, the spice turmeric. Okay, so how could this possibly cause liver disease if it's not absorbed? Well, the answer, we think, is that these modern products of turmeric have been altered so that they are absorbed,” he said.

HLA alleles in turmeric users

Seven of the 10 individuals identified as having liver injury following turmeric supplementation carried a specific human leukocyte antigen (HLA) allele, known as HLA-B*35:01, despite this normally existing in the population at a frequency of about 6-7%. HLA alleles are genes that code proteins that help the immune system recognize cells as either part of the body or as foreign objects, meaning they play a role in immunity or autoimmunity.

Hoofnagle said they could not say with certainty that all of the cases they discovered were due to turmeric, as many of the people they identified with liver injury were taking other drugs at the time. There did appear to be a particular risk for people with the HLA allele HLA-B*35:01, which needs further investigation.

“So, of our 10 cases, we could be wrong about several of them. So, it may be that this allele is absolutely necessary. We don't know that when we look at the cases that had the allele and compare it to the three that didn't, the cases with the allele had this classic, look, you see, whereas the ones that didn't have the allele, they were a little bit different,” Hoofnagle said.

He and other authors are currently looking at conducting further research to better understand this allele and the mechanisms underpinning the heightened risk of liver injury they had observed.

Herbal phenols in curcumin may be a culprit

One of the reasons why liver injury occurs in certain individuals could be that curcumin is a phenolic compound, which makes it a bioactive compound in the human body.

Previously, research has shown that people carrying this genetic variant were more likely to experience liver injury after using *Polygonum multiflorum* Trusted Source, an herb native to China and used in traditional Chinese medicine.

Hoofnagle explained that the use of green tea supplements, mostly in the form of weight loss supplements, had also been linked to liver injury.

“These other herbals that have been implicated also have phenols. So it’s beginning to kind of come together that something about phenols affects [carriers of] B*35:01 and makes it react in the liver,” he said.

Kristin Kirkpatrick, MS, registered dietician and a dietician at Cleveland Clinic told Medical News Today that it was important to consider the bigger picture when analyzing this data, and consider the other factors that can influence liver health:

“This study examined not only turmeric in a supplemental form but also the addition of piperine, which appeared to enhance bioavailability. The liver is the body’s TSA agent. You can’t move forward in the body without first being screened by this gatekeeper. Supplements make their first stop there, and therefore, the liver takes the brunt of the energy the body takes to break down, detoxify, and allow in or remove.”

“In regards to liver injury, it’s estimated that potentially 1 in 3 individuals now have metabolic dysfunction-associated steatotic liver disease (MASLD) and the further along the disease is, the harder for the liver to do its job well. If it can’t detoxify efficiently, it’s more likely to experience injury,” Kirkpatrick said.

Why the correct dose matters

Hoofnagle said treating turmeric supplements as though they are as safe as turmeric used in food, which the majority of regulation since the 1970s has done, was a mistake. While acknowledging that turmeric has been used in Indian medicine for thousands of years, he pointed out this was mainly for digestive issues and that there was a difference between using some spice in a meal and taking a whole gram in a capsule every day.

“It’s a typical Western approach to traditional medicines. You try to find out what’s the active principle, and then the more the better, right? The higher the dose, the better. Well, that’s not true in biology. In biology, the correct dose is the correct dose. And if you go higher, all you have is more side effects,” he explained. He said that this created regulation complications, as the FDA does not regulate herbal medicines. Trusted Source

“What I’m saying is, no, we’re not talking about a traditional medicine. We’re talking about a purified component that’s given in far higher doses. That’s a medicine. So I know it’s posed as an herb, but I would say, no, it’s a medicine. ...that’s my attitude, that once you start messing with traditional medicines, you’re not dealing with them anymore when you start chemically modifying or extracting things, it’s not really a traditional medicine anymore,” he said.

CHECKING FOR FUNGI AND TOXINS IN COMMON CULINARY HERBS AND SPICES

14th June, 2024 <https://naturalsciencenews.com/>

The study in Nairobi County, Kenya, found high levels of fungal contamination in spices and herbs sold in open-air markets and supermarkets. *Aspergillus* and *Penicillium* species, known for producing harmful mycotoxins, were frequently found in the samples. Many samples had ochratoxin A (OTA) levels above safe limits, posing significant health risks like liver and kidney damage



The recent study conducted by the Technical University of Kenya aimed to screen fungal diversity and ochratoxin A (OTA) levels in culinary spice and herb samples sold in open-air markets and supermarkets in Nairobi County, Kenya. This study is crucial because OTA is a toxic secondary metabolite produced by certain fungi, and its presence in food can pose significant health risks. The research revealed a high frequency of *Aspergillus* and *Penicillium* species contaminating the samples. These fungi are known producers of mycotoxins, which are harmful substances that can contaminate food products. The isolated species included *Aspergillus ochraceus*, *Aspergillus nomiae*, *Aspergillus niger*, *Aspergillus flavus*, *Aspergillus ustus*, *Aspergillus terreus*, *Aspergillus nidulans*, *Aspergillus clavatus*, *Penicillium crustosum*, *Penicillium expansum*, *Penicillium brevicompactum*, *Penicillium glabrum*, *Penicillium thomii*, *Penicillium citrinum*, *Penicillium polonicum*, and *Cladosporium cladosporioides*. The study found that the total fungal count on spice and herb samples collected from various sources varied between 6 and 7 CFU/mL. Among imported spices, garlic had the highest fungal diversity, while cardamom had the least. For spices from both open market and supermarket outlets, cloves had the highest fungal diversity, while white pepper had the least. For herbs sampled from the open markets, basil was the most contaminated, while sage was the least. In supermarket samples, parsley, sage, and mint had the highest fungal diversity, and bay had the least. These findings are significant because they indicate the contamination of spices and herbs with OTA at high concentrations. The calibration curve for OTA was saturated at 40 $\mu\text{g}/\text{kg}$, with samples of garlic, cinnamon, red chili, basil, thyme, mint, sage, and parsley having levels above this. Among the spices, imported ginger had the highest OTA levels (28.7 $\mu\text{g}/\text{kg}$), while turmeric from the open market had the least (2.14 $\mu\text{g}/\text{kg}$). For herb samples, parsley from the open market had the highest OTA levels at 29.4 $\mu\text{g}/\text{kg}$, while

marjoram from the open market had the lowest at 6.35 µg/kg. This study builds on earlier research that highlights the risks associated with mycotoxin contamination in food products. For example, previous studies have shown that Capsicum products, such as peppers, are highly susceptible to mycotoxin contamination during production, storage, and distribution. Another study conducted in Ankara, Turkey, found that spice samples such as black pepper, red pepper, cumin, and turmeric were contaminated with various mycotoxins, including OTA. The presence of OTA in food products is concerning due to its toxic effects. OTA has been found to cause a range of toxic effects, including hepatotoxicity (liver damage) and nephrotoxicity (kidney damage). The neurotoxic effects of OTA have also been evaluated, showing that OTA can induce cell death in neuronal cells through oxidative stress and DNA damage. These findings underscore the importance of monitoring and controlling mycotoxin levels in food products to protect public health. The results of the current study demonstrate the widespread contamination of culinary herbs and spices with OTA, often beyond acceptable limits. This highlights the need for informed and sustainable mitigation strategies aimed at reducing human exposure to OTA through dietary intake of spices and herbs in Kenya. Such strategies could include improved agricultural practices, better storage conditions, and regular monitoring of mycotoxin levels in food products. In conclusion, the study conducted by the Technical University of Kenya underscores the significant health risks posed by OTA contamination in culinary herbs and spices. By identifying the fungal species responsible for this contamination and quantifying the levels of OTA present, the research provides a foundation for developing effective strategies to mitigate these risks and ensure the safety of food products.

EXPERTS RAISE CONCERN OF SCAB, LEAFMINER IN HIMACHAL'S APPLE ORCHARDS

June 26, 2024

<https://indianexpress.com/>



Raising the woes of apple growers in Himachal Pradesh, scab and apple blotch leafminer have started appearing in orchards. Experts have noted that field inspections suggest the scab has begun appearing on the leaves of apple plants. In certain areas, including Janjelhi in Mandi and Jubbal in Shimla, scab has also been observed on the fruits, which are still immature and in their initial stage.

Also, traces of contagious apple blotch leafminer, an insect known to have damaged thousands of hectares of apple orchards in Jammu and Kashmir (J&K) every year, have started emerging in the orchards of the state. These alarming findings were shared by experts from various institutes, including Dr YS Parmar University of Horticulture and Forestry, Nauni, the Regional Horticultural Research and Training Station, Mashobra, and private enterprises, at the CII Apple Conclave held in Kufri on Wednesday.

“Scab was found everywhere where apples are grown, but its appearance ahead of the apple season is alarming. The season in Himachal Pradesh starts on July 15 and lasts until October. During our field visits, we found traces of scab caused by fungus on the leaves and fruit. If not treated in time, it can damage the entire production in an orchard. Scab is curable, and apple growers in Himachal are equipped to deal with it,” Vikas Rohta, a postgraduate in Horticulture from Dr YS Parmar University of Horticulture and Forestry, and North Head of Bayer CropScience Limited, said on Effective Disease Management at the conclave.

The more worrisome finding is the traces of apple blotch leafminer – which up until now was limited in J&K – were found in Himachal Pradesh. “Our state

machinery is not equipped to deal with this contagious insect, which lays its eggs on shaded leaves and spreads like wildfire,” he added.

Senior scientist Dr Usha Sharma from Dr. YS Parmar University emphasised on the importance of natural farming along with the adoption of modern techniques involving the use of pesticides.

“Recently, I met apple farmers in the Jubbal area who are complaining about scab in their orchards. Indeed, apple farmers are focusing on and demanding high-density planting instead of traditional planting, but they cannot rule out that viruses and insects will not hit the new varieties of apple plants. Farmers should not stop using natural farming methods and should not rely completely on modern techniques. They should use cow dung paste, bordeaux paint, chaubattia paste, and bordeaux mixture, which have been used for a long time.” Sharma added.

Bottom of Form

Approximately 300 apple farmers, especially from Shimla, Kullu, Mandi, and Kinnaur, attended the conclave. Apple is the most important cash crop of Himachal Pradesh, constituting about 49 per cent of the total area under fruit crops and about 82.5 per cent of the total fruit production in the state.

BIODIVERSITY

BIODIVERSITY-FRIENDLY AGRICULTURE IN INDIA

Jun 28, 2024 <https://www.hindustantimes.com/>



Resilient and sustainable agriculture relies on thriving, biodiversity-friendly farming. Biodiversity includes all living things on Earth—plants, animals, microorganisms—and the variety of ecosystems they form, such as rainforests and grasslands. It forms the foundation of agriculture through

the species and genetic variation of crops and livestock and supports production through essential ecosystem functions and services.

To put things in perspective, a handful of healthy soil alone contains billions of microorganisms. This healthy soil, a vital part of our biodiversity, supports the growth of the crops we depend on daily. Biodiversity in agriculture enables crops to resist pests and diseases because different types of plants have different levels of resistance and susceptibility to pests and diseases. Biodiversity through other ecosystem services like nutrient cycling, nutrient sequestration and conversion, soil water retention, pollination by bees and other wildlife supports the agriculture ecosystem for a sustainable food production.

This rich support system is under threat. Biodiversity loss has intensified at an alarming rate, driven by human activities like habitat destruction, the climate crisis, and the overuse of agricultural land and resources. The Food and Agriculture Organization (FAO) has highlighted the obvious and significant risks this crisis poses to global food security. After all, biodiversity loss affects everything from soil fertility to pest resistance. It makes our agricultural systems more vulnerable to climate-induced stresses, including extreme weather conditions, erratic rainfall, soil degradation and increased locust and pest invasions. The FAO points out that developing countries are particularly at risk, with data showing potential decreases in agricultural productivity by 20-40% due to the climate crisis. To address this growing challenge, we must prioritise the conservation and sustainable use of biodiversity in agriculture. This means implementing farming practices that enhance ecosystem functions and resilience without depleting natural resources. How can we achieve this?

The FAO projects that the anticipated effects of escalating land-use change, organism exploitation, and the climate crisis will continue to drive negative trends in nature until 2050 in the absence of strong policy action aimed at producing transformative change. In India, home to 1.4 billion people, the government is acutely aware of the repercussions of biodiversity loss and climate events on food

security. It plans to continue incentivising crop diversification, encourage farmers to use high-yield, climate-resilient seeds, and launch a special Bharat Krishi Satellite to support crop and weather forecasting, pesticide application, irrigation, and soil data collection. Further, it has implemented policies to boost the production of oilseeds, millets, and pulses – all ecologically sustainable crops – to maintain India’s Annadatta status. These are promising steps, and the following measures can further strengthen India’s efforts to promote biodiversity.

First, investment in research and innovation to develop biodiversity-friendly agricultural solutions has to double. One example is using a science-based approach to develop lower-profile products that excel in crop protection and crop health while maintaining a healthy relationship with soil organisms. Another is innovating across the seed technology spectrum, encompassing conventional, biotech and new plant breeding techniques, all aimed at increasing yield while reducing the need for clearing more land for agriculture. Solutions such as bio-based pest management products and precision farming technologies are also highly promising. Second, educate farmers by giving them the knowledge and resources they need to implement biodiversity conservation measures. For instance, teaching farmers about crop diversification and sustainable pest management can not only help them reap better harvests and higher profits but also empower them to contribute to the long-term viability of the agriculture sector. Third, promote collaboration between government agencies, NGOs, and the private sector for driving collective action to scale up biodiversity conservation efforts on farmlands. Public-private partnerships with farmers and local communities can further strengthen these efforts.

One of the 2030 Sustainable Development Goals aims to “ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, help maintain ecosystems, and strengthen capacity for adaptation to climate change”. This naturally includes urgent action to address the risks to food security posed by biodiversity loss – a responsibility that cannot

rest solely on governments. Impactful solutions will require a collective effort involving farmers, communities, NGOs, the private sector, and policymakers. By working together, we can protect the great diversity of life that works behind the scenes to put food on our tables and – given the linkages between biodiversity and farm productivity – help achieve India’s vision for Kisan Samman.

BIODIVERSITY IN SUSTAINABLE AGRICULTURE: A CASE STUDY ON INDIAN SARUS CRANE

June 02, 2024 <https://www.thehindubusinessline.com/>



The world’s ecosystem is facing threats due to human activities, resulting in significant biodiversity loss and the decline of ecosystem services. Recognising the pivotal role of ecosystem services in urban development,

there is an opportunity to address these challenges through strategic ecological restoration efforts.

Given that agriculture’s expanding footprint is causing habitat loss, preventing wild lands from being converted into farmland is critical to maintaining biodiversity. By embracing both traditional knowledge and new research, farmers and scientists are producing food in a way that harnesses biodiversity to make the most of what nature provides. This approach is called agroecology, and is a core component of regenerative agriculture, which builds up natural resources like healthy soil and water rather than using them up.

While embracing agroecology is a revolutionary shift away from industrial farming, it’s nothing new: these practices are often adapted from the practices of indigenous people worldwide, who have created complex agroecological systems that exist in balance with nature. Preserving and reviving these indigenous traditions can make agriculture around the world more sustainable and help preserve biodiversity. The fact that 80 per cent of the world’s biodiversity is

preserved on lands that are managed by indigenous people is a testament to agroecology's potential.

Playing vital role

Agricultural biodiversity not only sustains the food-based bio-resources, but it plays a vital role in maintaining a viable population of various dependent flora and fauna, that play an important role in providing nutrients, pest management and propagation of the agricultural diversity. In this, one of such important faunal species is the Sarus Crane, directly associated with agriculture.

Sarus Cranes (*Grus Antigone*) in India have benefited from long-standing cultural and traditional values of farmers. There are 15 crane species in the world out of which the Sarus crane is the only resident species found in India. The major population of Sarus cranes are found in Uttar Pradesh, Gujarat and Rajasthan. They are classified as "Vulnerable" in the IUCN Red List. The prominent growing conservation challenges for Sarus cranes are local threats like egg mortality and land use change, and broader threats like industrialisation, land use change, and changing climate. Challenges to Sarus crane conservation are enormous, but persisting traditional agriculture and positive farmer attitudes offer considerable advantages. Framing and developing initiatives around these advantages will be critical to executing efficient and long-term conservation interventions.

But for farmers to take steps to boost biodiversity, we must sensitise them first and make them aware of how it can in turn benefit them. One effective initiative in this regard is the Sarus Crane Conservation Programme in Gujarat's Kheda and Anand districts. This serves as a compelling case study of how farmers can actively contribute and play a crucial role. Due to the reduced availability of natural habitats, the Sarus crane has adopted the sub-optimal habitat of paddy fields for its survival. Out of the three population stronghold States in India, Kheda district in Gujarat is the only place where maximum number of nests are found in the paddy fields. The Sarus crane uproots the paddy saplings for building its nest

because of which the farmers considered the bird as a pest for paddy, and they remove the nests and eggs in their agriculture fields.

The program is focused on conserving the Sarus crane population, building partnerships with the forest department and the community, educating farmers and local communities and building capacity to sustain the conservation efforts. The status of the species is documented, while important roosting, breeding and congregation sites are identified. Threats to the birds and their habitat are investigated. Armed with this information, a mammoth awareness campaign was conducted with 521 sensitisation programmes involving 58,665 community members including farmers, teachers and students across 40 villages. This led to the formation of 88 Rural Sarus Protection Group volunteers in these villages. The results speak for themselves as Sarus numbers went from 500 in 2015 to 1254 in 2023.

Farmers were a pivotal part of this effort and played a key role once they were sensitised about the benefits of Sarus conservation for the agrarian ecosystem, especially when it comes to pest management. Thus, as is evident, farms and biodiversity need not be at odds with each other. In today's world, with the challenge of global warming, we need to conserve biodiversity, our strongest natural defence against climate change. By practicing sustainable, modern, informed methods of agriculture, we can have the best of farms and biodiversity.

COUNTING INSECTS FOR FARMLAND BIODIVERSITY

28 June 2024 <https://cordis.europa.eu/>



The EU-funded SHOWCASE project has launched an insect counting app that promotes biodiversity by helping farmers monitor flower-visiting insects. The InsectsCount app helps to build an observer community and enhances learning-by-doing by sharing observations on flower-visiting insects in relation to

land use and management. Biodiversity is closely interrelated with agriculture, and bees, butterflies and other pollinating insects play a vital role in it. Pollinators aid in the reproduction of around 75 % of crops grown worldwide for human consumption. These include apples, tomatoes, berries and other crops grown in Europe, as well as imported crops such as coffee, mangoes and soybeans that have become part of modern European diets. We need pollinators for their role in increasing crop yields and enhancing crop quality. However, this is not their sole contribution. They also support biodiversity and help food production systems adapt to climate change, ensuring future food security. This is why their dwindling numbers have brought to the fore the need for effective conservation efforts and pollinator-friendly practices. An important step towards achieving this is by monitoring insect populations and identifying species at risk.

Community participation is key

The app helps users share and access data on observed pollinator species, including statistics comparing species observed by the user with those found throughout a region. The aim is for farmers to gain insight into the relationship between an observed species and a specific region's land use and management practices. But to effectively use the app, coordinators must first create an observer community by gathering observers within a region and motivating them to actively participate. Alternatively, groups of users can find a coordinator who has started an observer community. It is this community participation that sets the app apart from other insect counting efforts. User involvement is strengthened using innovative gamification elements, such as awarding badges when observation goals are met. Michiel Wallis de Vries of SHOWCASE project partner Dutch Butterfly Conservation, the Netherlands, highlights the app's uniqueness in a 'EurekAlert!' news release, stating "as far as we know, this app is the first to combine pollinator monitoring and gamification." Monitoring communities are organised in experimental biodiversity areas (EBAs), regions where farmers, researchers, NGOs and citizens work together to enhance biodiversity for

agricultural systems and surrounding ecosystems in a community effort. The ultimate goal is improved sustainability and resilience in agriculture. The news release explains further: “After registering with an EBA, users can customise their preferences, such as joining a regional group, sharing data, selecting language preferences, and specifying the organisms they wish to monitor, such as flower-visiting insects. Once their account is established, users can begin recording the abundance of flower-visiting insects. Farmers also have the option to collect biodiversity data themselves or utilise recorded information to implement specific actions on their farms.” The app is part of the SHOWCASE (SHOWCASing synergies between agriculture, biodiversity and Ecosystem services to help farmers capitalising on native biodiversity) project’s effort to deliver novel tools that aid the transition to more sustainable farming. Another initiative geared towards this goal is a platform called Living Fields that the project is creating to provide farmers with high-quality information of the benefits of biodiversity in agriculture.

CLIMATE CHANGE

HOW SOIL SYMBIONTS COULD UNLOCK CLIMATE-SMART AGRICULTURE

5 June 2024 <https://eos.org/>



From vast corn fields to small rice plots, the way we grow our food and nourish our communities will increasingly bear the brunt of climate change.

Rising temperatures and more extreme weather are exacerbating inequalities in global food systems. More than enough food is already produced to feed the global population, but roughly 783 million people worldwide currently experience hunger as a result of systemic

inequalities related to gender, geography, conflict, and resources. Warming of 2°C will drive an estimated 189 million additional people into hunger.

And yet global food production systems are stuck in a vicious cycle that threatens both food security and environmental health.

Farmers in predominantly high-income countries (and elsewhere, when possible) apply vast amounts of inorganic fertilizers to their fields to ensure high yields. Perversely, however, the synthetic fertilizer supply chain is contributing to the very changes in climate that are acutely harming food production worldwide. For example, synthetic fertilizer application and livestock production together are responsible for up to 70% of emissions of nitrous oxide—a greenhouse gas that is almost 300 times more potent than carbon dioxide.

Thankfully, nature offers a solution that is of increasing interest to scientists. This solution—crop-fertilizing soil microbes—could help to break the cycle of synthetic fertilizer use and its attendant environmental impacts and usher in more sustainable food production systems.

Tracing the Evolution of Beneficial Microbes

When plants first appeared on land roughly 460 million years ago, these intrepid explorers developed new strategies to source the critical nutrients required for life from the terrestrial environment.

beneficial relationships with soilborne arbuscular mycorrhizal fungi. Ancient plants were rootless, but the connection established with these filamentous fungi allowed them to access water and vital nutrients such as nitrates, phosphates, and micronutrients from the soil. In return, plants provided the fungi with energy harvested through photosynthesis that was otherwise unavailable to these microbes. These fungi continued to provide the same benefits to root-bearing plants once they evolved.

Later, about 100 million years ago, some plants, including beans, peas, and lentils—what we know as the legume family of plants—used the same blueprint and developed a similar symbiotic relationship with certain types of soil bacteria.

These bacteria, known as rhizobia, would infect the roots of legume plants and then use an enzyme to break down and fix abundant atmospheric nitrogen into accessible nutrients for the plant, supporting its continuous growth.



Today, scientists addressing the challenges threatening global food systems hope that by retracing past plants' evolutionary steps, they can leverage these natural processes to reduce costly overreliance on inorganic fertilizers and support more sustainable production of the

world's staple crops. A major area of advancement includes research into plant perception mechanisms for mycorrhizal fungi and rhizobia, which has allowed scientists to make strides in understanding how legumes “decide” to engage with these beneficial bacteria. For example, we now know the molecular mechanisms—involving various signals, genes, and proteins—that integrate plant nutrient status and symbiotic “willingness.” Typically, legumes and other plants will “turn off” their ability to connect symbiotically with beneficial microbes once sufficient nutrients, usually supplied by fertilizers, are present in the soil.

Using knowledge from such research, along with gene editing technologies, scientists can now control and dial up both the positive and negative signals in plants (e.g., legumes, rice, barley) that determine the interaction with beneficial microbes. This means that scientists can reactivate or augment plants' biological ability to source nutrients naturally from their environment, potentially reducing the existing dependence on applied fertilizers.

The Potential of Plant-Microbe Symbiosis

Although new insights hold promise, this research is still in its early stages, and much remains to be done before plants' beneficial associations with microbes can be fully utilized in the field. For instance, scientists are field-testing crop lines where plants continuously engage with symbiotic mycorrhizal fungi to

investigate the impact of this symbiotic connection on nutrient absorption and yield in agricultural settings.

Decades of plant breeding have traditionally been thought to have caused modern staple crops, such as maize (corn), wheat, and others, to become more reliant on fertilizers, diminishing the role of ancient fungal symbioses. However, recent research has shown that modern varieties remain responsive to and continue to benefit from fungal symbiosis.

As scientists continue their research and look to reestablish symbiotic connections in crop species, they must identify varieties with the greatest capacity to associate with beneficial soil fungi and bacteria. In parallel, more work is needed to better understand how to optimize the signaling processes plants use when deciding whether to engage with microbes to ensure that they take full advantage of the potential of such interactions.

Ultimately, if both of these research tracks deliver promising results, scientists may be able to produce new crop varieties that significantly improve on the abilities of current varieties to benefit from interactions with symbiotic fungi. Such improved varieties, in turn, would support sustainability through higher yields and reduced usage of fertilizers.

The Future of Sustainable Farming

Sustainable transitions in global food systems that help farmers, particularly those without access to the latest agricultural technologies, prepare for and adapt to the impacts of climate change are badly needed. And the world cannot wait much longer for these innovations.

The global carbon emissions budget (the maximum amount of emissions that can be produced before average global temperatures rise beyond the target set by the 2015 Paris Agreement) is increasingly limited, whereas the likelihood of keeping global heating below 1.5°C is growing ever slimmer.

Research into optimizing plants' engagement with beneficial fungi is thus emerging at an opportune time. Compared with traditional techniques of plant

breeding, genetic editing approaches like those used in this research are significantly faster and should cut the time needed to deliver new crop varieties that meet imminent climatic challenges.

Enhancing symbiotic relations with arbuscular mycorrhizal fungi and rhizobia will not only allow crops to deliver high yields with less fertilizer but will also offer other broad sustainability benefits for agricultural production. For instance, beneficial fungi can support the sequestration of more atmospheric carbon underground while at the same time significantly augmenting soil fertility.

Applying knowledge gained from research into the roles of beneficial fungi and bacteria will likely be foundational in achieving the goal of the United Arab Emirates Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action, signed in December at the COP28 climate talks in Dubai. The declaration saw more than 150 countries commit, for the first time, to transitioning to sustainable and resilient food systems as a key pillar of climate action. Already, there have been important steps toward more sustainable farming practices for the world's major staple crops. For instance, rice farming (which, at present, is responsible for roughly 10% of global methane emissions) and maize and legume farming are increasingly embracing climate-smart practices. These practices include, among others, the adoption of improved tillage and pest management practices as well as cultivation techniques that reduce greenhouse gas emissions, water consumption, and the time needed to grow the crop. Recent research suggests that rice production, like that of many other staple cereal crops, also has extensive potential to benefit from enhanced arbuscular mycorrhizal symbiosis.

Scientists are continuing to build a clearer picture of the processes that dictate engagement with beneficial microbes and how we can influence these processes for good. Although this research remains in its early days, the potential to optimize crop biology for better nutrient uptake is a promising, yet underappreciated,

solution for reducing fertilizer dependence, promoting sustainable food production, and improving food security for communities around the world.

RISING TEMPERATURES THREATEN INDIA'S WHEAT PRODUCTION

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Yields of the country's second most important food staple have declined significantly in the past two years. In 2022, excessive temperatures in March hit wheat production, lowering output by almost 4 million tonnes below the

government's forecast of 110 million tonnes.

Studies show that the impact of "heat stress" was more evident in key wheat growing states of north India where wheat productivity declined significantly during the 2021-22 *rabi* or winter planting season (sowing in mid-November and harvesting in April-May).

In Punjab, for instance, the decline was 13.5 percent compared to the previous year. Scientists have estimated that for every 1 degree Celsius increase in temperature wheat production reduces by 4-5 million tonnes.

Worryingly, the adverse effect of heat stress is threatening to reverse the substantial improvements in wheat production India experienced between 2014-15 and 2020-21 when output increased from 86 million tonnes to 110 million tonnes.

In 2023, the official target for wheat output of 113 million tonnes was again down by almost 3 million tonnes. This year, the government expects wheat output to be 110 million tonnes, but the actual level will not be known for several months.

However, these figures are disputed by the main industry body, the Roller Flour Millers' Federation of India. It says wheat output levels were lower than those projected by the government by at least 10-14 percent. This year, the federation expects wheat production to be around 105 million tonnes, 8 percent lower than

government projections, although this would be about 3 percent higher than the federation's estimates of the previous year's output.

Lending credence to the estimates of the industry was the consistently lower-than-expected level of wheat procurement by the government.

During the 2022-23 rabi marketing season, procurement by government agencies was 18.7 million tonnes as against the government target of 44.4 million tonnes, a 60 percent shortfall. The following year, the government set a considerably lower procurement target of 34.2 million tonnes, but actual procurement was 26.1 million tonnes, almost a quarter lower.

Given the experiences of the past two rabi marketing seasons, the government lowered the wheat procurement target for the current season further to 30-32 million tonnes. However, as in the past two seasons, actual procurement is expected to remain below the target.

The latest estimates indicate that wheat procurement would be marginally higher than that of the previous year.

The decline in production over the past two seasons has reduced domestic availability of wheat, thus jeopardizing the government's targets on two fronts. First, it is lowering publicly held stocks, namely buffer stocks, critical for providing subsidized food grains to the poor as well as for conducting open market operations necessary for keeping domestic wheat prices in check.

Second, lower output has affected the government's aspirations for transforming India into an agriculture export hub.

These aspirations were fueled during 2021-22, when India emerged as one of the major exporters of wheat, exporting a record level of over 7.2 million tonnes of the commodity. But with wheat output declining in 2022 after increasing continuously for six years, between 2015-16 and 2020-21, the government banned wheat exports in order to "manage the overall food security of the country and control the increasing prices of foodgrains."

However, even while imposing the export ban, the government decided to “continue with deals which are done directly with other governments” resulting in export of more than 4.6 million tonnes during 2022-23.

With wheat production declining during the year, continued wheat exports made its impact felt on the domestic food reserves. The buffer stock of wheat maintained by the Food Corporation of India (FCI) dropped to 29.9 million tonnes on June 1, 2024, almost 4.7 percent lower than the 31.4 million tonnes a year ago. The current buffer stock level is at a 16-year low, slightly higher than the previous lowest wheat stock that was at 24.1 million tonnes on June 1, 2008.

Though the government claims that the existing level of buffer stock is adequate for meeting any exigencies, there are indications that it is less certain than it professes.

That supply constraints have become an area of concern from the government is evidenced by the fact that India has begun importing substantial quantities of wheat, for the first time since 2017-18. Imports began again in June 2023 and have increased consistently since. Until April this year, total imports have been almost 115,000 tonnes.

There is no doubt that India would find it difficult to enhance the production of wheat given the significant challenges posed by consistent increase in temperatures in the immediate pre-harvest phase.

Faced with similar imperatives to ramp up wheat production in the mid-1960s, the then government had adopted the green revolution with strong research support that allowed the realization of the objective of food self-sufficiency.

The National Mission for Sustainable Agriculture (NMSA) is expected to play a similar role, having been tasked with the responsibility of transforming Indian agriculture into an ecologically sustainable climate resilient production system.

In addition, National Innovations in Climate Resilient Agriculture aims at “strategic research on adaptation and mitigation, demonstration of technologies

on farmers' fields and creating awareness among farmers and other stakeholders to minimize the climatic change impacts on agriculture.”

However, fiscal support for agricultural research has remained inadequate as increases in budgetary allocations have often not been increased in real terms, which shows a lack of political commitment in this vital area.

This situation needs to change quickly to prevent a catastrophic decline in wheat production.

CULTIVATING CHANGE: THE ROLE OF ESG IN AGRICULTURAL CARBON PROJECTS

June 08, 2024 <https://www.thehindubusinessline.com/>



As the global community grapples with the pressing challenge of climate change, carbon asset management has emerged as a crucial strategy for mitigating greenhouse gas emissions and promoting sustainable practices across various sectors, including agriculture. However, the evaluation of carbon projects in agriculture must extend beyond the mere calculation of carbon footprints to encompass a broader range of environmental, social, and governance (ESG) factors. This holistic approach not only enhances the overall impact and sustainability of carbon initiatives but also fosters community engagement, improves livelihoods, and promotes biodiversity conservation.

Quantifying ESG factors: Methodologies and challenges

The integration of ESG factors into carbon asset management strategies for agriculture requires robust methodologies for evaluation and quantification. While carbon footprint calculations have traditionally been the primary focus, there is a growing recognition of the need to incorporate additional metrics that capture the multifaceted nature of sustainable agricultural practices.

One significant challenge lies in the development of standardised frameworks and metrics that can effectively quantify social and governance factors. These aspects often involve qualitative assessments and stakeholder engagement, which can pose difficulties in terms of measurement and comparability across projects.

Environmental considerations: Beyond carbon footprints

While carbon sequestration and emissions reduction remain paramount in carbon asset management, a comprehensive approach must also consider the broader environmental implications of agricultural practices. This includes:

Soil Health: Regenerative farming techniques, such as crop rotation, cover cropping, and reduced tillage, can improve soil fertility, water retention, and carbon sequestration potential.

Biodiversity Conservation: Sustainable agricultural practices can promote the preservation of natural habitats, contributing to the protection of flora and fauna diversity.

Water Resource Management: Efficient irrigation techniques, rainwater harvesting, and the implementation of water-saving technologies can enhance water conservation efforts in agriculture.

Social considerations: Enhancing community engagement and livelihoods

The social dimension of ESG factors in carbon asset management is pivotal in ensuring the long-term sustainability and inclusivity of agricultural carbon projects. Key considerations include:

Community Engagement: Involving local communities in the planning and implementation stages of carbon projects can foster a sense of ownership and promote the adoption of sustainable practices.

Livelihood Improvements: Carbon initiatives can contribute to the economic empowerment of smallholder farmers by providing access to alternative income streams, training, and resources.

Labor Practices: Ensuring fair labor conditions, worker safety, and ethical employment practices within agricultural operations is crucial for maintaining social sustainability.

Governance factors: Transparency and accountability

Robust governance frameworks are essential for ensuring the credibility and transparency of carbon asset management in agriculture. This includes:

Compliance with sustainability standards: Adherence to internationally recognized standards, such as those set by the International Standards Organisation (ISO) and the Roundtable on Sustainable Palm Oil (RSPO), can enhance the credibility and comparability of carbon projects.

Stakeholder Engagement: Engaging with diverse stakeholders, including local communities, NGOs, and regulatory bodies, throughout the project lifecycle can promote transparency and accountability.

Policy and Regulatory Alignment: Aligning carbon asset management strategies with relevant government policies and regulations can facilitate the successful implementation and scalability of agricultural carbon projects.

Land-use change: Balancing environmental and social implications

The potential environmental and social repercussions of land-use change associated with carbon projects in agriculture must be carefully evaluated. While the conversion of degraded lands or monocultures to sustainable agroforestry systems can yield positive outcomes, the displacement of existing communities or the conversion of biodiverse ecosystems could have detrimental consequences. A comprehensive analysis of land-use change scenarios, coupled with robust safeguards and mitigation measures, is crucial to minimising negative impacts.

Co-benefits of agricultural carbon projects

Beyond carbon sequestration and emissions reduction, agricultural carbon projects can generate a range of co-benefits that contribute to overall sustainability. These include:

Improved Soil Health: Practices such as cover cropping, reduced tillage, and the application of organic amendments can enhance soil fertility, water retention, and nutrient cycling.

Biodiversity Conservation: Agroforestry systems, riparian buffers, and the preservation of natural habitats within agricultural landscapes can support biodiversity and ecosystem services.

Water Resource Management: Efficient irrigation techniques, rainwater harvesting, and the implementation of water-saving technologies can enhance water conservation efforts in agriculture.

Resilience to Climate Change: Sustainable agricultural practices can increase the resilience of farming systems to the impacts of climate change, such as drought, floods, and temperature extremes.

Conclusion

Evaluating ESG criteria in carbon asset management for agriculture is a critical step toward achieving truly sustainable and impactful carbon initiatives. By extending the focus beyond carbon footprints and embracing a comprehensive approach that incorporates environmental, social, and governance factors, we can unlock the full potential of agricultural carbon projects. This holistic approach not only contributes to climate change mitigation but also fosters community engagement, improves livelihoods, and promotes biodiversity conservation. With robust methodologies, stakeholder engagement, and alignment with sustainability standards, carbon asset management in agriculture can pave the way for a more resilient and sustainable future for our planet and its inhabitants.

ORGANIC FARMING

VERGER NATURALS SUSTAINABLY SOURCES CINNAMON AND SPICES FROM SRI LANKA

15 June 2024 <https://www.premiumbeautynews.com/>

Working closely with small farmers from Sri Lanka, Verger Naturals supplies a wide range of natural extracts, including their hero ingredient Ceylon Cinnamon, also known as ‘true’ cinnamon, which boasts a specific biochemical composition

resulting in a truly unique olfactive experience, characterized by its delicate sweetness, mild warmth and complex undertones. However, like many suppliers of natural materials, Verger must deal with climate change and price instability. Ahead of the next World Perfumery Congress (WPC) in Geneva, we met with Nuwan Delage, Founder.



Verger Naturals was created ten years ago, with the aim to promote traditional spices and natural extracts from Sri Lanka while championing sustainability and the upliftment of farming communities. What is special about your business?

Nuwan Delage - At Verger sourcing raw materials starts with partnership. It's a relationship we build with our farmers, one based on trust and understanding. We need to understand their processes, their challenges, their needs. The farmers in turn need to understand what we do to get their produce to the right customers at a fair price. Like most things in nature it is a symbiotic relationship between us and our farmer collectives.

How would you define sustainable sourcing?

Nuwan Delage - There are two key aspects to sourcing sustainably. The first and most commonly understood aspect is, based on managing the impact we have on the planet – the soil, the water table, the climate. It is about farming in a manner that does not strip the earth of resources but rather supports continued abundance. Here it matters how we manage harvesting and processing practices.

The second aspect is the impact we have on people and communities: paying fair prices, supporting farmers in difficult time and also improving their livelihoods. In a time where many people are moving away from farming in search of other opportunities it is important for us to make farming a practical and sustainable choice, where people can grow and develop and live good lives.

What major downstream challenges are you facing?

Nuwan Delage - Supply chain volatility is the biggest challenge that we face! Crop seasons are affected by climate change, and with irregular harvest yields, farming communities face economic challenges affect.

Could you give us an example of an initiative you've implemented to address such challenges?

Nuwan Delage - In 2021, a sudden governmental ban on chemical fertilizers, left many farmers in a difficult situation. We allocated a 75 acre plot of land to use waste cinnamon bark from the distillation process as the main raw material to generate 15 tons of compost per month. The compost is provided to our farming communities free of charge. Although the ban on non-organic fertilizer has been lifted, the current economic climate, resulting in high cost of fertilizers, means farmers still grapple with this issue and the compost project is therefore still as needed as it was when we began. This is also a form of regenerative agriculture that we are happy to be developing.

What kind of support would you like from the industry?

Nuwan Delage - It is important for the industry to understand our challenges and move towards providing longer term commitments on prices and volumes. In addition, continued commitment to transparency would be much appreciated.

What does transparency mean at source, is this interlinked to traceability?

Nuwan Delage - Transparency means to heighten the awareness we have within our supply chain, to know what practices are followed by the suppliers and partners upstream and be able to leverage this knowledge to improve the supply chain, farming practices and the benefits for everyone. Traceability without transparency is limited.

ORGANIC SEED PRODUCTION: YOUR COMPREHENSIVE GUIDE TO SUSTAINABLE FARMING

28 June, 2024 <https://krishijagran.com/>



Organic farming has gained significant popularity worldwide due to its focus on sustainability and health-conscious agricultural practices. A key aspect of this movement is organic seed production. The seeds produced or adapted for organic agriculture, grown under

conditions adhering to organic farming principles. These seeds do not contain residues of chemical fertilizers, pesticides, or GMOs, promoting healthier crops and ecosystems.

Benefits of Organic Seed Production

Environmental Conservation: Organic seed production enhances soil fertility, reduces erosion, and conserves water resources. For example, using cover crops like legumes (such as clover and vetch) improves soil structure and fertility without synthetic inputs. Additionally, incorporating composted chicken manure increases soil organic matter, improving nutrient availability.

Healthier Crops and Consumers: By avoiding synthetic chemicals, organic seeds yield crops free from harmful residues, ensuring healthier food products. For instance, organic tomatoes are grown without chemical pesticides, reducing health risks for consumers. Another example is planting beans with corn, which supports nitrogen fixation and weed suppression naturally.

Supports Sustainable Agriculture: Organic seed production promotes natural farming methods, supporting long-term agricultural sustainability. Crop rotation and companion planting are examples of practices that reduce pests and diseases naturally, minimizing reliance on chemical controls.

Steps Involved in Organic Seed Production

1. Seed Selection and Preparation

Choosing Suitable Varieties: Select local varieties adapted to organic farming conditions, like heirloom tomatoes for flavor and adaptability. Another example is selecting disease-resistant varieties to reduce the need for chemical treatments.

Seed Treatment: Treat seeds with organic-approved substances, e.g., neem oil for pest control and seaweed extract for growth promotion.

2. Field Preparation

Soil Management: Enhance soil fertility with compost and green manure.

Mulching with straw is another example that suppresses weeds and retains soil moisture naturally.

Weed Management: Use mulching and hand weeding. For instance, using landscape fabric suppresses weeds effectively in organic carrot production.

3. Sowing and Crop Management

Planting: Ensure proper spacing and depth. Planting lettuce in succession is an example that maximizes yield without overcrowding.

Irrigation and Nutrient Management: Use drip irrigation and organic fertilizers. Applying compost tea is another example that boosts soil nutrients and microbial activity.

4. Pest and Disease Management

Biological Controls: Introduce beneficial insects like ladybugs to control aphids in organic lettuce production. Another example is using nematodes to control soil pests naturally.

Organic Sprays: Use garlic spray for fungal diseases. Garlic extract sprayed on tomatoes prevents early blight effectively.

5. Harvesting and Seed Processing

Timing: Harvest at maturity. Collecting lettuce seeds when pods turn brown ensures seed viability.

Processing: Clean and dry seeds naturally. Air-drying pepper seeds preserves seed quality and germination rates.

6. Seed Certification

Certification Process: Seek organic certification. Organic certification agencies verify compliance with organic standards.

Traceability: Maintain records for traceability. Keeping detailed logs of planting dates and inputs ensures transparency.

Challenges in Organic Seed Production

Limited Availability: Some organic seed varieties may be less accessible. Rare heirloom varieties may require sourcing from specialized seed banks.

Higher Costs: Initial investment in organic inputs and certification can be costly. Organic certification fees vary based on farm size and location.

Technical Expertise: Requires knowledge of organic farming practices. Training in soil health management supports successful organic crop production.

ORGANIC FARMERS' BELIEFS ABOUT SOIL MICROBIOME AFFECT THEIR PRACTICES, STUDY SHOWS

June 24, 2024 <https://www.farmersadvance.com/>

Organic farming can support soil microorganisms that promote plant defenses and reduce insect pests. But not all organic practices are equally beneficial for soil microbes, and it's important to understand farmer motivations in order to encourage the adoption of microbiome-supportive efforts. A new study from the University of Illinois Urbana-Champaign and Cornell University looks at how organic farmers' beliefs about the microbiome influence their soil management practices.

“There is very little research on what farmers think about the soil microbiome and what it means for which agricultural practices they adopt. In the long run, we want to understand organic farmers' incentives to adopt microbiome-friendly practices from an economic perspective,” said co-author Shadi Atallah, associate professor

in the Department of Agricultural and Consumer Economics, part of the College of Agricultural, Consumer and Environmental Sciences (ACES) at Illinois.

The researchers surveyed 85 organic vegetable farmers in New York, gauging their microbiome beliefs, farming practices, and motivations. The farmers were also asked to provide soil samples from their fields.

The survey included a brief explanation of the interaction of soil microbes and plant defenses. Then, farmers were asked to indicate their agreement with a series of statements about factors that influence the soil microbiome, including on-farm practices such as no-till, cover cropping, or mulches; farm characteristics; external factors from bordering lands; and climate events.

“Overall, 96% of the farmers believed that the microbiome on their farm is influencing plant defenses and pest suppression. But there was much more variety in their beliefs about what factors promote a healthy microbiome,” said lead author Elias Bloom, postdoctoral research associate at Cornell.

The researchers identified seven belief clusters, based on the farmers’ agreement with the microbiome impact of on-farm practices, external factors, or a combination of those.

“We found that farmers who believed on-farm practices such as no-till or cover crops are important for influencing the microbiome also tended to adopt those practices. These beliefs are consistent with what the literature indicates are the preferred practices to support the microbiome,” Bloom said.

The researchers also looked at demographic characteristics such as farm size and farmer’s age and how that influenced the adoption of practices.

“For example, larger farms tend to be less diversified and less likely to adopt no-till and biological mulches. To promote these ecosystem benefits, researchers need to think about how to bring no-tillage and diversified crop production to a larger scale so they can be more manageable for larger farms,” Bloom stated.

If Extension services and land management agencies have a goal of encouraging farmers to maximize investments in the soil microbiome, it’s important to know

how to target messages, Atallah said. Beliefs can be hard to measure, while socio-economic characteristics are more directly observable, so there is an opportunity to use these characteristics as a proxy for beliefs.

The authors caution demographic variables did not fully predict the adoption of farming practices. They said it's important to examine beliefs in order to fully understand farmer motivations.

“There's another important and exciting part of the study, which we will explore in the next steps,” said co-author Clare Casteel, associate professor in the School of Integrated Plant Science at Cornell. “We've also collected soil samples from all these farmers across the sites. We're actually going to measure changes in the microbiome and link biology to the understanding of economics and current beliefs.”

Atallah noted this is an exploratory study focusing on a sample of organic farmers in New York, a state where organic farming is thriving. It doesn't allow for conclusions on a national scale, but the work can inform future research on microbiome-friendly practices.

“Understanding why different farmers might select different practices based on what they believe about the microbiome is a first step to understanding how to incentivize certain kinds of organic practices. Eventually, there could be market incentives such as a microbiome-friendly ecolabel on food,” he added.

Bloom noted the work also relates to connections between the soil microbe and human health.

“What you put into your body influences your gut microbiome and your health. Similarly, what you put into your farm influences your soil microbiome and the health of your crops. There are important parallels between our work in organic agriculture and the soil microbiome to a broader interest in the public about the microbiome in general and how it influences all parts of our lives. We're still just at the beginning of understanding how it all fits together in humans and within farming systems.”

ICAR TIES UP WITH COROMANDEL INTERNATIONAL TO LEVERAGE SOIL TEST-BASED DATASETS FOR BETTER CROPS

Jun 17, 2024 <https://www.zeebiz.com/>

The Indian Council of Agriculture Research-National Bureau of Soil Survey and Land Use Planning (NBSS&LUP) has entered into a Memorandum of Understanding (MoU) with Coromandel International (CIL), a fertilizer company. The company Coromandel International informed the exchange in a filing on Monday. The collaboration aims to enhance the dissemination of improved soil test-based crop nutrition management to benefit farmers in Maharashtra, particularly in the Vidarbha and Marathwada regions.

The partnership will leverage soil test-based datasets generated by NBSS&LUP and the nutritional management solutions provided by Coromandel to improve soil health and crop productivity in the region.

This collaboration also aims to foster better coordination, research exchange, and support for the farming community.

At the MoU signing ceremony, N.G. Patil, Director of ICAR-NBSS&LUP, Nagpur, highlighted the Bureau's mandate and activities across its five regional centers.

He emphasized a goal-oriented developmental approach, offering farmers advisories based on land parcel information using soil data from the Land Resource Inventory (LRI).

Sankarasubramanian S, Executive Director of Nutrient Business at Coromandel International, who signed the MoU on behalf of the company, stressed the

importance of balanced nutrition management based on soil test data for the betterment of the farming community.

He expressed a desire to extend this partnership to other parts of Maharashtra and India, providing soil-based digital solutions generated by ICAR-NBSS&LUP for optimal fertilizer recommendations through site-specific nutrient management.

This MoU will enable Coromandel International to introduce advanced nutrition and crop management practices in Maharashtra, utilizing the soil information and farm advisories provided by ICAR-NBSS&LUP. As part of this project, site-specific nutrition demonstrations and farmers' awareness programs will be conducted.

The validated results will be used to develop Decision Support Systems (DSS) through mobile applications, aiding in crop choices and nutrient management.

During the signing event, several other collaborative opportunities were discussed, including drone-based research for precision agriculture, carbon farming, and climate-smart agriculture. These discussions focused on common scientific and farmer-centric issues, aiming to further enhance the impact of this partnership.

ICAR EMPOWERS GOAN FARMERS WITH INNOVATIVE RICE FARMING TECHNIQUES IN COASTAL SALINE SOILS

11 June, 2024

<https://krishijagran.com/>



In a bid to bolster rice farming in Khazan lands, ICAR-Krishi Vigyan Kendra, in collaboration with ICAR-Central Coastal Agricultural Research Institute, Goa, organized a comprehensive training session at Mayam

village. The event, held under the Technology Demonstration Component of

National Innovations in Climate Resilient Agriculture, aimed to equip farmers with the latest techniques and inputs to enhance productivity in coastal saline soils.

Dr. N. Bommayasamy, Senior Scientist and Head of ICAR-KVK, North Goa, underscored the importance of utilizing drum seeders for direct sowing rice, alongside practices such as concurrent cultivation of rice with dhaincha for green manure, treating seeds with biofertilizers, and employing bio-control agents for pest management.

Additionally, strategies for maintaining soil health and productivity through organic manure and bio-fertilizers were emphasized, along with the use of bio-pesticides and bio-fungicides to combat pests and diseases.

During the program, ten farmers and farm women from the NICRA-adopted village received improved high-yielding rice variety, Goa dhan-4, and bioformulation, Goa Bio-1, specially developed for Khazan lands.

This initiative signifies a concerted effort towards sustainable agriculture practices tailored to the unique environmental conditions of coastal regions.

AGRINNOVATE INDIA FACILITATES TRANSFER OF ICAR-CTCRI'S 'E-CROP' IOT TECHNOLOGY FOR SMART FARMING

12 Jun 2024 <https://krishijagran.com/>



ICAR-CTCRI's groundbreaking 'E-Crop' IoT technology for smart farming was successfully transferred to M/s. Tech Visit IT Pvt. Ltd., facilitated by Agrinnovate India, promises to revolutionize agricultural practices with precise resource management and sustainable solutions.

In a significant stride towards advancing precision agriculture, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, unveiled 'E-Crop,' an IoT-based technology, aimed at revolutionizing farming practices.

The technology transfer, orchestrated by Agrinnovate India Limited, New Delhi, witnessed the signing of a Technology Licensing Agreement (TLA) with M/s. Tech Visit IT Pvt. Ltd, Mumbai. Dr. G. Byju, Director of ICAR-CTCRI, exchanged the agreement with Shri. Bharat Patni, Director of M/s. Tech Visit IT Pvt. Ltd.

'E-Crop' holds immense potential in the smart farming sector, as highlighted by Dr. Praveen Malik, CEO of AgIn, emphasizing its capacity to boost farmers' profits compared to conventional methods.

Dr. G. Byju underscored the significance of licensing 'E-Crop' on World Environment Day, marking a pivotal moment in ICAR-CTCRI's journey towards sustainable agricultural practices.

The principal scientist and inventor of the technology, Dr. V.S. Santhosh Mithra, elucidated the farmer-friendly features of 'E-Crop,' managed through the Institute Technology Management Unit of ICAR-CTCRI, in collaboration with M/S Agrinnovate India Private, New Delhi.

This groundbreaking technology enables farmers to effectively manage scarce natural resources by precisely measuring soil moisture, temperature, nutrient content, and weather parameters. With its crop growth models offering timely guidance on irrigation, fertilization, and pest control, 'E-Crop' optimizes input efficiency and minimizes wastage, aligning with principles of regenerative agriculture. Notably, the technology commands a significant share in India's \$886.21 million agricultural technology market. The unveiling ceremony witnessed the participation of approximately 120 scientists and staff from ICAR-CTCRI, reflecting the collective commitment towards leveraging innovation for sustainable agricultural development.

കാർഷിക സർവകലാശാലയ്ക്ക് അംഗീകാരം

June 22, 2024 <https://www.manoramaonline.com/>



മണ്ണുത്തി • കാർഷിക സർവകലാശാലയിൽ നടപ്പാക്കുന്ന സുഗന്ധ തൈല വിള വികസന പ്രവർത്തനങ്ങൾക്കു ‘ബെസ്റ്റ് പെർഫോമർ’ അംഗീകാരം. ദേശീയ തലത്തിൽ അടയ്ക്കാ സുഗന്ധവിള ഗവേഷണ ഡയറക്ടറേറ്റിന്റെ കീഴിൽ പദ്ധതി നടപ്പിലാക്കുന്ന 47 കേന്ദ്രങ്ങളിൽ നിന്നുമാണു കാർഷിക സർവകലാശാലയെ തിരഞ്ഞെടുത്തത്.

ശ്രീനഗരിലുള്ള കശ്മീർ യൂണിവേഴ്സിറ്റി ഓഫ് അഗ്രികൾച്ചർ സയൻസ് ആൻഡ് ടെക്നോളജിയിൽ നടത്തിയ വാർഷികയോഗത്തിൽ കാർഷിക സർവകലാശാല നോഡൽ ഓഫീസർ ഡോ. ജലജ എസ്. മേനോൻ ഇന്ത്യൻ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് സ്പൈസ് റിസർച്ച് ഡയറക്ടർ ഡോ. ആർ. ദിനേഷിൽ നിന്നു പുരസ്കാരം ഏറ്റുവാങ്ങി. സുഗന്ധ തൈല വിള വികസനത്തിനായി മേന്മയുള്ള നടീൽ വസ്തുക്കളുടെ ഉൽപ്പാദനം, വിതരണം, മികച്ച സാങ്കേതിക വിദ്യ പ്രചരിപ്പിക്കൽ എന്നീ പ്രവർത്തനങ്ങളാണു സർവകലാശാല നടപ്പാക്കി വരുന്നത്.

ഡോ.വൈ. ആർ. ശർമ അനുസ്മരണ പ്രഭാഷണം ഭാരതീയ സുഗന്ധവിള ഗവേഷണസ്ഥാപനത്തിൽ (ഐ.ഐ.എസ്.ആർ) വച്ച് സംഘടിപ്പിച്ചു

26 June, 2024 <https://malayalam.krishijagran.com/>



എട്ടാമത് ഡോ.വൈ. ആർ. ശർമ അനുസ്മരണ പ്രഭാഷണം ഭാരതീയ സുഗന്ധവിള ഗവേഷണ സ്ഥാപനത്തിൽ (ഐ.ഐ.എസ്.ആർ) വച്ച് സംഘടിപ്പിച്ചു. മുംബൈ ഭാഭാ അറ്റോമിക് റിസർച്ച്

സെന്ററിലെ എഫ്.എഫ്.എ.സി.എസ് വിഭാഗം മുൻ മേധാവി ഡോ. പ്രസാദ്.എസ്. വാരിയർ "സുഗന്ധവ്യഞ്ജനങ്ങളുടെ ഗുണനിലവാരം മെച്ചപ്പെടുത്തുന്നതിനുള്ള റേഡിയേഷൻ പ്രോസസ്സിംഗ്" എന്ന വിഷയത്തിൽ മുഖ്യ പ്രഭാഷണം നടത്തി.

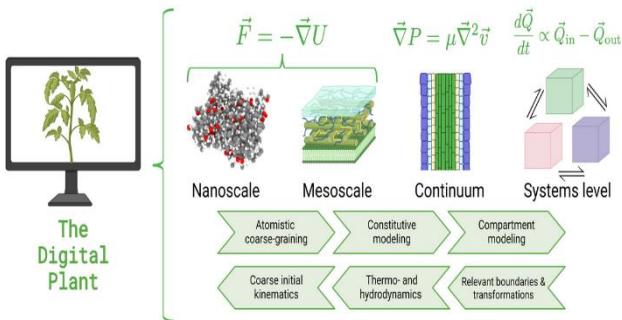
ഭക്ഷ്യോപയോഗ വസ്തുക്കളുടെ ഗുണനിലവാരം കാത്തുസൂക്ഷിക്കാൻ ഹാനികരമല്ലാത്തവിധം റേഡിയേഷൻ പ്രക്രിയ ഉപയോഗിക്കുന്നത് വിജയകരമാണെന്നും, വിദേശങ്ങളിൽ അതൊരു മാനദണ്ഡമായി ക്കൊണ്ടിരിക്കുകയാണെന്നും അദ്ദേഹം പറഞ്ഞു. ഡോ.വൈ. ആർ. ശർമ ട്രസ്റ്റ് ഏർപ്പെടുത്തിയ മികച്ച കർഷകനുള്ള അവാർഡ് കർണാടക ചിക്മംഗളൂരു സ്വദേശി ശ്രീ. ലക്ഷ്മണ ഗൗഡയ്ക്ക് അദ്ദേഹം സമ്മാനിച്ചു.

ശാക്തീയമായ സസ്യ സംരക്ഷണ മാർഗങ്ങൾ സ്വീകരിക്കുന്നതിലും സുഗന്ധവ്യഞ്ജനങ്ങൾക്കും തോട്ടവിളകൾക്കും സുസ്ഥിരമായ ഇടവിള സമ്പ്രദായം പ്രോത്സാഹിപ്പിക്കുന്നതിലുമുള്ള അദ്ദേഹത്തിന്റെ ശ്രമങ്ങളെ കണക്കിലെടുത്തുകൊണ്ടാണ് ട്രസ്റ്റ് ഗൗഡയെ തിരഞ്ഞെടുത്തത്. ഡോ. എ.ഐ.ഭട്ട് സ്വാഗതം പറഞ്ഞ ചടങ്ങിൽ ഡയറക്ടർ ഡോ.ആർ ദിനേശ് അധ്യക്ഷത വഹിച്ചു. ഡോ. എം.എൻ. വേണുഗോപാൽ, ഡോ. സന്തോഷ്.ജെ.ഇപ്പൻ, അരുണ ശ്രീനിവാസ് എന്നിവർ സംസാരിച്ചു.

GENERAL

DIGITAL TWINS AND NANOTECHNOLOGY CAN TRANSFORM AGRICULTURE

June 6, 2024 <https://www.cmu.edu/>



Carnegie Mellon University researchers have developed an approach to increase crop yield and efficiency by making plants more resilient against disease and harmful environmental factors.

In a world where agriculture accounts for 14%-28% of global greenhouse gas emissions and 70% of all freshwater withdraws, it is impossible to ignore that current agricultural practices are unsustainable. This, in addition to a range of other factors, including extreme weather events, rampant crop pests and rapidly degrading soil, underlines the need for new technologies to meet increasing global food demands and climate goals.

In a new study published in *Nature*[\(opens in new window\)](#), researchers at Carnegie Mellon University highlight that plant nanobiotechnology approaches can be used to deliver nanoforms of active agents, such as micronutrients or plant protection products, to specific biological targets. As a result, plants become more resilient against disease and harmful environmental factors like extreme heat or salt contents in soil, thus increasing crop yield and overall efficiency. However, because the field of plant nanobiotechnology is still in its nascent stages, many of the challenges to implementing new tools like nanocarriers are still unknown to researchers.

To overcome this obstacle, Greg Lowry[\(opens in new window\)](#), in collaboration with colleagues and students, is looking beyond plants and agriculture to find solutions inspired by nanomedicine.

“We found that the challenges of using nanocarriers to deliver nutrients in plants parallel those in nanomedicine, which has the advantage of being an established and well-studied field,” said Lowry, a professor of civil and environmental engineering[\(opens in new window\)](#). “While there are some key differences between plants and animals, many important parts of our research have been informed by nanomedicine, including identifying nanocarrier designs that can ensure that active agents are effectively packaged, delivered and released where they are needed.”

Similar to nanomedicine, researchers found that nanocarriers are most successful when they interact well with the organism they’re targeting, navigate key biological barriers, and take advantage of natural processes while minimizing unintended consequences. The study also explored the potentially transformative approach of creating “digital twins” of plants for assessing the efficacy of different nanocarrier designs.

Digital twins are breakthrough modeling technologies that have been widely used throughout infrastructure management, predictive maintenance and manufacturing. Their unique ability to analyze a structure and its surrounding

conditions, process the information, and use it to inform, predict and modify what happens in the physical world has revolutionized the way researchers process data. Just as medical researchers use “digital patients,” or digital twin models to simulate how medicines interact with and move within the body, Lowry and his team could use “digital plants” to facilitate the design of nanocarriers that target nutrient delivery to selected plant organs. In doing so, nanocarriers would be better equipped to deliver essential active agents where and when they’re needed most, increasing their effectiveness, resilience to adversity and overall agricultural output.

“Nano-enabled precision delivery of active agents in plants will transform agriculture, but there are critical technical challenges that we must first overcome to realize the full range of its benefits,” said Lowry. “I’m optimistic about the future of plant nanobiotechnology approaches and the beneficial impacts it will have on our ability to sustainably produce food.”

HEALTH BENEFITS OF CLOVES: NATURE’S REMEDY FOR INFLAMMATION, CANCER PREVENTION, DENTAL WELLNESS

JUNE 11, 2024 <https://www.moneycontrol.com/>



Cloves, the small, nail-shaped flower buds, are more than a culinary delight; they are packed with several health benefits. Apart from enhancing the flavour of dishes and beverages, cloves have been known for their medicinal properties for centuries. Cloves are rich in nutrients and bioactive compounds, which makes them a strong addition to a health-conscious diet. According to the certain studies, cloves contain significant amounts of vitamins and minerals, including vitamin C, vitamin K, manganese, and small amounts of calcium, magnesium, and vitamin

E. Moreover, cloves are high in antioxidants, particularly eugenol, which is known for its anti-inflammatory and antimicrobial properties.

Discover the many benefits of adding cloves to your diet:

Manages inflammation: Cloves possess strong anti-inflammatory properties due to their high eugenol content. A study finds that eugenol can significantly reduce inflammation and oxidative stress. This makes cloves beneficial in managing conditions like arthritis and other inflammatory diseases.

Promotes gut health: Clove is a popular plant rich in phytochemicals, known to improve gut health and growth performance in poultry. It can be used alone or combined with other plant extracts. It also has carminative properties, helping to reduce gas and bloating. Clove can improve gut health and prevent digestive issues like indigestion and constipation.

Boosts immune system: The high levels of antioxidants in cloves help strengthen the immune system. Antioxidants combat free radicals, which can damage cells and lead to chronic diseases. The antimicrobial properties of cloves can help fight off infections and improve overall immunity.

Reduces dental problems: Cloves have been used traditionally for dental care. Their antimicrobial and analgesic properties make them effective in reducing tooth pain and fighting oral bacteria. Clove oil can reduce tooth pain and treat gum infections, making it a popular ingredient in mouthwashes and toothpaste.

Regulates blood sugar levels: Cloves may help regulate blood sugar levels, making them beneficial for people with diabetes. Research indicates that the compounds in cloves can improve insulin function and lower blood sugar levels.

Improves respiratory health: Cloves can also benefit respiratory health. Their expectorant properties help in relieving symptoms of respiratory conditions like colds, asthma, and bronchitis. Clove oil can act as a natural remedy for respiratory issues by clearing mucus and easing breathing.

Possesses anticancer properties: The eugenol in cloves has shown potential in inhibiting the growth of cancer cells. A study finds that clove extract can prevent the proliferation of cancer cells and induce apoptosis, or programmed cell death, in cancerous cells.

NUTMEG: A MIGHTY SPICE WITH HEALTH BENEFITS

14 June, 2024 <https://krishijagran.com/>



Nutmeg is known for its excellent source of dietary fibre and is often found in dishes as an aid for better digestion. It also contains manganese, a mineral essential for bone health, enzyme function, and carbohydrate metabolism. It provides a good amount of copper, which plays a role in energy production, iron absorption, and immune function.

Health Benefits of Nutmeg:

Pain Relief: Nutmeg exhibits anti-inflammatory properties, potentially offering relief from pain and inflammation associated with arthritis and muscle soreness. It has also been used for centuries to be a relief for menstrual cramps.

Improved Brain Function: Nutmeg may contribute to cognitive health such as increased concentration.

Antibacterial Properties: Nutmeg has antibacterial properties, potentially aiding in the fight against foodborne illnesses and promoting oral health.

Digestive Aid: Nutmeg's carminative properties help relieve gas and bloating, promoting healthy digestion. It may also stimulate the appetite and alleviate nausea.

Mood Booster: Nutmeg has mild mood-lifting properties. Studies suggest it may help alleviate symptoms of anxiety and depression, although more research is needed in this area.

Beyond the Kitchen:

Nutmeg's applications extend far beyond the kitchen. In traditional medicine, it has been used for a variety of ailments, from pain relief to wound healing. The essential oil of nutmeg is used in aromatherapy to promote relaxation and ease anxiety. Topically, it may be used to soothe muscle aches and pains.

Effects of Excessive Nutmeg Consumption:

While nutmeg is generally safe for consumption in small amounts, excessive intake can be harmful. Nutmeg contains a compound called myristicin, which can cause hallucinations, seizures, and other adverse effects in high doses. The recommended daily intake of nutmeg is around 1-2 teaspoons, grated or ground. Pregnant and breastfeeding women should avoid nutmeg due to potential risks.

Including Nutmeg into Your Diet:

Nutmeg's warm, slightly sweet flavor complements a variety of dishes. It pairs beautifully with sweet and savory alike.

It can be added to baked goods to enhance their flavors.

Nutmeg adds a touch of warmth to savory dishes like stews, soups, and sauces. It pairs well with vegetables like pumpkin, butternut squash, and spinach.

A pinch of nutmeg can immediately elevate mashed potatoes, mac and cheese, and creamy pasta dishes.

Nutmeg adds a unique twist to beverages like eggnog, hot cocoa, and mulled wine.

A small amount can enhance the flavor of smoothies and protein shakes as well.

So, the next time you reach for your spice rack, do not forget to add a moderate amount of nutmeg to satiate your taste buds and for your health.

WOMEN ON A MISSION TO TURN TURMERIC LEAVES INTO LIQUID GOLD IN TELANGANA

23 Jun 2024 <https://www.newindianexpress.com/>

While turmeric is no longer one of India's best-kept secrets anymore, with people across the world recognising its anti-inflammatory and antioxidant properties, among others, a women-led self-help group (SHG) from Gummiryal village in Ergatla mandal of the district, renowned for its turmeric production, has gone a step further in realising the potential of the turmeric plant and spreading its goodness.

By extracting oil from the leaf of the plant, these women want to ensure that turmeric has another use case and motivates others to start a similar organisation. A major crop in the district, hordes of turmeric plants are destroyed or burned by farmers after the harvest season, leading to air pollution in the process. However, local farmers realised that the leaves of turmeric plants hold immense potential and approached the CSIR-CIMAP Research Centre in Boduppal, Hyderabad.

Scientists at the research station have confirmed that turmeric leaves contain essential oils that can be used in medicines, cosmetics and other products. This oil is in high demand, both locally and internationally, market experts say.

Ten women from the Manikanta SHG decided to establish a turmeric oil plant in their village. They approached the ICICI Foundation. With its support of Rs 12.5 lakh along with Rs 2.5 lakh invested by the SHG members, they have set up the oil unit.

The distillation plant works with steam to separate water and oil, both of which will be sold in the market. In an initial experiment, they used one tonne of leaves to produce 8 to 9 litres of essential oil, which they sell at a rate of Rs 600 per litre. Soma Raja Reddy was appointed the coordinator to promote the initiative and sell the product in the market.

Numerous health benefits

Highlighting the environmental benefits of the initiative, Soma tells TNIE that traditionally, after harvesting, farmers burn the turmeric leaves, causing harm to the environment. By extracting essential oil from the leaves, the SHG intends to avoid this harm and instead sell it to pharmaceutical and cosmetic companies, as well as manufacturers of organic medicines. This presents a new economic opportunity for rural areas, he adds.

Soma says that from the next season, they will start preparations for producing large quantities of turmeric essential oil and also decide on pricing for the market. He adds that they can easily earn `1.50 lakh per month after deducting all expenditures.

Furthermore, some turmeric farmers in the district are hopeful about the establishment of more value-added product units following the announcement of the National Turmeric Board by the Union government

MALAYALAM NEWS

കുരുമുളകിനെ ഇനി പിടിച്ചാൽ കിട്ടില്ല; കൊക്കോയുടെ കുതിപ്പിനെ അനുസ്മരിക്കുന്ന പ്രകടനം

June 10, 2024 <https://www.manoramaonline.com/>



കുരുമുളകിനെ ഇനി പിടിച്ചാൽ കിട്ടില്ല, അതേ കൊക്കോയുടെ കുതിപ്പിനെ അനുസ്മരിക്കുന്ന പ്രകടനം സുഗന്ധരാജാവിൽ പ്രതിഫലിക്കുന്നു. എൽ-ലിനോ കാലാവസ്ഥ പ്രതിഭാസം മൂലം മുഖ്യ ഉൽപാദകരാജ്യങ്ങളിൽ എല്ലാം തന്നെ വിളവ് ചുരുങ്ങിയത് സ്ഥിതി കൂടുതൽ സങ്കീർണ്ണമാക്കുന്നു. അമേരിക്കയും യൂറോപ്യൻ രാജ്യങ്ങളും കുരുമുളകിനായി ഇന്ത്യയിലേക്ക് തിരിയുമെന്ന് ഏതാനും മാസങ്ങൾക്ക് മുന്നേ 'കർഷകശ്രീ' നൽകിയ വിലയിരുത്തൽ കയറ്റുമതി ലോബിയുടെ ചങ്കിലാണ് ആദ്യ ആണി അടിച്ചത്. ചുളുവിലയ്ക്ക് 2000-2500 ടൺ ചരക്ക് കൂടി കൈക്കലാക്കാൻ ചില കേന്ദ്രങ്ങൾ കണക്കുകൂട്ടിയ അവസരത്തിലാണ് വിദേശ സാധ്യതകളെക്കുറിച്ചുള്ള വിലയിരുത്തൽ പുറത്തുവിട്ടത്. ആ വിറയിൽ ഒരു പകർച്ചവ്യാധി കണക്കെ വിയറ്റ്നാമിലേക്കും ഇന്തോനീഷ്യയിലേക്കും വ്യാപിച്ചു. അധികം വൈകിയില്ല, ബ്രസീലും മലേഷ്യയും ശ്രീലങ്കയും കുരുമുളക് വില ഉയർത്തിയതിൽനിന്ന് ഒന്ന് വ്യക്തം, വിദേശ ബയർമാർ കുരുമുളകിനായി ഇന്ത്യയെ ആശ്രയിക്കുമെന്ന്. [ഫെബ്രുവരി അവസാനം ഇതേ കോളത്തിൽ](#) വ്യക്തമാക്കി, അമേരിക്കൻ സ്പെസ് ട്രേഡ് അസോസിയേഷൻ നിഷ്കർഷിക്കുന്ന ഗുണനിലവാരം പുലർത്തുന്ന മുളകിനായി ന്യൂയോർക്ക് ആസ്ഥാനമായി പ്രവർത്തിക്കുന്ന ഇറക്കുമതിക്കാർ ഇന്ത്യയിലേക്ക് തിരിയുമെന്ന്.

മികച്ചയിനം ചരക്ക് കേരളത്തിലും കർണാടകത്തിലും സർറ്റോക്കുണ്ട്. എന്നാൽ അത് ഒരിക്കലും ഒരു ഭീമൻ സർറ്റോക്ക് അല്ലതാനും. ദക്ഷിണേന്ത്യൻ സംസ്ഥാനങ്ങളിലെ തോട്ടങ്ങളിൽ നേരിട്ടിറങ്ങി നടത്തിയ പഠനങ്ങളിൽ ഉൽപാദനം കുറയുമെന്ന് മനസ്സിലാക്കിയ വിവരങ്ങൾ കഴിഞ്ഞവർഷം അവസാനത്തിൽ തന്നെ കർഷകരിലേക്ക് നമ്മൾ എത്തിച്ചിരുന്നു. ഉൽപാദനം കുറഞ്ഞതിനാൽ കാർഷിക മേഖലയിൽ ഇനി നീക്കിയിരിപ്പ് 25 ശതമാനത്തിൽ ഒതുങ്ങും. ലോക സുഗന്ധവ്യഞ്ജന വിപണി വിയറ്റ്നാമിൽ നിന്നുള്ള പുതിയ ക്വട്ടേഷനുകളെ തികളാഴ്ച്ച രാവിലെ ആകാംക്ഷയോടെയാണ് ഉറ്റു നോക്കിയത്. ഇന്ന് ടണ്ണിന് 8000 ഡോളറിന് മുകളിലാണ് വിയറ്റ്നാമിൽ നിന്നും പുതിയ ഓഫറുകൾ ഇറങ്ങിയത്. കഴിഞ്ഞവാരത്തിലെ വിലയിലും ടണ്ണിന് 1700 ഡോളർ ഒറ്റയടിക്ക് ഉയർത്തി. പിന്നിട്ട 25 വർഷത്തെ ചരിത്രം പരിശോധിച്ചാൽ ഇത്തരം ഒരു കുതിച്ചുചാട്ടം അവിടെ സംഭവിച്ചിട്ടില്ല. കുരുമുളകുക്ഷാമം വിയറ്റ്നാമിൽ അത്രയ്ക്ക് രൂക്ഷമാണ്. ചരക്കുള്ളവർ അത് പൂഴ്ത്തിവെച്ചത് സ്ഥിതി കൂടുതൽ ഗുരുതരമാക്കുന്നു. കഴിഞ്ഞ മാസം ആഭ്യന്തര വിപണിയിൽ കിലോ 1,15,000 വിയറ്റ്നാം ഡോ.ഗിൽ വ്യാപാരം നടന്ന കുരുമുളക് വെള്ളിയാഴ്ച്ച 1,64,000ലായിരുന്നത് ഇന്ന് രാവിലെ 1,65,000 ഡോ.ഗിലേക്കു കുതിച്ചു. പ്രദേശിക മാർക്കറ്റിലെ ചരക്ക് ക്ഷാമം കയറ്റുമതിക്കാരെ വട്ടംകറക്കുന്നു.

2023 ജൂണിനെ അപേക്ഷിച്ച് മുളകുവില 125 ശതമാനം ഉയർന്നു. 2017നു ശേഷമുള്ള ഏറ്റവും ഉയർന്ന നിലവാരത്തിലാണ് അവിടെ ഇടപാടുകൾ നടക്കുന്നത്. 2020ൽ ഉൽപ്പന്ന വില 34,000 ഡോ.ഗിലേക്ക് ഇടിഞ്ഞത് കാർഷിക മേഖലയ്ക്ക് കനത്ത ആഘാതം സൃഷ്ടിച്ചതോടെ കർഷകർ മുളകിനെ തഴഞ്ഞ് കാപ്പിയിലേക്കും കൊക്കോയിലേക്കും ചുവടുമാറ്റി. ഇതുമൂലം നാലു വർഷമായി അവിടെ മൊത്തം ഉൽപാദനം അടിക്കടി കുറയുകയാണ്. പിന്നിട്ട വർഷത്തെ കാലാവസ്ഥ വ്യതിയാനം കൂടിയായപ്പോൾ വിളവ് കുത്തനെ കുറഞ്ഞു. വിയറ്റ്നാമിലെ ഒരു പ്രമുഖ കയറ്റുമതിക്കാരന്റെ വിലയിരുത്തൽ അടുത്ത മൂന്ന് മുതൽ അഞ്ച് വർഷങ്ങളിൽ ഉൽപ്പന്ന ഡിമാൻഡ് ഇരട്ടിക്കുമെന്നാണ്. ആഗോള വിപണിയിൽ മുളകിന് അനുഭവപ്പെടാൻ ഇടയുള്ള ആവശ്യം അത്തരമെന്ന് അവർ കണക്കുകൂട്ടുന്നു. കുരുമുളകുവില അവിടെ മൂന്നര ലക്ഷത്തിനും നാലു ലക്ഷത്തിനും ഇടയിലേയ്ക്കു കുതിക്കാം. അതായത് നിലവിലെ 1,65,000 ലക്ഷം ഡോ.ഗിൽ നിന്നും 3,50,000നു മുകളിൽ സഞ്ചരിക്കുമെന്ന് സാരം.

കൃഷി വ്യാപിപ്പിക്കൽ മാത്രമേ അതിന് ശാശ്വത പരിഹാരമെന്ന് വ്യക്തമായി മനസിലാക്കിയ അവർ വീണ്ടും തോട്ടങ്ങളിൽ പിടിമുറുക്കും. ഏതാനും വർഷം മുൻപ് രണ്ട് ലക്ഷം ടണ്ണിന് മുകളിൽ വിളയിച്ച അവർ പിന്നീട് കുരുമുളകിനെ തഴഞ്ഞു. ഈ വർഷം 1.70 ലക്ഷം ടൺ ഉൽപാദനം നേരത്തെ കണക്കുകൂട്ടിയെങ്കിലും അതിലും കുറയുമെന്നാണ് പുതിയ വിലയിരുത്തൽ. ജനുവരി-മേയ് 31 കാലയളവിൽ അവർ 1,14,424 ടൺ കുരുമുളക് കയറ്റുമതി നടത്തി. അതായത് ശേഷിക്കുന്നത് 50,000 അല്ലെങ്കിൽ 55,000 ടൺ ചരക്ക് മാത്രം. പുതിയ സീസൺ ആരംഭിക്കാൻ ഇനിയും എട്ടു മാസം കാത്തിരിക്കണം. മേയിൽ അവർ 31,357 ടൺ ചരക്ക് ഷിപ്പ്മെന്റ് നടത്തി. 30,000 വെച്ചാണെങ്കിൽ പോലും രണ്ടു മാസത്തെ ആവശ്യത്തിനുള്ള മുളക് മാത്രമേ അവിടെയുള്ളൂ. ആ നിലയ്ക്ക് നോക്കിയാൽ ജൂലൈ അവസാനത്തോടെ മുളകു വില രണ്ടു ലക്ഷം ഡോ.ഗിലേക്ക് ഉയർന്നാലും അദ്ഭുതപ്പെടാനില്ല. യൂറോപ്യൻ രാജ്യങ്ങളും അമേരിക്കയും ക്രിസ്മസ്-ന്യൂ ഇയർ വരെയുള്ള ആവശ്യങ്ങൾക്ക് മുൻകൂർ കച്ചവടങ്ങൾ ഉറപ്പിക്കാൻ പരക്കം പായുന്നു. നാലു മാസം മുന്നേ കുരുമുളക് വില 50,000 രൂപയിൽ നീങ്ങിയ അവസരത്തിലാണ് ക്ഷാമം രൂക്ഷമാകുമെന്ന് നമ്മൾ വ്യക്തമാക്കിയത്. ആ സൂചന മുഖവിലയ്ക്ക് എടുത്ത ഹൈറേഞ്ചിലെയും വയനാട്ടിലെയും മറ്റു ഭാഗങ്ങളിലെയും നമ്മുടെ കർഷകരെ കാത്തിരിക്കുന്നത് ഓണം ബംബറാണ്.

കൊച്ചിയിൽ ഗാർബിൾഡ് കുരുമുളക് 66,000 രൂപയിലെത്തി. ചരിത്ര നേട്ടങ്ങൾ തിരുത്താനുള്ളതാണ്, ഇക്കൂറി മലബാർ മുളക് അത് തിരുത്തുക തന്നെ ചെയ്യും. അതിന്റെ സൂചനയായി വേണം ഇന്ത്യൻ നിരക്ക് 8200 ഡോളറിലേക്ക് ഉയർന്നത്. രണ്ടാഴ്ച മുന്നേ 5000 ഡോളർ രേഖപ്പെടുത്തിയ ഇന്താനീഷ്യയുടെ പുതിയ വില 8200 ഡോളറായി. ബ്രസീലും വിയറ്റ്നാവും 8000 ഡോളറിൽ ഒപ്പത്തിന് ഒപ്പമാണ്. അതേ, മത്സരം ശക്തമാകുന്നു, പന്ത് കർഷകരുടെ പൂർണ്ണ നിയന്ത്രണത്തിലും. 10,000-12,000 ഡോളറിനെയാണ് ആഗോള കുരുമുളക് വിപണി ഉറ്റുനോക്കുന്നത്. ഇന്ത്യയ്ക്കു മുന്നിൽ ഇറക്കുമതി ഭീഷണിയില്ല, കയറ്റുമതി സാധ്യതകൾ മാത്രം.

മഞ്ഞൾ ഗ്രാമമാകാൻ വെളിയന്നൂർ, വെളിയന്നൂരിന്റെ സ്വന്തം ബ്രാൻഡിൽ മഞ്ഞൾ പുറത്തിറക്കും, പദ്ധതിയിലൂടെ 12000 കിലോ പ്രതിദ മഞ്ഞൾ വിത്ത് വിതരണം ചെയ്യും

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വെളിയന്നൂർ: മഞ്ഞൾ ഗ്രാമമാകാൻ ഒരുങ്ങി വെളിയന്നൂർ പഞ്ചായത്ത്. നെറ്റ് സീറോ കാർബൺ കേരളം ജനങ്ങളിലൂടെ പദ്ധതി ആദ്യഘട്ടത്തിൽ നടപ്പിലാക്കുന്ന പഞ്ചായത്തായ വെളിയന്നൂർ മഞ്ഞൾ ഗ്രാമം പദ്ധതിയിലൂടെ 12000 കിലോ പ്രതിദ മഞ്ഞൾ വിത്ത് വിതരണം ചെയ്യും. നൂറ്റി ഇരുപത് കർഷകരാണ് ആദ്യഘട്ടത്തിൽ പദ്ധതിയുടെ ഭാഗമാകുക. ശുദ്ധമായ മഞ്ഞൾ ലഭ്യമാക്കുക, ഔഷധ ഗുണം പ്രചരിപ്പിക്കുക എന്നിവയാണ് പദ്ധതിയുടെ ലക്ഷ്യം.

ഇതിനായി 2024-25 വാർഷിക പദ്ധതിയിൽ ഉൾപ്പെടുത്തി ഏഴ് ലക്ഷം രൂപ ചെലവഴിക്കും. ഗ്രാമസഭകൾ വഴിയാണ് അപേക്ഷ ക്ഷണിച്ചിരുന്നത്. വിത്ത് സൗജന്യമായി ആണ് നൽകുക. ഒരേ കാലയളവിൽ വിളവെടുക്കാൻ സാധിക്കും വിധം ജൈവ രീതിയിലാണ് കൃഷി ചെയ്യേണ്ടത്. ആവശ്യമായ മാർഗനിർദ്ദേശങ്ങൾ വിവിധ ഘട്ടങ്ങളിൽ പഞ്ചായത്തും കൃഷിഭവനും നൽകും. മഞ്ഞളിന്റെ വിപണിയും പഞ്ചായത്ത് ഉറപ്പാക്കും.

കോഴിക്കോട് ഭാരതീയ സുഗന്ധവില ഗവേഷണകേന്ദ്രം പുറത്തിറക്കിയ മഞ്ഞൾ ഇനമായ പ്രതിഭ എന്ന ഇനം മഞ്ഞൾ വിത്ത് ആണ് പദ്ധതിയുടെ ഭാഗമായി വിതരണം ചെയ്യുന്നത്. പ്രതിഭക്ക് ഗുണവും മണവും മാത്രമല്ല ഉത്പാദനശേഷിയും വളരെ കൂടുതലാണ്. തണലിലും നല്ല വിളവ് തരുന്നതിനാൽ തോട്ടത്തിലെ ഇടവിളയായും വീട്ടുവളപ്പിലെ കൃഷിയിലും പ്രതിഭ ഉൾപ്പെടുത്താം. മറ്റ് മഞ്ഞളിനങ്ങളെ അപേക്ഷിച്ച് കൂടിയ മണവും രുചിയും വിളവുമാണ് ഈ ഇനം മഞ്ഞളിനെ വെറിട്ടതാക്കുന്നത്.

റെയ്ഡ്കോ വഴിയാണ് പദ്ധതി നടപ്പിലാക്കുന്നത്. വിളവെടുപ്പ് സമയത്ത് സമാഹരിക്കുന്ന മഞ്ഞൾ ഗുണമേന്മ ഉറപ്പുവരുത്തി വെളിയന്നൂരിന്റെ സ്വന്തം ബ്രാൻഡിൽ പുറത്തിറക്കുന്നതിനാണ് വെളിയന്നൂർ ലക്ഷ്യം വയ്ക്കുന്നത്. പദ്ധതിയുടെ വിതരണ ഉദ്ഘാടനം ഗ്രാമപഞ്ചായത്ത് പ്രസിഡന്റ് സജേഷ് ശശി നിർവ്വഹിച്ചു. വൈസ് പ്രസിഡന്റ് ജിനി സിജു അധ്യക്ഷത വഹിച്ചു.

കിലോയ്ക്ക് 2.75 ലക്ഷം രൂപ വിലയുള്ള മാനവഴം; തൈക്ക് വില 2500 രൂപ: വ്യത്യസ്തമാണ് ഈ എൻജിനീയറുടെ തോട്ടം

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ബഹുരാഷ്ട്ര കമ്പനിയിലെ എൻജിനീയറായണെങ്കിലും ഒഡീഷ സന്ദേശിയായ സുബ്രത് നാഥ് രാവിലെ 5 മണിക്ക് എഴുന്നേറ്റ് 8 മണിക്ക് ഓഫീസിലേക്കു പുറപ്പെടുന്നതിന് മുൻപ് ചെടികളെ പരിപാലിക്കും. വീട്ടിൽ പച്ചക്കറിത്തോട്ടമുണ്ടായിരുന്നതുകൊണ്ടുതന്നെ ചെറുപ്പത്തിലേ കൂടെ കൂടിയതാണ് ചെടികളോടുള്ള താൽപര്യം. വളരുന്തോറും ആ താൽപര്യമേറി. ജോലി കഴിഞ്ഞ് വീട്ടിലെത്തിയാൽ ചെടികളെ നനയ്ക്കാനും മറ്റും സമയം കണ്ടെത്തും; മുൻപ് സ്കൂൾ പഠന കാലത്ത് ചെയ്തതു പോലെ തന്നെ. കൃഷിക്കു വേണ്ടി വീട്ടിലെ ബാൽക്കണിയുൾപ്പെടെ കഴിയുന്നത്ര സ്ഥലവും പ്രയോജനപ്പെടുത്തി ഏകദേശം 4000 ചതുരശ്രയടിയിലാണ് കൃഷി. അപൂർവ്വയിനം ചെടികളും കൂട്ടത്തിലുള്ളതാണ് ഈ എൻജിനീയറുടെ കൃഷിയെ വ്യത്യസ്തമാക്കുന്നത്. ആയിരം ഇതളുള്ള താമര (1000 lotus petals) സഹസ്രദള പത്മം, വിലയേറിയ മാവിനമായ മിയാസാക്കി എന്നിവ സുബ്രതിന്റെ തോട്ടത്തിലെ അപൂർവ്വയിനങ്ങളാണ്.

400 ചെടികളുള്ള തോട്ടത്തിൽ താമര, ആമ്പൽ എന്നിവയുടെ നൂറോളം വ്യത്യസ്തയിനങ്ങളുണ്ട്. 10 തരം ഓർക്കിഡുകൾ, അഡീനിയത്തിന്റെ 20 ഇനങ്ങൾ, മിയാസാക്കിയൂൾപ്പെടെ 10 തരം മാവിനങ്ങൾ എന്നിവയുൾപ്പെടുന്നു. അപൂർവയിനം ചെടികളെ വളർത്തുമ്പോൾ അവയ്ക്ക് അനുയോജ്യമായ താപനില, ഈർപ്പം എന്നിവയെക്കുറിച്ച് വ്യക്തമായ ധാരണ വേണം. കൂടാതെ വളർത്താനുപയോഗിക്കുന്ന ചെടിച്ചട്ടിയുടെ വലുപ്പത്തെക്കുറിച്ചും അറിവുണ്ടാവണം എന്നാണ് സുബ്രത്ത് പറയുന്നത്.

മിയാസാക്കി മാങ്ങ

ലോകത്തിൽ ഏറ്റവും വില കൂടിയ മാങ്ങയാണിത്. ജപ്പാനിലെ മിയാസാക്കി നഗരമാണ് സ്വദേശം. ആഗോളവിപണിയിൽ ഒരു കിലോയ്ക്ക് 2.7 ലക്ഷം രൂപ ഇതിന് വിലയുണ്ടത്രേ! സ്വാദേറയുള്ള ഈ മാമ്പഴത്തിൽ 15% പഞ്ചസാരയുണ്ട്. ഈ മാങ്ങയ്ക്ക് മുട്ടയുടെ ആകൃതിയായതിനാൽ 'എഗ്സ് ഓഫ് സൺ' എന്നും അറിയപ്പെടുന്നു. സുബ്രതിന്റെ കൈവശമുള്ള ഇതിന്റെ തൈ ഒന്നിന് 2500 രൂപ വിലയുണ്ട്.

ഒഡീഷയിൽ വേനൽക്കാലത്ത് താപനില 46 ഡിഗ്രി വരയാകാറുണ്ട്. ഈ അവസ്ഥയിൽ അപൂർവയിനം സസ്യങ്ങളെ വളർത്തുന്നത് ഒരു വെല്ലുവിളി തന്നെയാണ്. എന്നാൽ ആ വെല്ലുവിളിയെ മറികടക്കാൻ ശ്രമിക്കുകയാണ് ഇദ്ദേഹം. ചുടിനെ മറികടക്കാൻ ഒരു ഗ്രീൻഹൗസ് സജ്ജമാക്കിയിട്ടുണ്ട്. തൈകളെ 2-3 മാസം ഇതിനകത്ത് വളർത്തും. അതിനു ശേഷം സാവധാനമാണ് നേരിട്ടുള്ള സൂര്യപ്രകാശം ഏൽപ്പിക്കുക.

സസ്യങ്ങൾക്കാവശ്യമായ പോഷകങ്ങളായ നൈട്രജൻ, ഫോസ്ഫറസ്, പൊട്ടാഷ് എന്നിവ ചാണകത്തിലുള്ളതിനാൽ രാസവളങ്ങളുപയോഗിക്കാതെയാണ് കൃഷി. തൈകൾ വിറ്റതിലൂടെ കഴിഞ്ഞ വർഷം ഒരു ലക്ഷം രൂപ നേടി. എന്നാൽ മിയാസാക്കി മാവിൻതൈ വിൽക്കാൻ ഇപ്പോൾ ഉദ്ദേശമില്ല.