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SPICES

Turmeric found to Improve Memory and Protect the Brain

TOPHEALTHJOURNAL.COM-03-JUL-2018

Turmeric is one of the common domestic spices. It belongs to the ginger family. Aside from its characteristic use in the kitchen, it is also popular for its medicinal properties. It is often touted for its various medicinal uses. It is anti-inflammatory in nature. It treats abnormal and ulcerative bowel movements. Owing to the anti-amyloid properties, it is also asserted to prevent plaque formation between vessels.

In addition, a recent study has illuminated its potential use as a neuroprotector. The researchers from the University of California-Los Angeles have revealed that Curcumin supplementation can improve the memory of an individual.

Curcumin is the major active ingredient of turmeric. It imparts the characteristic orange-yellow color to turmeric. Turmeric is also rich in pyridoxine, vitamin C, zinc, iron, calcium, and turmerone. Almost all the medicinal uses of turmeric are attributed to Curcumin. Moreover, pyridoxine present in turmeric is also reported to treat blood conditions like anemia and radiation sickness.

The respective research was published in the American Journal of Geriatric Psychiatry.

For the experiment, 40 people with normal brain functioning and minor memory issues were examined. All of them were aged between 50-90 years. They were divided into a test and a control group. The experimental study continued for almost a year and a half and the participants were fed with 90 milligrams of Curcumin twice a day. The form of Curcumin fed i.e. Theracurmin had an increased ability to penetrate into the endothelial lining.

Cognitive tests were performed before starting the study, every six months during the study, and upon its completion. The data upon analysis concluded that daily intake of Curcumin can improve the memory of the subjects by 30%. In addition, their brain scans showed an improvement in signal conduction from hypothalamus, amygdala, and areas responsible for emotions. FDDNP-PET signals were determined in the amygdala, hypothalamus, temporal, parietal, frontal, and motor regions. Curcumin was also accredited to energize and radiate their moods. However, the control group didn't demonstrate the same results. The researchers further added that Curcumin effectively reduced inflammation in the brain cells which in other cases may promote depression and dementia. Some people, however, reported nausea and abdominal pain as a side effect but only in fewer cases.

The researchers anticipate future studies where Curcumin would be tested against depression and other mild psychotic disorders. The effect of age, genetic flaws, severe cognitive problems, and the inhabiting environment on the memory and mood are still to

be studied.Curcumin is a popular dietary staple in Asia and the senior citizens upon analysis exhibited improved cognitive abilities and a lower degree of Alzheimer's.

The benefactions offered by turmeric and especially Curcumin demand it to be a frequent part of our diet. It should preferably be obtained from the fresh root or ground spice. Curcumin found in curry blend is quite variable in amount thus fresh herb must be utilized in order to ensure the consumption of an adequate amount of Curcumin. Some people drink turmeric mixed in warm milk which is then named the "golden milk." It's a soothing way to relieve mild internal pains and injuries.

A lot of recent studies serve as an evidence of the advantages that turmeric offers. Almost all of these advantages are attributed to Curcumin. If you still don't find it in your diet, grab it from your nearest general stores and don't forget to add a pinch of it while cooking your food. You can also sprinkle it on your meal not only to add a taste but also to nutrify it.

PSU's new technology to help keep aroma of spices intact

TIMES OF INDIA :JUL 4, 2018

VADODARA: Did you cook that favourite cuisine of yours but felt the aroma of some spices missing? The state-owned Gujarat State Fertilizer Corporation Ltd (GSFC) has cooked up a technique to not just spice up your food, but also retain the taste of spices. The GSFC Agrotech Ltd, a subsidiary of GSFC, has launched its own packed spice powders. It has developed a unique technique wherein the spices are grinded, but they don't lose their aroma.

"We have developed a grinding technique using liquid nitrogen, which is cold. When the spices are being grinded in a machine, the temperature naturally goes up. The spices lose their aroma due to heat. But we use liquid nitrogen — which is one of our by-products — in the machine while grinding the spices to keep the temperature cooler," joint CEO of GSFC Agrotech Ltd Renu Bhatt said.

"The cool surroundings makes spice leaves crispy and easier to crush finely. Also, they retain their natural aroma and oil. These spices used even in little quantity make the food tastier. We have already begun selling them on trial basis at our retail outlet in GSFC premises," Bhatt told TOI. GSFC Agrotech is currently selling coriander and cumin powder, but it plans to expand its range of spices in future.

The company is yet to decide if it wants to sell the spice powders under its already existing brand 'Sardar'. Company officials said they are currently selling two spice powders in retail, but they can take bulk orders as well. When the sale picks up, the company plans to market it across the country.

"Currently, we buy coriander and cumin seeds from Unjha market, but we may also rope in farmers to meet our needs. The farmers will be asked to produce spices as per our demands. They will earn good income and we will get spices as per our needs," Bhatt added.

India sees record spices exports in FY18

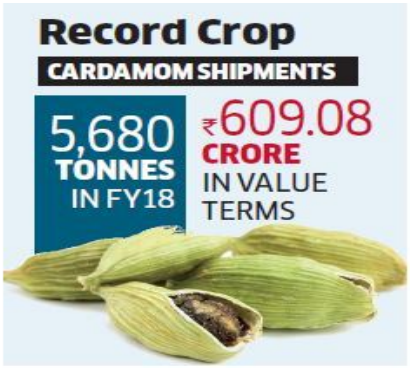
ECONOMIC TIMES : 01-JUL-2018

Mint products fetched the second highest revenue among spices with a volume of 21,500 tonnes worth Rs 3,228.35 crore.

KOCHI: India exported a record 1.03 million tonnes of spices and spice products in FY18, registering an increase of 8 per cent in volume terms. At about Rs 17,930 crore, exports were 1 per cent higher in rupee terms. In dollar terms, exports were pegged at $ 2.8 billion, up 5 per cent .

"Exports of Indian spices maintained an increasing trend during 2017-18 and exceeded the target fixed for 2017-18," Spices Board Secretary A Jayathilak said.

Compared to the target of 1.023 million tonnes, valued at Rs 17,665 crore ($2.64 billion) for FY18, the achievement was 100 per cent in terms of volume, 101 per cent in rupees, and 105 per cent in dollar terms. Jayathilak attributed the increase to innovative market interventions and the emphasis on value-added products by the board.



Exports of small cardamom created an all-time record, with shipments of 5,680 tonnes valued at Rs 609.08 crore as against 3,850 tonnes worth Rs 421.50 crore a year earlier, registering an increase of 48 per cent in volume and 45 per cent in value.

Chilli continued to lead Indian spice shipments with export of 4,43,900 tonnes, fetching an amount of Rs 4,256.33 crore. While volumes increased by 11 per cent , the value declined by 16 per cent from the previous year due to volatility in prices of chilli in international markets.

Mint products fetched the second highest revenue among spices with a volume of 21,500 tonnes worth Rs 3,228.35 crore. The value rose by 28 per cent but volumes fell 3.5 per cent . Cumin exports touched 1,43,670 tonnes valued at Rs 2,418 crore, increasing 21 per cent in volumes and 23 per cent in value.

Other gainers included garlic, asafoetida and tamarind and valueadded products like curry powder, spice oils NSE 4.88 % and oleoresins. A total volume of 17,200 tonnes of spice oils and oleoresins worth Rs 2,661.72 crore were exported, marking an increase of 42 per cent in volume and 15 per cent in value.

Kerala HC stays MIP of Rs 500/kg on pepper for now

ECONOMIC TIMES : 24-JUL-2018

The director general of foreign trade (DGFT) had in March issued orders banning all consignments of pepper imported below MIP.

KOCHI: In a major relief to valueadded pepper exporters, the Kerala High Court issued an interim stay on the minimum import price (MIP) of Rs 500 per kg imposed on black pepper imports.

The court observed that only the Central government had the power to issue notification framing or amending the Exim Policy under section 3 of the Foreign Trade (Development and Regulation) Act 1992.

The director general of foreign trade (DGFT) had in March issued orders banning all consignments of pepper imported below MIP. The MIP was first introduced last December to protect domestic pepper growers who said rising imports were responsible for the sharp slump in pepper prices. But value-added pepper exporters, who import pepper for value addition and re-export the commodity, continued to bring in pepper by paying fines from December till March. DGFT issued a ban in March.

"We will appeal against the stay. We have also met the commerce minister and apprised him of the situation," said KK Vishwanath, co-ordinator of Consortium of Black Pepper Growers Organisation.

Ever since the levy, MIP had become a bone of contention between the growers and exporters. Exporters like Kancor Ingredients and Synthite Industries, in their petition against MIP, contended that the total production of pepper in India was 35,000-60,000 tonne a year. The export requirement is 20,000 tonne.

Even when pepper production in the country had been at its maximum, it was not sufficient to meet the export requirement.

Save

Chilli Powder Could Contain Carcinogen: Study

HUNGRYFOREVER.COM : 17-JUL-2018

Did you ever imagine something on your kitchen shelf that's as staple as the chilli powder could lead to cancer? That's exactly what a study conducted by Gujarat Forensic Sciences University (GFSU) has found out recently. The study, which was on popular brands of

chilli powder revealed that about half of them had higher levels of mycotoxins which have already been proven to be carcinogenic.

Conducted by assistant professors Jayrajsinh Sarvaiya and Prajesh Prajapati of Institute of Research and Development (IRD) of GFSU, pointed this out as the factor for the high rejection rate of Indian spices on the western countries.

"Half of the top brands"

"We are constantly screening various commercial food samples for the presence of aflatoxin, a variant of mycotoxins, to train our students in food forensics. It is really a matter of a concern to find half of the top brands of spices, in particular, chilli powder, with a high level of either of the two variants of aflatoxin. At the same time, some of the brands were found to be of good quality too," Dr. Sarvaiya told the publication.

LC-MS method of screening mycotoxin in food products, the most advanced method for food forensics was used for the study, reported TOI. Six Indian brands were taken for study and some of the samples were found to have 50 to 100 ppb level as opposing to the accepted level of 30 ppb (parts per billion). Improper storage of the whole chillis by vendors was stated as a probable reason.

Proper storage and regular testing

"Various regulatory authorities of the world, including FSSAI has laid down very strict compliance limit for the presence of mycotoxins in different types of grains, pulses, spices, milk and other food products," said Dr. Pajapati. Mycotoxins are produced by specific strains of fungus and enter the food chain from them. Proper storage of the spiced in a humidity-free environment and regular testing for traces of fungus can prevent the growth of mycotoxins, according to Prasenjit Maity, in-charge director of IRD.

"The researchers added that even the feed for cattle should be screened to decrease contamination of aflatoxin M1, which is milk-specific mycotoxin in cow and buffalo milk. Internationally, the tolerance limit is set at 0.1 part per billion (ppb) for the substance," he added.

Involve States in foreign trade policy

HINDU BUSINESS LINE (SATIRE) (PRESS RELEASE) (BLOG)-25-JUL-2018

Kerala reaching out to southern States to lobby with New Delhi for a greater say in tariff talks is a welcome initiative

Chief Ministers of States across the country need to emulate Kerala, which plans to participate in foreign economic policy formulation that impacts peninsular India. Kerala's Agriculture Minister VS Sunil Kumar recently reached out to Karnataka, Tamil Nadu, Puducherry, Andhra Pradesh and Telengana to lobby with New Delhi for a greater say in tariff negotiations in international relations.

Kerala has conveyed its serious concerns to New Delhi over the Regional Comprehensive Economic Partnership, a proposed free trade agreement (FTA) between India and the 10 member ASEAN states which has a bearing on the southern economies. The crops common to some of these southern States are coconut, cashew, cardamom, coffee, ginger, turmeric, pepper and rubber, which are vulnerable to imports through the FTA.

Pepper story

Today the import of pepper, which is grown across Karnataka, Kerala and Tamil Nadu, has hit domestic prices drastically. Karnataka is the country's largest pepper producer after Kerala and Tamil Nadu. Following the Indo-Sri Lanka Free Trade Agreement (ISLFTA) signed in 2016-17, there was phenomenal increase in the import of spices, especially black pepper and nutmeg from Sri Lanka into India.

Cheaper pepper from Vietnam, the world's largest pepper producer, illegally entered India through Sri Lanka, Nepal, Myanmar and Bangladesh at eight per cent duty under SAARC agreement as against 70 per cent for other countries. This lowered Indian black pepper prices by 40 per cent during the last fiscal year.

An estimated 40,000 tonnes of pepper was dumped into the country in 2017 which compelled the Directorate General of Foreign Trade to shift import of this commodity and its derivatives from "free" to "prohibited" if the import price is ₹500 or less per kg. Earlier, importers exploited a loophole in the notification of December 6, 2016, where pepper was defined as "free", and cleared their consignments with payment of a small fine on invoiced value.

As a founder WTO member, India is committed to implementing its various agreements and provisions, which include those on market access, domestic support and export subsidies, agreements on sanitary and phyto-sanitary measures, TRIPS and TBT.

As a result of the agreements, all the quantitative restrictions had to be abolished and non-tariff measures replaced by tariff measures during the implementation period from January 1, 1995, to December 31, 2004.

However, there are certain protection provisions in the form of 'safety trigger', customs duties, anti-dumping clauses and 189 countervailing duty rights available to India as to other members of the WTO family.

While ISLFTA has increased Indo-Sri Lankan general trade, there is no scope for increased export of Indian spices to Sri Lanka, as India is a bigger market and Sri Lanka is a smaller one for spices. However, the ISLFTA has helped the spice oils and oleoresin industry of Kerala to get cheap spices, especially light berries of black pepper and nutmeg, through the duty free import of spices from Sri Lanka.

In this backdrop, Kerala's initiative to act collectively to protect its agricultural economy and lobby with the Centre is an impressive initiative.

Executive power

Today, New Delhi holds executive power in all matters related to foreign policy as stipulated in Article 246a, 7th Schedule of the Constitution.

However, Prime Minister Narendra Modi has sought participation from State governments in foreign policy, especially to strengthen trade ties and seek foreign direct investment.

In October 2014, the External Affairs Ministry created a new 'States Division' "to coordinate facilitation of efforts . . . between . . . Mission/Post(s) and State/Union Territories Governments as well as foreign diplomatic and trade missions in India." This will enable the States to contribute to foreign policy formulation.

In its 2014 election manifesto, the Bharatiya Janata Party referred to the importance of creating a new spirit of cooperation and collaboration between New Delhi and the States.

Modi stated: "Team India shall not be limited to the Prime Minister-led team sitting in Delhi, but will also include Chief Ministers and other functionaries as equal partners."

Often, unilateral decisions taken by the Centre create dissatisfaction in the States. For instance, the Centre ceded the Islet of Kachchativu to Sri Lanka in 1974 without any consultation with the Tamil Nadu government. To that extent, the States have historically been distanced from engagement with the Centre over national security and foreign policy issues.

Coalition politics

For the first four decades of nationhood, the dominance of the Indian National Congress with not many regional parties, except in Tamil Nadu, explains such a situation. However, with the era of coalition politics since 1991, States have influenced foreign policy decisions.

During the late 1980s, Tamil Nadu's political leaders lobbied with the Centre to withdraw the Indian Peace Keeping Force and stop further conduct of counter-insurgency operations in Sri Lanka. The country's true strength is the sum total of the prosperity of its States which are key drivers of economic growth. While agriculture contributes 18 per cent to GDP, it is noteworthy that 49 per cent of the population is engaged in farming, which merits state support through trade protectionism to the extent possible.

To develop India-Sri Lanka trade, at the cost of poor farmers, for geo-political considerations or counter the rise of China is pathetic policy. For the Ministry of External Affairs to be in tune with the citizenry across the country, it cannot afford to be New Delhi-centric but must have representative offices (apart from regional passport offices) across all State capitals. Clearly, the Centre and States need to be on the same page to formulate foreign economic policy that does not adversely impact sections of society.

The writer teaches International Relations and Strategic Studies at the CHRIST Deemed to be University, Bengaluru.

Farmers concerned over slackened price of black pepper

SETOPATI.NET-25-JUL-2018

The hundreds of local farmers in Jhapa district involved in black pepper plantation are concerned as their produces go unsold due to the dominance of imported black pepper in the local markets.

The commercial farming of black pepper is done in Arjundhara, Mechinagar and Buddha Shanti in the district and produced in abundance yet the produce is pushed out of market by the foreign imported black pepper.

Arjundhara Municipality's Agriculture Division officer Shaliram Bhattarai shared that the district produced some 17 metric tonnes of black pepper in the last fiscal year.

It was sold for Rs 1,600 per kilo last year while it could hardly fetch him around Rs 400 this year, shared Dinbandhu Pokharel, a local farmer of Arjundhara-10 in the district. Pokharel produced a total of 600 kilos of black pepper this year.

He claimed that the price of locally produced black pepper was slacked due to the black pepper smuggled to Nepal from the third countries.

Similarly, Yogesh Niraula of Buddha Shanti Rular Municipality-7 in the district is also suffering similar fate. Niraula is forced to sell his produce at handout amount.

He opined that this locally produced spice would only find market and fair price if the smuggling of the same from the third countries is curbed.

A total of 96,800 kilos of black pepper was imported in the last fiscal year, according to the Mechi Customs Office, Kakadvitta.

Black pepper, considered to be the King of spices, is imported from India to Nepal that is brought to India from Indonesia and Sri Lanka, among other countries.

Police recently had confiscated over 500 kilos of black pepper being smuggled to India from Bhansa Khola at Mechinagar-6 in the district.

Spices Board Labs to Conduct Pesticide Residue Test for Cardamom

BLIVE-05 : JUL-2018

Idukki: Farmers will be able to test the presence of pesticide residue in cardamom in the labs of the Board itself, sparing them of the inconvenience of taking their produce to far off places to conduct this important test, Spices Board Chairman Subhash Vasu said here.

Vasu, who took over as Chairman of Spices Board recently, disclosed this while interacting with a group of small scale farmers at the Spices Park at Puttady on Wednesday.

The samples for testing will be collected in the Indian Cardamom Research Institute in Mailadumpara and in the office of Spices Park at Puttady.

Vasu said farmers are the backbone of agriculture and traders could exist and exporters thrive only when there are farmers to support them. "Hence, the board will take steps that will ensure the co-operation and co-existence of these three parties. All my efforts will be in this regard," he said.

He also promised the farmers that he would take effective steps to draw the attention of Central government to the issues of the cardamom farmers.

The Chairman's visit was intended to provide a momentum to the awareness campaign on judicious use of pesticides and chemicals initiated by the Spices Board in Idukki.

Dr Rema Shree, Director, Spices Board presided over the event in which hundreds of small scale farmers attended. She also answered queries from farmers.

Spices maintain steady trend in listless trade

BW BUSINESSWORLD : 17-JUL-2018

Mumbai, Jul 17 (PTI) An overall steady trend was seen in an otherwise listless spices market here today in the absence of any worthwhile buying activity. Following are today's closing rates (in Rs) with previous rates in brackets: Black pepper (per kg) 350/400 (350/400), ginger unbleached (per kg) 165 (165), copra office Alappuzha (per quintal) 11,800 (11,800), copra office Kozhikode (per quintal) 11,700 (11,700), copra Rajapur Mumbai (per quintal) 19,600 (19,600), copra edible Mumbai (per quintal) 15,100 (15,100). PTI BPD SBT

Exploring the many shades of chillies in India

TIMES OF INDIA-03-JUL-2018

Are you missing some spice in life? If yes, why not go on a spice trail. India is a land of diversity and when you start your here, get ready to be introduced to a mix of culture and customs. You realise that after every two miles, not just the landscape changes, but also the taste and cuisines. And a lot of it has to do with spices and herbs. As for spices, the BOSS ingredient in India is the chilli, and most Indians will find it unfathomable to imagine a dish without a dash of chillies.

The humble chilli, apart from adding the required spice in your dish, also boasts of some medicinal properties. If eaten moderately, chillies have curative effects on your body. Records state that there are around 400 varieties of chillies available in the world, and India is the largest producer of this ingredient, closely followed by China.

Chillies in fact are the hottest ingredient in our kitchen. There are some types that rank midway on the scale, whereas there are other varieties that will force you to clench your fist and bang your head in despair. While India grows the hottest chilli in the world, this article will take you further on this spicy trail. Read on!

Bird's eye chilli, Northeast

It was mostly used by the Native Americans for about 9000 years. However, it is now more commonly used in South East Asian countries. In India, it is grown in the Northeast, and you should not judge it by its rather tiny size. In terms of its ranking on the SHU (Scoville Heat Units), this chilli you give you the right punch. This variety got its innovative name as birds spread the seeds by picking up ripe chillies. Savour it by adding a dash of it to your food.

Guntur chilli, Andhra Pradesh

Andhra cuisine is specially known for being spicy, and the chilli responsible for this is Guntur Sannam – S4. Its fame has spread so far and wide that it accounts to almost 30% of India's chilli exports. If you are not used to high level of spiciness, try not to use more than one chilli in your dish. Although a variety of Guntur chilli is found in Andhra Pradesh, states like Madhya Pradesh also boasts of cultivating them.

Bhut jolokia, Nagaland

It is known as Naga jolokia in most parts of Assam, but people all over the world know it as bhut jolokia. It has been named after the ferocious Naga inhabitants, mostly residing in hills and plains. Bhut jolokia is used as a spice and also as a food. Many people even use it to get rid of summer heat. It is used in both fresh as well as dried form, as both impart distinct flavours to your food. Bhut jolokia is also ranked as one of the hottest chillies in the world. Such is its fame that the Indian Army wanted to use some of the varieties of chillies as weapons.

Jwala chilli, Gujarat

You will find this chilli in almost all over the country, but is specially grown in Gujarat. Most of the Indian household use it for cooking. This kind of chilli can even be easily grown at home and is considered as one of the most important crops in India.

Kashmiri chilli, Kashmir

Kashmiri chilli is popular more because of its colour than its spice level. This type is grounded into powder and is used in dishes not only in India but across the world. The use of Kashmiri chilli usually enhances the taste of a dish, reason why it's popularly used everywhere. Moreover, when measured in terms of spiciness, this type of chilli is quite mild and barely measures 2000 SHU (Scoville Heat Units).

Byadagi chilli, Karnataka

Byadagi chilli is consumed all across India and is mostly known for its pungency and colour. This type is categorised by its longish structure and colour. When this type of chilli

is dried, its appearance turns crinkly. You will find this type mostly grown in Karnataka; it is quite similar to paprika.

Kanthari chilli, Kerala

Kanthari chilli is another variety of the bird's eye chilli. This type is specially grown in Kerala; it is deemed fully matured when it turns white. Also, these chillies are quite hot and lend a good flavour to your food.

RESEARCH NEWS

New Research Appears to Validate the Health Benefits of Turmeric

ORGANIC AUTHORITY-16-JUL-2018

The health benefits of turmeric have been touted far and wide, but after research last year found that the spice's superpowers may have been exaggerated, some have been wary. Now, a newly released study has the potential to repair turmeric's rep and solidify the evidence in favor of the spice once and for all.

Researchers at the University of California San Diego School of Medicine, in cooperation with scholars from Peking and Zhejiang Universities, recently revealed that curcumin, the active ingredient in turmeric, is able to bind to an enzyme known as dual-specificity tyrosine-regulated kinase 2 (DYRK2) at the atomic level, impairing cell proliferation and reducing cancer burden.

Sourav Banerjee, PhD, UC San Diego School of Medicine postdoctoral scholar and first author on the study, notes that while the 2017 study "was indeed hard for curcumin researchers to digest [… The researchers] also provided a good guideline of how state-of-the-art curcumin research should be carried out."

"Owing to a lot of chemical drawbacks, curcumin indeed comes up as a false-positive in many screens," says Banerjee. "Hence a thorough and diligent effort is required to prove whether it is a true hit or a promiscuous waste-of-time. We were very cautious initially when it came up in our screen too and in fact asked a lab in Dundee, UK to repeat our data with a different system altogether to be absolutely sure."

The study, which was published in the July 9 issue of the Proceedings of the National Academy of Sciences, found that, in combination with the FDA-approved multiple myeloma drug carfilzomib, curcumin could reduce cancer in mice.

"Although curcumin has been studied for more than 250 years and its anti-cancer properties have been previously reported, no other group has reported a co-crystal structure of curcumin bound to a protein kinase target until now," Banerjee says in a press release.

Dr. Josh Axe, D.N.M., C.N.S., D.C., founder of Ancient Nutrition and DrAxe.com, notes that this research certainly reinforces other research that has been conducted with regards to turmeric's anticarcinogenic properties.

"A multitude of in vitro studies have shown that curcumin could be effective against many types of cancer, including lung, pancreatic, colorectal and breast cancers," Dr. Axe says. "The anti-inflammatory properties of curcumin have also been well-documented and, in addition to fighting cancer development, may also be beneficial in the prevention of chronic disease and inflammatory conditions like rheumatoid arthritis, IBD and asthma."

Of course, researchers caution not to jump to conclusions with regards to the results of this animal study – more work is needed.

"Our current work throws light on an important and novel mechanism of how curcumin functions biologically," says Banerjee. "Yes, this research is promising but one needs to be cautious before calling this a miracle drug."

Specifically, Banerjee notes that curcumin is expelled from the body quite quickly, which could reduce its efficacy.

"For curcumin to be an effective drug, it needs to be modified to enter the bloodstream and stay in the body long enough to target the cancer," Banerjee says. "Owing to various chemical drawbacks, curcumin on its own may not be sufficient to completely reverse cancer in human patients." This also means that just upping your consumption of turmeric might not be enough – and for more than one reason.

"Curcumin constitutes 2-6% of turmeric," he says. "So dietary turmeric may not have a high enough curcumin content to target cancer. Moreover, the bioavailability of curcumin is poor in general so ideally one needs to utilize curcumin as a template to generate better derivatives with better bioavailability for use in therapeutics." Dr. Axe suggests taking concentrated supplements in addition to your tasty turmeric tonic. He prefers a fermented supplement and produces one for Ancient Apothecary.

"Fermentation increases the bioavailability of curcumin in your body to maximize the potential health benefits, helping you get more bang for your buck," says Dr. Axe. "Additionally, look for a supplement that also contains piperine, a compound found in black pepper that has been shown to boost absorption by up to 2,000 percent."

While this research certainly isn't the last word on turmeric, it is a fantastic start.

Turmeric-derived eye drops could treat glaucoma: study

SCIENCE DAILY-24-JUL-2018

A derivative of turmeric could be used in eye drops to treat the early stages of glaucoma, finds a new study led by UCL and Imperial College London researchers.

In the new Scientific Reports paper, the researchers report a new method to deliver curcumin, extracted from the yellow spice turmeric, directly to the back of the eye using eye drops, overcoming the challenge of curcumin's poor solubility.

The research team found the eye drops can reduce the loss of retinal cells in rats, which is known to be an early sign of glaucoma.

They are also investigating how the eye drops could be used as a diagnostic tool for a range of conditions.

"Curcumin is an exciting compound that has shown promise at detecting and treating the neurodegeneration implicated in numerous eye and brain conditions from glaucoma to Alzheimer's disease, so being able to administer it easily in eye drops may end up helping millions of people," said the study's lead author, Professor Francesca Cordeiro (UCL Institute of Ophthalmology, Western Eye Hospital and Imperial College London).

Glaucoma is a group of eye conditions affecting over 60 million people worldwide that leads to irreversible blindness in 1 in 10 cases. The condition mainly involves the loss of retinal ganglion cells, a type of neuron located near the surface of the retina. Stopping the loss of these cells early on has not yet been achieved, so it is a key focus of glaucoma research.

Curcumin has previously been shown to protect retinal ganglion cells when administered orally. For the current study, the researchers were seeking to find a more reliable method to deliver curcumin. Oral administration is difficult because curcumin has poor solubility, so it does not easily dissolve and get absorbed into the bloodstream, and would require people to take large amounts of tablets (up to 24 a day) that may cause gastrointestinal side effects.

The team developed a novel nanocarrier, wherein the curcumin is contained within a surfactant combined with a stabiliser, both of which are known to be safe for human use and are already in existing eye products. The nanocarrier can be used in eye drops to deliver much higher loads of curcumin than other products in development, increasing the drug's solubility by a factor of almost 400,000, and localises the curcumin in the eyes instead of throughout the body.

The researchers initially tested the product on cells that are used to model glaucoma, before conducting trials in rats with eye conditions involving the loss of retinal ganglion cells.

After twice-daily use of eye drops in the rats for three weeks, retinal ganglion cell loss was significantly reduced compared to matched controls, and the treatment was found to be well-tolerated with no signs of eye irritation or inflammation.

Having found an effective way to deliver curcumin, the researchers are hopeful that it could also be used to diagnose Alzheimer's disease, as curcumin is known to bind to the amyloid beta protein deposits implicated in Alzheimer's, and can be detected in the retina with fluorescence to highlight the malignant proteins.

"We are now researching diagnostic uses for these eye drops alongside other ways to visualise the retina, as eye tests can be an opportunity to detect signs of neurodegeneration with a simple, non-invasive test," said co-lead author Dr Ben Davis (UCL Institute of Ophthalmology and Imperial College London).

Professor Cordeiro added: "As we live longer, diseases such as glaucoma and Alzheimer's are steadily increasing. We believe our findings could make a major contribution at helping the lives of people affected by these devastating diseases."

The researchers received funding from the Medical Research Council and Dr. Werner Jackstädt-Stiftung.

Turmeric can cure stomach cancer: JNU study

INDIA TODAY-22-JUL-2018

Consuming turmeric can cure stomach cancer, revealed a research study done by the Department of Biotechnology of the Jawaharlal Nehru University (JNU). After studying the impact of curcumin, an active component on the Helicobacter Pylori, the student group found that by incorporating turmeric in the treatment of stomach cancer, the disease can be successfully cured. According to the research, the main purpose of the study was oxidation of curcumin which holds a key for therapeutic purpose.

Five students had been studying the use for curcumin, a bioactive component of turmeric since the past five years. The students came out with a detailed research working under Rupesh Chaturvedi, professor of the Department of Biotechnology. The students have published a detailed research paper, expounding how through their detailed trials on the sample taken from a group of 40 people from Lucknow, it has been found that turmeric can prove to be of help in the course of treatment of stomach cancer.

Helicobacter Pylori bacteria is one of the leading bacteria which leads to the formation of ulcers in the stomach. Consistent consumption of food consisting of this bacterium can lead to stomach cancer. The JNU Professor said that according to the research which was carried out on food samples taken from 40 people from Lucknow, it was found that 39 people used to consume food (mostly junk food) which led to the formation of the Helicobacter Pylori bacteria in their body. Five students -- Rohit Tiwari, Alka Yadav, Jyoti Gupta, Jyoti and Achyuth Pandey studied the effects of curcumin on the bacteria and found that curcumin fights the bacteria.

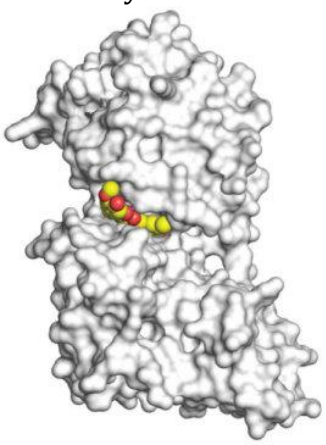
While studies on the use of turmeric have been carried out all over the world, it is the first time that a successful research has been carried out and has proven that the age old turmeric can be a crucial component in fighting the fatal disease.

Crystal structure reveals how curcumin impairs cancer

SCIENCE DAILY-10-JUL-2018

Through x-ray crystallography and kinase-inhibitor specificity profiling, researchers reveal that curcumin, a natural occurring chemical compound found in the spice turmeric, binds to the kinase enzyme dual-specificity tyrosine-regulated kinase 2 (DYRK2) at the atomic level. This previously unreported biochemical interaction of curcumin leads to inhibition of DYRK2 that impairs cell proliferation and reduces cancer burden.

A 3D image, obtained using x-ray crystallography, shows curcumin in yellow and red binding to kinase enzyme dual-specificity tyrosine-regulated kinase 2 (DYRK2) in white at the atomic level.



Through x-ray crystallography and kinase-inhibitor specificity profiling, University of California San Diego School of Medicine researchers, in collaboration with researchers at Peking University and Zhejiang University, reveal that curcumin, a natural occurring chemical compound found in the spice turmeric, binds to the kinase enzyme dual-specificity tyrosine-regulated kinase 2 (DYRK2) at the atomic level. This previously unreported biochemical interaction of curcumin leads to inhibition of DYRK2 that impairs cell proliferation and reduces cancer burden.

But before turning to curcumin or turmeric supplements, Sourav Banerjee, PhD, UC San Diego School of Medicine postdoctoral scholar, cautions that curcumin alone may not be the answer.

"In general, curcumin is expelled from the body quite fast," said Banerjee. "For curcumin to be an effective drug, it needs to be modified to enter the blood stream and stay in the body long enough to target the cancer. Owing to various chemical drawbacks, curcumin on its own may not be sufficient to completely reverse cancer in human patients."

Writing in the July 9 issue of the Proceedings of the National Academy of Sciences, Banerjee and colleagues report that curcumin binds to and inhibits DYRK2 leading to the impediment of the proteasome -- the cellular protein machinery that destroys unneeded or damaged proteins in cells -- which in turn reduces cancer in mice.

"Although curcumin has been studied for more than 250 years and its anti-cancer properties have been previously reported, no other group has reported a co-crystal structure of curcumin bound to a protein kinase target until now," said Banerjee, first author on the study. "Because of their work on the crystallography, our collaborators at Peking University, Chenggong Ji and Junyu Xiao, helped us to visualize the interaction between curcumin and DYRK2."

"The enzyme kinases IKK and GSK3 were thought to be the prime curcumin-targets that lead to anti-cancer effect but the co-crystal structure of curcumin with DYRK2 along with a 140-panel kinase inhibitor profiling reveal that curcumin binds strongly to the active site of DYRK2, inhibiting it at a level that is 500 times more potent than IKK or GSK3."

Working alongside Jack E. Dixon, PhD, Distinguished Professor of Pharmacology, Cellular and Molecular Medicine, Chemistry and Biochemistry at UC San Diego, Banerjee and team have been looking for regulators of proteasomes to inhibit tumor formation by proteasome-addicted cancers like triple-negative breast cancer (TNBC) and the plasma cell malignancy called multiple myeloma.

Using biochemical, mouse cancer models and cellular models the team found that curcumin is a selective inhibitor of DYRK2 and that this novel molecular target has promising anticancer potential for not only chemo-sensitive but also proteasome inhibitor resistant/adapted cancers.

"Our results reveal an unexpected role of curcumin in DYRK2-proteasome inhibition and provide a proof-of-concept that pharmacological manipulation of proteasome regulators

may offer new opportunities for hard-to-treat triple-negative breast cancer and multiple myeloma treatment," said Dixon, who was co-senior author with Zhejiang University's Xing Guo, PhD, on the paper. "Our primary focus is to develop a chemical compound that can target DYRK2 in patients with these cancers."

DYRK2 depletion impairs proteasome activity and exhibits slower cancer proliferation rates and significantly reduced tumor burden in mouse models. In combination with the FDA-approved multiple myeloma drug, carfilzomib, curcumin induced a much higher cancer cell death while normal non-cancerous cells were less affected. This suggest that targeting proteasome regulators (such as DYRK2) in combination with proteasome inhibitors may be a promising approach of anticancer therapy with less side-effects but further work is needed, said Banerjee.

Turmeric found to Improve Memory and Protect the Brain

TOPHEALTHJOURNAL.COM-03-JUL-2018

Turmeric is one of the common domestic spices. It belongs to the ginger family. Aside from its characteristic use in the kitchen, it is also popular for its medicinal properties. It is often touted for its various medicinal uses. It is anti-inflammatory in nature. It treats abnormal and ulcerative bowel movements. Owing to the anti-amyloid properties, it is also asserted to prevent plaque formation between vessels.

In addition, a recent study has illuminated its potential use as a neuroprotector. The researchers from the University of California-Los Angeles have revealed that Curcumin supplementation can improve the memory of an individual.

Curcumin is the major active ingredient of turmeric. It imparts the characteristic orange-yellow color to turmeric. Turmeric is also rich in pyridoxine, vitamin C, zinc, iron, calcium, and turmerone. Almost all the medicinal uses of turmeric are attributed to Curcumin. Moreover, pyridoxine present in turmeric is also reported to treat blood conditions like anemia and radiation sickness.

The respective research was published in the *American Journal of Geriatric Psychiatry*.

For the experiment, 40 people with normal brain functioning and minor memory issues were examined. All of them were aged between 50-90 years. They were divided into a test and a control group. The experimental study continued for almost a year and a half and the participants were fed with 90 milligrams of Curcumin twice a day. The form of Curcumin fed i.e. Theracurmin had an increased ability to penetrate into the endothelial lining.

Cognitive tests were performed before starting the study, every six months during the study, and upon its completion. The data upon analysis concluded that daily intake of Curcumin can improve the memory of the subjects by 30%. In addition, their brain scans showed an improvement in signal conduction from hypothalamus, amygdala, and areas responsible for emotions. FDDNP-PET signals were determined in the amygdala, hypothalamus, temporal, parietal, frontal, and motor regions. Curcumin was also accredited to energize and radiate their moods. However, the control group didn’t demonstrate the same results.

The researchers further added that Curcumin effectively reduced inflammation in the brain cells which in other cases may promote depression and dementia. Some people, however, reported nausea and abdominal pain as a side effect but only in fewer cases.

The researchers anticipate future studies where Curcumin would be tested against depression and other mild psychotic disorders. The effect of age, genetic flaws, severe cognitive problems, and the inhabiting environment on the memory and mood are still to be studied.

Curcumin is a popular dietary staple in Asia and the senior citizens upon analysis exhibited improved cognitive abilities and a lower degree of Alzheimer's.

The benefactions offered by turmeric and especially Curcumin demand it to be a frequent part of our diet. It should preferably be obtained from the fresh root or ground spice. Curcumin found in curry blend is quite variable in amount thus fresh herb must be utilized in order to ensure the consumption of an adequate amount of Curcumin. Some people drink turmeric mixed in warm milk which is then named the "golden milk." It's a soothing way to relieve mild internal pains and injuries.

A lot of recent studies serve as an evidence of the advantages that turmeric offers. Almost all of these advantages are attributed to Curcumin. If you still don't find it in your diet, grab it from your nearest general stores and don't forget to add a pinch of it while cooking your food. You can also sprinkle it on your meal not only to add a taste but also to nutrify it.

BIODIVERSITY

Hundreds of species unlikely to survive biodiversity collapse - scientists

NEWSHUB-28-JUL-2018

A devastating collapse in global biodiversity is imminent, scientists say, warning hundreds of species may not survive.

An international team have published a major study in the journal *Nature*, saying we must make urgent changes to our approach to pollution and climate change, which are placing major stress on our planet.

Failure to act quickly and decisively would greatly increase the risk of "unprecedented and irrevocable species loss", particularly in the tropics.

"The fate of the tropics will be largely determined by what happens elsewhere in the planet," said lead author Prof Jos Barlow of Lancaster University.

Among the species under imminent threat are the African Bush Elephant, tree frogs, and many different kinds of birds.

The paper, titled '*The future of hyperdiverse tropical ecosystems*', is the first high-level report on the state of all four of the world's tropical ecosystems - tropical forests, savannahs, lakes and rivers, and coral reefs.

While the tropics cover roughly 40 percent of the planet's surface, they are the home to more than three quarters of all species.

The study shows that humans will also be impacted, with the tropics providing important resources for fishing and agriculture.

The scientists are calling for an international response, which Dr Joice Ferreira said was vital to help avoid the loss of tropical biodiversity.

"Five years ago biologists expected to be the first to find a species, now they hope not to be the last," Prof Barlow added.

Maharashtra may have most biodiversity heritage sites in India by year end

HINDUSTAN TIMES-26-JUL-2018

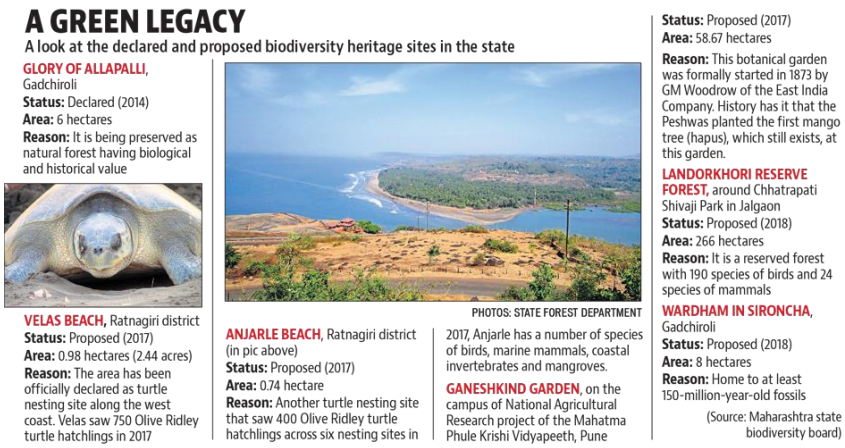
These are locations that have rich biological, ethnic, historical value and fragile ecosystems;

By the end of 2018, Maharashtra may become the only state in India to have the highest number of biodiversity heritage sites (BHS) to its name. The Maharashtra State Biodiversity Board (MSBB) has proposed two more biodiversity heritage sites – an eight-hectare area in Vidarbha and 266 acres of the Landorkhori Reserve Forest in Jalgaon district. Once these are approved by the Centre, there will be six BHS in Maharashtra.

BHS are locations with biological, ethnic and historical value that have fragile ecosystems. To strengthen biodiversity conservation, these areas are marked as heritage sites under the Biological Diversity Act, 2002. BHS are first approved by the state and then the Centre. The first and only BHS in Maharashtra at present is the six-hectare forest patch, Glory of Allapalli, in Gadchiroli district. It was notified in July 2014, a little more than a year after the state had approved it as a BHS.

In July 2017, MSBB proposed Anjarle and Velas beaches in Ratnagiri district, and Ganeshkhind in Pune be given the status of BHS. While all three locations have received nods from the state, the Centre is yet to clear the proposals.

The proposed BHS in Vidarbha is in the Naxal-affected Gadchiroli district. Archaeologists recently discovered fossils a few kilometres away from this patch. “The eight-hectare site holds many more hidden secrets from at least 150 million years ago, which are yet to be excavated. Thus, more protection is need for this site as it has the ability to become a global heritage zone,” said Tushar Chavan, deputy conservator of forest, Sironcha, who submitted the BHS proposal to MSBB.



In Landorkhori Reserve Forest, the proposed BHS is around Meharun Lake and Chhatrapati Shivaji Park.

Vilas Bardekar, chairman of MSBB, said, “This area has created its own microclimate making it very suitable for wild animals to survive and is an important bird habitat. However, there have been very few efforts to document the biodiversity of this region. Once declared a BHS, threats such as water holding capacity of the lake, encroachment, water pollution due to untreated waste, and deforestation will all be addressed and the area will be better protected.”

CLIMATE CHANGE

How does climate change affect crop growth?

ISRAEL21C-17-JUL-2018

New Cornell-Volcani partnership will advance cutting-edge research in agricultural and environmental sciences.

Israel’s Volcani Center Agricultural Research Organization has entered into a partnership with Cornell University College of Agriculture and Life Sciences of New York to advance cutting-edge research in the agricultural and environmental sciences.

Volcani Center-Agricultural Research Organization in Rishon LeZion. Photo by Yigal Elad

The two institutions will conduct research on critical issues confronting the environment today and its effect on agriculture, specifically the impact of climate change on crop growth.

The partnership is a result of New York State’s multi-sector trade mission to Israel in December 2017, led by Howard Zemsky, head of Empire State Development, New York’s chief economic development agency.

The trip continued efforts initiated by NY Governor Andrew Cuomo in March 2017 to strengthen economic ties with Israel, create new jobs and attract additional international business investment in New York through the Global NY initiative.

“By bringing together the tremendous research capabilities of our land grant university and the Volcani Center, we can continue our work to grow the agricultural community and improve our environmental sustainability now and for our future generations,” said NY State Agriculture Commissioner Richard A. Ball.

“As the leading agricultural research organization in Israel, Volcani Center is looking forward to further expand our work and global impact through this exciting opportunity for fruitful collaboration with the prestigious, world- class Cornell University,” said Prof. Eli Feinerman, director of the Volcani Center.

The Volcani Center, based in Rishon LeZion, is the Israeli national institute for agricultural research. It is comprised of two research stations and six institutes spanning plant sciences, animal sciences, plant protection, soil, water and environmental sciences, agricultural engineering and postharvest and food sciences.

Climate Change Leading To Reduced Crop Yield, Study Shows

NDTV-23-JUL-2018

A government-commissioned study projected reduction in crop yields for irrigated maize, wheat and rain-fed rice.

The study was commissioned by the government to assess the impact of climate change

A scientific study commissioned by the government to assess the impact of climate change has projected reduction in crop yields for irrigated maize, wheat and rain-fed rice, the Rajya Sabha was informed today.

The study has also found that malaria has spread to new areas and its transmission may increase in duration, the Minister of Environment Forest and Climate Change Harsh Vardhan said during Question Hour.

Answering a question, he said the study has assessed the impact of climate change on four key sectors of the economy -- agriculture, water, natural ecosystems and biodiversity and health in four regions-the Himalayan region, Western Ghats, the coastal region and the Northeast.

"The study projects a variable rate of agricultural production including decrease in yield in some crops and change in composition of forests and net primary productivity. Extreme precipitation events are likely to increase in all the regions, water yield is projected to increase in the Himalayan region whereas it is likely to be variable across other three regions," the minister said.

He observed that the Indian Council of Agricultural Research has also analysed the impact of climate change on crop yields using crop simulation models.

Replying to another query, the minister said the government has made a very detailed action plan for cleaning Ganga.

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Climate change not one heat wave, but a pattern of extremes: scientist

NEWS1130-03-JUL-2018

OTTAWA – The scorching heat wave that set records in Ontario and Quebec over the Canada Day long weekend can't be directly attributed to climate change — but neither can the likelihood of a connection be ignored outright, says a University of Waterloo climate scientist.

Suggesting the two aren't linked would be akin to arguing that no particular home run can be attributed to steroids when a baseball player on a hitting streak is caught doping, said Blair Feltmate, who's also the head of the Waterloo-based Intact Centre on Climate Adaptation.

While a single isolated event might be normal, there's little doubt that the world and Canada are together seeing more extreme weather events — patterns that can be attributed to climate change, Feltmate said.

"All the predictions illustrate that going forward in Canada, things are going to be hotter, wetter and wilder," he said. "It's not any particular year that matters. What matters is the overall, the long-term trend."

Globally, the world's average annual temperature is one degree Celsius warmer than it was a century ago, says Feltmate.

"You have to remember that the difference between the temperature we have on the planet today versus an ice age is only five or six degrees Celsius, so being up one degree Celsius over a period of 100 years is a really big deal," said Feltmate.

The Paris climate change agreement Canada signed in 2015 with the rest of the world aims to keep global warming at 2 degrees C compared to pre-industrial levels. 1.5 C would be even better, scientists say. Canada's current plans to cut emissions are nowhere near sufficient; even if implemented — a prospect that's in serious doubt — the world will get 3 degrees C hotter than it used to be by the next century.

A 2017 study in the journal Nature Climate Change found that about one-third of the world's population already lives somewhere where the daily temperatures are considered lethal more than 20 days a year.

Even with drastic cuts to greenhouse gas emissions in the next 75 years, that number is still expected to grow to 50 per cent of the population — or 75 per cent, including parts of Ontario and Quebec, if nothing is done at all. With limited mitigation, parts of India, Africa and South America would hit lethal temperatures every day of the year.

Canadians need to brace themselves for an influx of eco-migrants over the next century, Feltmate warned — people who are fleeing their homelands because they are simply too hot.

Environment Canada modelling suggests the average summer temperature across Ontario between 2041 and 2070 will be 3.5 C higher than it was between 1981 and 2010. The city of Toronto has modelling from 2011 that showed between 2000 and 2010 there were on average 20 days over 30 C, and with climate change that will more than triple to 66 days by 2040.

Rolf Campbell, a weather historian behind the Twitter account "YOW Weather Records," says Ottawa hit its highest-ever humidex measurement on Sunday: 47.2 C. Temperatures in Ottawa have gone above 32 C for five days in a row, the longest heat wave since 2001. With the forecast set to hit 35 C on Wednesday, a six-day heat wave would be the longest since 1944.

The temperature on Canada Day was 10 C higher than average, leaving paramedics to treat more than 100 people at various Canada Day events. Some 18 people were taken to hospital with heat-related illnesses.

Montreal, also experiencing extreme temperatures, reported six deaths this week due to the heat.

ORGANIC FARMING

Saudi Arabia Unveils Its $200 Million Organic Farming Action Plan

ABOUT HER-11-JUL-2018

Two years ago, it was reported that the Saudi Arabian government had begun designing strategies to support the development of organic farming across the Kingdom, with plans to establish more than 20 organic farms in the near future. This week, it was finally announced that the plan has now been set into action. The Saudi Ministry of Environment, Water, and Agriculture unveiled its organic farming action plan, which was approved by the Cabinet, and has allocated SR750 million ($200 million) to support it.

According to the ministry's undersecretary, Ahmed bin Ali Al-Eyada, the plan will be one of the most important means of supporting organic production in the Kingdom. This nation-wide move towards building institutional capacity, part of its ambitious plan to expand Saudi Arabia's shift toward organic agriculture, is seen as a positive step addressing the country's nutritional needs, public health, and environment-related issues. "The plan aims to increase organic production by 300 percent. Its other objectives include providing safe food, sustainable, highly profitable farming, which will be an important resource for the national economy [...] Organic farmers are a key part of this plan, so they must be supported by it through different means," explained Al-Eyada.

According to report by the Oxford Business Group, Saudi Arabia went through a key policy shift on self-sufficiency and wheat production over the last few years. In line with this approach, the Kingdo's government instituted a number of other plans to mitigate the effects of agricultural production on the country's water reserves, with one of the most important moves in this respect being the emphasis on organic and greenhouse production. In a 2016 piece by Arab News, the deputy chief of the Saudi Organic Farming Association (SOFA) explained that the Saudi government encouraging organic farming in the Kingdom by providing support to organic farmers such as paying the fees for certification, rendering technical advice, and extending support to improve the quality of farming.

Centre discusses Subhash Palekar farming pattern for national use

TNN | JUL 15, 2018, 03.45 AM IST

NAGPUR: The Central government seems to be seriously considering the Zero Budget Natural Farming (ZNBF), promoted by Padma Shri Subhash Palekar, as one of the tools to meet its target of doubling the income of farmers by 2022. Palekar told TOI that the Niti Aayog along with the scientists of Indian Council of Agricultural Research (ICAR), State Agriculture Universities (SAUs), the Union minister of state for agriculture Gajendra Shekhawat and Himachal Pradesh governor Acharya Dev Wrat held a meeting with him on ZBNF on July 9.

Most participants agreed in principle that ZNBF was the only alternative technology available to double farmers income. Hence all states should promote it on large scale to meet this dream of the Prime Minister Narendra Modi," said Palekar.

ICAR director general Trilochan Mohapatra told TOI that at the meeting it was decided to work together with Palekar in validating the ZBNF before it is adopted at the national level. "ICAR will validate the technology. It will study the crop response, soil properties etc after using this technology," he said.

Palekar says that the PM might be talking of doubling the farmers income but there is no technology for it. Neither is loan waiver any solution to tackle farmers' suicides. "I have no hesitation in claiming that ZNBF is the only solution by which not only will the farmers' income double but it will also trigger another green revolution. In fact, ZNBF will more

than double the income as there is no cost involved in the inputs like fertilizers, pesticides etc. It only uses natural resources like soil, water, air, cow dung, cow urine etc," he said.

ZNBF campaign was launched by Palekar in 1988 and since then he has convinced 50 lakh farmers across India. He says that government teams have already inspected some of the farmers using ZNBF. Dev Wrat has about 200 acres of land in Gurukul near Kurushetra in Haryana where entire agriculture is done using ZNBF. The ICAR team saw this farm too.

"ZNBF not just will stop suicides, double income but will also conserve resources, prevent global warming and climate change and stop migration of youth from villages to cities. It will fetch double price to the crop. Everyone has realized the limitations of chemical and organic farming. The production through these technologies is decreasing. In fact the cost of cultivation in organic farming is higher than even chemical farming," said Palekar.

Palekar tells that the vice chairman of Niti Aayog Rajiv Kumar was impressed by the presentation made by him during the five-hour long meeting at Delhi. Hence the centre is likely to instruct the states to adopt ZNBF like the Andhra Pradesh and Himachal Pradesh governments

NITI Aayog wants states to adopt zero-budget natural farming

BUSINESS STANDARD-09-JUL-2018

NITI Aayog vice-chairman Rajiv Kumar on Monday made a case for promoting zero-budget natural farming (ZBNF) in states, saying it would help double farmers' income by 2022.

Aayog member Ramesh Chand, who is an expert in agriculture, said that such methods could be scaled up nationally only after they have been scientifically proven to be correct and there is proper manual for these. Under ZBNF, neither fertiliser nor pesticide is used and only 10 per cent of water is to be utilised for irrigation as compared to traditional farming techniques.

ALSO READ: NITI Aayog's water management index not really useful, needs major changes

Rajiv Kumar said that states can promote ZBNF under the two farm sector schemes – Paramparagat Krishi Vikas Yojana and Rashtriya Krishi Vikas Yojana.

"Around five million farmers are working on zero-budget farming in different states," he said, adding that not only does it have potential for India but it can also be put to global use.

ICAR IN PRINT

Outstanding institutions, scientists awarded on ICAR's 90th ...

UNITED NEWS OF INDIA-16-JUL-2018

Outstanding institutions, scientists awarded on ICAR's 90th Foundation Day

New Delhi, July 16 (UNI) Union Agriculture and Farmers' Welfare Minister Radha Mohan Singh on Monday gave away Indian Council of Agriculture Research (ICAR) Awards, 2017, on the occasion of the 90th Foundation Day of the Council.

The Chaudhary Devi Lal Outstanding All-India Coordinated Research Award of Rs 5 lakh was given to All-India Coordinated Research Project on Spices, Kozhikode, Kerala. The Best Centre in this category was AICRP Centre-KAU Panniyur, Kerala.

The Rafi Ahmed Kidwai Award for Outstanding Research in Agricultural Sciences carried four awards of Rs 5 lakh each, a certificate and citation.

These were won by DK Yadava, Head of the Seed Science and Technology, Indian Agriculture Research Institute (IARI) New Delhi in Crop and Horticulture Sciences; BS Dwivedi, Head of Soil Science and Agricultural Chemistry, IARI in Natural Resource Management; Kajal Chakraborty, Senior Scientist, Marine Biotechnology, Marine Fisheries Research Institute, Kerala, in Animal and Fisheries Sciences and Anjani Kumar of International Food Policy Research in Social Sciences.

The Lal Bahadur Outstanding Young Scientist Award for scientists below 40 years of age for outstanding research carries Rs one lakh in cash, Rs 5 lakh for three-months training abroad plus a research grant of Rs 10 lakh per year for three years, certificate and citation.

The awards in this category were won by B Kalyana Babu, senior scientist at Agricultural Institute of Oil Palm Research, Pedayegi, Andhra Pradesh in Crop and Horticulture Science; PC Abhilash, Assistant Professor, Institute Sustainable Development in Banaras Hindu University, Varanasi in Natural Resource Management; Rajendran Thomas of ICAR-NRC, Guwahati, Assam in Animal and Fisheries Sciences and Eldho Varghese of Central Marine Fisheries Research Institute, Kochi, Kerala in Social Sciences.

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The Jawaharlal Nehru Award for PG Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences were given to 18 winners. The award carried Rs 50,000 in cash, certificate and citation and gold medal each for outstanding Ph.D Research work.

Three awards of Rs one lakh were awarded under Bharat Ratna Dr C. Subramaniam Award for Outstanding Teachers to Archana Sachdev, Tapan Jyoti Purakayaastha and Alka Singh all of IARI, New Delhi.

Two prizes under Panjabrao Deshmukh Outstanding Woman Scientist Award were shared by Shelly Praveen of Biochemistry Division, IARI, New Delhi and Seema Jaggi of Agricultural Statistics Research Institute, New Delhi. The other award was shared by Neeru Bhooshan of Zonal Technology Management and Business Planning, IARI and PS Vimla Devi of Institute of Oilseeds Research, Hyderabad, Telengana. The award carries Rs one lakh in cash and an equal amount for motivating women scientists/women students, certificate and citation.

Other awards in various categories included NASI-ICAR Award for Innovation and Research on Farm Implements, Vasant Rao Naik Award for Research Application in Agriculture, Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems, Swami Sahajanand Saraswati Outstanding Extension Scientist Award, Nanaji Deshmukh ICAR Award for Outstanding Interdisciplinary Team Research in Agriculture and Allied Sciences, 2015-16 and ICAR Cash Awards to administrative, technical and support staff.

Among the awards for three Highest Ranked Universities, the National Dairy Research Institute, Deemed University, Karnal was ranked first, followed by the IARI, Deemed University, New Delhi and the Guru Angad Dev Veterinary and Animal Science University, Ludhiana.

UNI GP RSA 1848

IISR IN PRINT

Best Decolonized Food Company

EAST BAY EXPRESS-24-JUL-2018

Given that the original intent of colonialism in India was to dominate the spice trade, the ultimate decolonization of food would be within the spice industry. In Oakland, Sana Javeri Kadri launched a spice company to do just that. Her Diaspora Co. sources single-origin, organic turmeric directly from a small farm in a quiet village in Andhra Pradesh, ensuring the farmer makes a decent wage. To get it started, Kadri flew to the Indian Institute of Spice Research in Kerala to learn about the best heirloom strains, and eventually connected with a fourth-generation farmer looking for someone to buy his amazing turmeric. For now, folks can order jars of the richly golden, earthy powder online — and hopefully one day, Diaspora Co. will disrupt the trade even further with an array of spices.

GENERAL

Pepper group says Kampot yields will be down 26%

THE PHNOM PENH POST-24-JUL-2018

The yield for Kampot pepper – the Kingdom's only product with an official geographic indication (GI) – is expected to decline by nearly 30 percent this year due to climate factors, Kampot Pepper Promotion Association (KPPA) president Ngoun Lay said.

However, he said export supplies to international markets would remain steady.

Lay said the shortage was due to overly dry weather at the beginning of the year when the peppercorns were growing, and excessive rains during the months when the drying process was underway.

He estimated that production will be around 75 tonnes by the end of the month, which constituted a 26 percent decline.

Kampot pepper's GI area currently stands at 250 hectares in Kampot and Kep provinces. Within that area, 110 hectares have mature pepper plants that can be harvested.

The KPPA's membership swelled from 387 farmers and 21 distributors last year to 440 farmers and 29 distributors this year, Lay said. Last year, the group successfully harvested 102 tonnes of pepper.

"Even though our production is lower than last year, we are still able to supply to our buyers as we still have some peppercorn reserved from last year," he said.

So far this year, the association has sold 40 tonnes and expects to sell another 30 before the year's end.

Lay said the group has kept prices steady at $15 per kg for black pepper, $25 for red pepper and $28 for white pepper.

Sok Huy, a farmer and member of the KPPA who has 10 hectares of pepper plants, said his production would be down 30 percent compared to last year.

"Normally I finish harvesting at the end of June, but this year, it will be a late harvest because of the rain.

"I haven't started harvesting yet. I am really worried there will be no sun to dry it and I will lose a lot," he said.

Turmeric Capsules Market Analysis 2018 to 2025

THEBUSINESSTACTICS.COM-09-JUL-2018

The research report presents a comprehensive assessment of the Turmeric Capsules market and contains thoughtful insights, facts, historical data, and statistically supported and industry validated market data. It also contains projections using a suitable set of assumptions and methodologies. The research report provides analysis and information according to categories such as market segments, geographies, type of product and deal landscapes. The report concludes with the profiles of major players in the global Turmeric Capsules market such as SynthiteInd, Sabinsa, Indena, Biomax, K.PatelPhyto, Arjuna, Naturite, Konark, Arpan, StarHiHerbs, GuangyeNatural, ZhongdaBio

The major market players are evaluated on various parameters such as company overview, product portfolio, and revenue of Turmeric Capsules from 2018 to 2025

Turmeric CapsulesGlobal Market Report from Market Insights Reports covers market characteristics, size and growth, segmentation, regional breakdowns, competitive landscape, market shares, trends and strategies for this market. The market characteristics section of the report defines and explains the market. The market size section gives the electronic equipment market revenues, covering both the historic growth of the market and forecasting the future. Drivers and restraints looks at the external factors supporting and controlling the growth of the market. Market segmentations break down the key sub sectors which make up the market. The regional breakdowns section gives the size of the market geographically.

Competitive landscape gives a description of the competitive nature of the market, market shares, and a description of the leading companies. Key financial deals which have shaped the market in the last five years are identified. The trends and strategies section highlights the likely future developments in the x market and suggests approaches.

The Global Turmeric Capsulesmarket was valued at USD xx million in 2017 and is forecasted to reach USD xx million by 2025, with a CAGR of xx% during the forecast period (2018-2025).

The research includes historic data from 2016 to 2017 and forecasts until 2025 which makes the reports an invaluable resource for industry executives, marketing, sales and product managers, consultants, analysts, and other people looking for key industry data in readily accessible documents with clearly presented tables and graphs.

Focus on digital learning, AI for future of agriculture

THE HINDU-02-JUL-2018

TNAU celebrates 48th Foundation Day
For a secure future for agriculture and agriculture education, the focus should be on digital learning, artificial intelligence, augmented learning and robotics, said Trilochan Mohapatra, Director General, Indian Council of Agricultural Research (ICAR), and Secretary, DARE.

Addressing the Tamil Nadu Agricultural University's 48th Foundation Day and Open and Distance Learning Graduation Day, Mr. Mohapatra wanted the university to also focus on climate change and water crisis.

A press release from the university said he was appreciative of the nanotechnology research work in the University.

Plan

S. Alagusundaram, Deputy Director General, ICAR, asked the scientific community to make use of the data available in the National Agricultural Research Project, which had inputs from over 225 institutions across the country, to draw up a plan to tackle the impact of climate change, the release said.

The university Vice-Chancellor K. Ramasamy recalled the institution's growth from a small farm school in Saidapet, then Madras, in 1863 to what it was today.

Honoured

Iraianbu, Director, Entrepreneurship Development, Government of Tamil Nadu, lauded the university's expertise in providing scientific inputs to policy makers.

The release said the university honoured staff who had put in more than 25 years in service and drivers with over 10 and 20 years of service.

India earns Rs 18000 crore a year from export of basmati rice

THE KASHMIR MONITOR (PRESS RELEASE)-17-JUL-2018

New Delhi:India has earned more than Rs 18,000 crore foreign exchange per year from export of basmati rice, especially from the variety 1121 developed by the country's top agri-institute ICAR, agriculture minister Radha Mohan Singh said .

The Indian Council of Agricultural Research (ICAR) has developed many new varieties and technologies which have helped transform the food importing nation to an food exporting country, he said. The institute is playing an important role in fulfilling the government's vision of doubling farmers' income by 2022, he added.

"Instead of boasting about the past achievements, the ICAR should focus on addressing the present and future challenges," the minister said while addressing the 90th foundation day ceremony of the ICAR.

Much of the ICAR research so far was on raising farm output to reduce the country's dependence on imports but going forward the institute should concentrate on raising crop yields, increasing nutrition level, developing climate resilient crop varieties besides attracting youth in farm sector, he said.

The efforts should be towards improving the farming and farmers' income, he said. Highlighting measures taken to boost farmers' income, the minister said the government had recently raised MSP of kharif crops that is 50% higher than the cost of production. Minister of State for Agriculture Gajendra Singh Shekhawat echoed his views saying, "We have become self-sufficient in most crops except one oilseeds/edibles oils. One big challenge before us is reducing import of edible oils."

Over Rs 70,000 crore worth of edible oil is imported every year. "It is not the time to sit quiet. We need to move ahead and address this challenge," he said. ICAR Director General Trilochan Mohapatra said the institute has released 189 varieties in last six month. Processable varieties in tomato (H391) and onion (HR6) have been released, which will help boost farmers income.

He said that innovation and support of agri-scientists are required for achieving the government's vision of doubling farmers' income.

FSSAI issues guidance note to ensure purchase of unadulterated spices

FNBNEWS.COM-31-JUL-2018

FSSAI issues guidance note to ensure purchase of unadulterated spices

Wednesday, 01 August, 2018, 08 : 00 AM [IST]

Shraddha Joshi, Mumbai

FSSAI, the country's apex food regulator, has issued a guidance note on spices to guide consumers on avoiding the purchase of adulterated products. Titled Safe Ground Spices -

How to ensure that they are not adulterated, it contained the key takeaway points that must be kept in mind while buying spices.

These include avoiding the purchase of powdered spices in the loose form (which FSSAI has banned on account of the high probability of adulteration); looking for the AGMARK logo and certification on ground spices, and checking for the FSSAI license number of the label of the package.

It is not uncommon for ground spices to be adulterated with artificial colours, starch, chalk powder, etc., in order to increase their weight and enhance their appearance. The consumption of adulterated spices can cause a number of diseases, including skin allergies, liver disorders, etc.

Consumers were instructed to purchase whole spices, as the chances of adulteration in them are generally lower than they are in ground spices, and look for the FSSAI organic logo - Jaivik Bharat - on the pack while purchasing organic spices.

Moreover, FSSAI's guidance note provided the way to detect adulteration in ground spices at home and the instructions to report the sale of ground spices in the loose form and adulteration to the food regulator.

As per the provisions of the Food Safety and Standards Act, 2006, Sub-Regulation 2.3.14, which pertains to the restrictions relating to the conditions for sale, states that the powdered spices and condiments can only be sold in a packed condition, and prohibits the sale of powdered spices and condiments in the loose form, with provisions of penalties for persons who manufacture for sale, store, sell or distribute adulterated spices.

As per FSSAI, the guidance note will increase consumers' awareness about safety of ground spices and will serve as a guide for them to ensure that purchased spices are not adulterated.

Experts opined that it was a proactive move by the apex regulator, because spices were important commodities in every Indian kitchen, and owing to the unavailability of packaged spices, consumers often ended up buying loose ones.

Commenting on the guidance note, an official from LocalCircles, a social media platform connecting organisations and the community, informed, "It is important to control adulteration in spices, but the bulk of the spices is sold in the open as non-packaged products, and it is elitism to insist that all consumers should buy only packaged spices."

"When the corporate sector makes a policy for regulators, such oversight is natural. That is why such policies will not help in removing adulteration. These rules are basically built to push consumers towards the expensive option, i e packaged products," he added.

"This does not only have an adverse effect on prices, but also on trade and jobs, especially small and medium enterprises that dominate spice trade," the official said.

"It is important that policies are made taking into account how the Indian market functions and how the spice trade is conducted, instead of letting it be dictated by a lobby," he added.

"Consultation with public and citizens would have helped the regulator evolve a more

holistic policy," the official stated.

Usha Sisodia, dietitian, Nanavati Super Speciality Hospital, Vile Parle, said, "This note is definitely going to help the consumer to get good-quality spices without any adulteration."

"The only worries will be for those who are not literate. So in my opinion, it should be prepare using colloquialisms in every language," she added.

"The apex regulator should also consider preparing a brief advertising note for television, using social networking sites such as Facebook, and arranging common education programmes at various public places," Sisodia said.

She added, "Adulteration of spices cannot be easily stopped. It can directly affect the business of many people. So the government should impose hefty fines on those who prove to be culprits."

Rice plants evolve to adapt to flooding

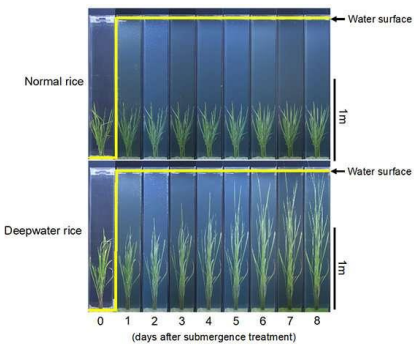
PHYS.ORG : 12-JUL-2018

Although water is essential for plant growth, excessive amounts can waterlog and kill a plant. In South and Southeast Asia, where periodic flooding occurs during the rainy season, the water depth can reach several meters for many months.

Rice varieties known as "deepwater rice" have developed a unique strategy to ensure their own survival. Deepwater rice grows normally in shallow water but in heavy floods increases its height in keeping with rising water levels, to enable the plants to ride out lengthy floods.

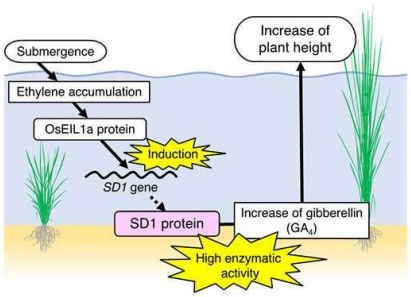
A research team comprising Takeshi Kuroha at Tohoku University, Motoyuki Ashikari at Nagoya University, Susan R. McCouch at Cornell University and colleagues in Japan and the U.S.A., have discovered a gene in rice that is critical to its survival in flood conditions. They have also shed light on its molecular function and evolutionary history.

The research group identified the SD1 (SEMIDWARF1), as a key gene responsible for the deepwater rice's response. The SD1 encodes a biosynthesis enzyme of gibberellin—a plant hormone. The gene orchestrates the deepwater rice response via a unique gain-of-function allele. When submerged, rice accumulate ethylene, a gaseous plant hormone. Deepwater rice amplify a signaling relay in which the SD1 gene is transcriptionally activated by an ethylene-responsive transcription factor, OsEIL1a.



Temporal morphological changes of rice in deepwater conditions. Credit: Takeshi Kuroha, Keisuke Nagai, and Motoyuki Ashikari

Molecular mechanism in deepwater rice. Credit: Takeshi Kuroha, Keisuke Nagai, and Motoyuki Ashikari

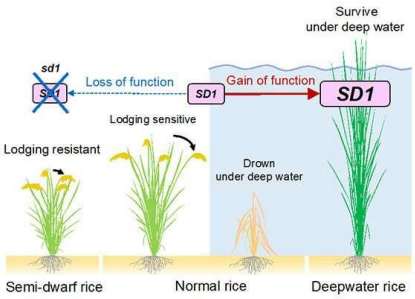


The resulting SD1 protein directs increased synthesis of gibberellins, largely one of gibberellin species, GA4, which promote vertical growth in the plant. Further analysis revealed that this conditionally functional variation evolved first in a wild ancestor and was then a target of selection during the domestication of cultivated rice adapted to deepwater environments in Bangladesh.

The SD1 gene is well-known as the Green Revolution gene in rice, where a loss-of-function allele of SD1 confers short plant height, providing lodging resistance and increases the harvest index, generating greater grain yields under high input agricultural systems (Figure 3- left).

A transcriptional gain-of-function allele of the same gene enables deepwater rice to adapt to flooding via the opposite phenotypic response—an increase in plant height. The ability of SD1 to function in such diverse roles in cultivated rice highlights the inherent plasticity of plant response to its environment.

The SD1 gene enables the plant to adapt to different environments. Credit: Takeshi Kuroha, Keisuke Nagai, and Motoyuki Ashikari



"Extreme weather events caused by climate change could affect food production worldwide," said Kuroha. "Farmers will need to diversify their methods and the cryptic genetic variation found in wild rice genes may offer adaptive solutions for growing resilient crops."

MALAYALAM NEWS

ഇന്ത്യൻ കൗൺസിൽ ഓഫ് അഗ്രികൾച്ചറൽ റിസേർച്ച്(ഐസി എആർ) നവതി ആഘോഷങ്ങളുടെ ഭാഗമായി ഏർപ്പെടുത്തിയ ചൗധരി ദേവി ലാൽ റിസർച്ച് പ്രോജക്ട് അവാർഡ് കോഴിക്കോട്ടെ ഇന്ത്യൻ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് സ്പൈസസ് റിസർച്ചിനു വേണ്ടി ഡയറക്ടർ കെ.നിർമൽ ബാബു കേന്ദ്ര കൃഷി മന്ത്രി രാധാ മോഹൻ സിങ്ങിൽ നിന്ന് ഏറ്റുവാങ്ങുന്നു.

കേരളത്തിന് ആറ് ഐ.സി.എ.ആർ. അവാർഡുകൾ

ഇന്ത്യൻ കൗൺസിൽ ഓഫ് അഗ്രികൾച്ചറൽ റിസർച്ചിന്റെ മികച്ച അഖിലേന്ത്യാ കോ-ഓർഡിനേറ്റഡ് റിസർച്ച് പ്രോജക്ട് അവാർഡ് കോഴിക്കോട് ഇന്ത്യൻ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് സ്പൈസസ് റിസർച്ച് ഡയറക്ടർ കെ.നിർമൽ ബാബു കൃഷിമന്ത്രി രാധാ മോഹൻ സിങ്ങിൽനിന്നു സ്വീകരിക്കുന്നു

ന്യൂഡൽഹി ▸ ഇന്ത്യൻ കൗൺസിൽ ഓഫ് അഗ്രികൾച്ചറൽ റിസേർച്ച്(ഐ.സി.എ.ആർ.)ന്റെ 2017-ലെ ആറ് അവാർഡുകൾ കേരളത്തിന്. മികച്ച അഖിലേന്ത്യാ കോ-ഓർഡിനേറ്റഡ് റിസർച്ച് പ്രോജക്ട് അവാർഡ് കോഴിക്കോട് ഇന്ത്യൻ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് സ്പൈസസ് റിസർച്ചിന് ലഭിച്ചു. മികച്ച ഗവേഷണ കേന്ദ്രത്തിനുള്ള അവാർഡ് കണ്ണൂർ പന്നിയൂർ കുരുമുളക് ഗവേഷണ കേന്ദ്രത്തിനു ലഭിച്ചു.

എറണാകുളം സെൻട്രൽ മറൈൻ ഫിഷറീസ് റിസർച്ച് ഇൻസ്റ്റിറ്റ്യൂട്ടിലെ മൂന്ന് ശാസ്ത്രജ്ഞർക്ക് അവാർഡ് ലഭിച്ചു. ആനിമൽ ആർഡ് ഫിഷറീസ് വിഭാഗത്തിൽ മികച്ച ഗവേഷണത്തിനുള്ള അവാർഡ് സീനിയർ സയന്റിസ്റ്റ് ഡോ. കാജൽ ചക്രബർത്തിക്കും സോഷ്യൽ സയൻസസ് വിഭാഗത്തിലെ മികച്ച യുവശാസ്ത്രജ്ഞനുള്ള അവാർഡ് ഡോ. എൽദോ വർഗീസിനും ഫിഷറീസ് സയൻസിലെ മികച്ച പി.ജി. ഡോക്ടറൽ തീസിസ് റിസർച്ച് അവാർഡ് ഡോ. അനുശ്രീ വേലപ്പൻ നായർക്കും ലഭിച്ചു. ബയോടെക്നോളജി വിഭാഗത്തിലെ മികച്ച പി.ജി. ഡോക്ടറൽ തീസിസ് റിസർച്ച് അവാർഡ് കൊല്ലം പാരിപ്പള്ളിയിലെ ഡോ. ആശ ശ്രീനിവാസനു ലഭിച്ചു.

ഐ.സി.എ.ആർ. സ്ഥാപക ദിനാഘോഷത്തോടനുബന്ധിച്ച് ഡൽഹിയിൽ നടന്ന ചടങ്ങിൽ കൃഷിമന്ത്രി രാധാ മോഹൻ സിങ് അവാർഡുകൾ വിതരണം ചെയ്തു.

മുരിങ്ങയില സത്ത് തളിക്കാം; ചെടികളുടെ വളർച്ച ത്വരിതപ്പെടുത്താം പച്ചക്കറിയുൾപ്പെടെ പല വിളകളിലും തളിക്കാൻ കഴിയുന്നതാണ് മുരിങ്ങയില ...

MATHRUBHOOMI JUL 10, 2018, 11:58 AM IS.....

പലപ്പോഴും നമ്മുടെ പൂന്തോട്ടങ്ങളിലും അടുക്കളത്തോട്ടങ്ങളിലും ചട്ടിയിലും വളർത്തുന്ന ചെടികകൾ പലതും മുരടിച്ചു പോകുന്നതും വേണ്ടത്ര വേഗത്തിൽ വളരാത്തതും കായ്ഫലം തരാത്തതും നമ്മെ വിഷമിപ്പിക്കാറുണ്ട്. അതിനു പരിഹാരമായി നാം രാസവളപ്പീടികയിൽ ലഭിക്കുന്ന പല തരം രാസഹോർമോൺ ഘടകങ്ങൾ വാങ്ങി തളിക്കുന്നു. പലതരം വളർച്ചാ ഹോർമോണുകളാണ് കെമിക്കൽ രൂപത്തിൽ വില്പന നടത്തിവരുന്നത്. എന്നാൽ, ജൈവകൃഷിയുടെ ലക്ഷ്യങ്ങൾക്ക് വിരുദ്ധമാണ് ഇവയുടെ ഉപയോഗം.

വീട്ടിലുണ്ടാക്കാം വളർച്ചാ ഹോർമോൺ

ആഫ്രിക്കൻ രാജ്യങ്ങളിലെ ജൈവകൃഷിത്തോട്ടങ്ങളിൽ വ്യാപകമായി ഉപയോഗിച്ചുവരുന്ന ഒരു ജൈവ ഹോർമോൺ മിശ്രിതമുണ്ട്. സാധാരണ വിളവിൽ നിന്ന് 30 മുതൽ 150 വരെ ശതമാനം വിള വർധനയാണ് ഈ ജൈവ ഹോർമോൺ സാധ്യമാക്കുന്നത്. നമ്മുടെ നാട്ടിൽ സുപരിചിതമായ ഒരു ചെടിയുടെ ഇലയിൽ നിന്നാണ് അത് ലഭ്യമാക്കുന്നത്. നമ്മൾ സാധാരണയായി നല്ല ഇലക്കറിയായി ഉപയോഗിച്ചുവരുന്ന മുരിങ്ങയാണ് താരം. അതെ, നമ്മുടെ തോട്ടത്തിലെ ചെടികൾ വളരാൻ ഉപയുക്തമായ ചെലവ് തീരെയില്ലാത്ത വളർച്ചാ ഹോർമോൺ സ്വയം തയ്യാറാക്കാം.

എങ്ങനെ തയ്യാറാക്കാം

മുരിങ്ങയുടെ 30 ദിവസമെങ്കിലും മൂപ്പുള്ള ഇലകൾ കുറച്ചു വെള്ളം ചേർത്ത് മിക്സിയിലടിക്കുക. അതിനുശേഷം ഒരു തുണിയിൽ കിഴികെട്ടിയോ അരിപ്പയിൽ അരിച്ചോ സത്തും ചണ്ടിയും വേർതിരിക്കണം. സത്ത് 16-20 ഇരട്ടി വെള്ളത്തിൽ നേർപ്പിച്ച് സ്പ്രെയർ കൊണ്ട് ചെടികളിൽ തളിച്ചുകൊടുക്കാം. വിളകളുടെ ഇലകളിലാണ് ഇത് തളിക്കേണ്ടത്.

എങ്ങനെ തയ്യാറാക്കാം

മുരിങ്ങയുടെ 30 ദിവസമെങ്കിലും മൂപ്പുള്ള ഇലകൾ കുറച്ചു വെള്ളം ചേർത്ത് മിക്സിയിലടിക്കുക. അതിനുശേഷം ഒരു തുണിയിൽ കിഴികെട്ടിയോ അരിപ്പയിൽ അരിച്ചോ സത്തും ചണ്ടിയും വേർതിരിക്കണം. സത്ത് 16-20 ഇരട്ടി വെള്ളത്തിൽ നേർപ്പിച്ച് സ്പ്രെയർ കൊണ്ട് ചെടികളിൽ തളിച്ചുകൊടുക്കാം. വിളകളുടെ ഇലകളിലാണ് ഇത് തളിക്കേണ്ടത്.

പച്ചക്കറിയുൾപ്പെടെ പല വിളകളിലും മുരിങ്ങയില സത്ത് തളിക്കാം. വിത്ത് മുളച്ച് 10 ദിവസം കഴിഞ്ഞും ഒരു മാസം കഴിഞ്ഞും കായ്കൾ രൂപപ്പെടുമ്പോഴും ഇതുതളിക്കാം. ഉണ്ടാക്കി അഞ്ച് മണിക്കൂറിനുള്ളിൽ മുരിങ്ങയിലസത്ത് തളിക്കുന്നതാണ് നല്ലത്. അധികം മൂപ്പില്ലാത്ത ചെടികൾക്കാണ് ഇത് തളിക്കുന്നതെങ്കിൽ 30 ഇരട്ടിവെള്ളം ചേർക്കണം. പെട്ടെന്നു തളിച്ചില്ലെങ്കിൽ ഫ്രീസറിൽ വെച്ചശേഷം പിന്നീടും ഉപയോഗിക്കാം.

കൃഷിയിടങ്ങളിലും ഗ്രീൻ ഹൗസുകളിലെ വിളകളിലും മുരിങ്ങയില സത്ത് വ്യാപകമായി തളിക്കുന്നുണ്ട്. ആഫ്രിക്കൻ രാജ്യങ്ങളിൽ ജൈവകൃഷിയുടെ പ്രധാന ഭാഗമണിത്. വിത്തുകളുടെ മുളയ്ക്കലും വളർച്ചയും ത്വരിതപ്പെടുത്താനും മുരിങ്ങയില സത്തിനാകും. പഞ്ചഗവ്യത്തോടൊപ്പം രണ്ട് ശതമാനം വീര്യത്തിൽ മുരിങ്ങയില സത്ത് തളിക്കുന്നതും മെച്ചമാണെന്നും തെളിഞ്ഞിട്ടുണ്ട്.

മുരിങ്ങയുടെ ഏറ്റവും പോഷകമുള്ള ഭാഗമായ ഇലകളിൽ ധാരാളം വൈറ്റമിൻ ബി, വൈറ്റമിൻ സി, ബീറ്റ കരോട്ടിൻ രൂപത്തിൽ വൈറ്റമിൻ എ, വൈറ്റമിൻ കെ, മാംഗനീസ്, മാംസ്യം എന്നിവയടങ്ങിയിരിക്കുന്നു. കൂടാതെ മുരിങ്ങയിലയിൽ 'സൈറ്റോകൈനുകൾ' എന്ന ഹോർമോണുകൾ നല്ല തോതിലുണ്ട്. ചെടികളുടെ വളർച്ച ത്വരിതപ്പെടുത്തുന്ന ഹോർമോണുകളാണ് ഇവ. മറ്റു അവശ്യ പോഷകങ്ങളും അടങ്ങിയിട്ടുണ്ട്. മുരിങ്ങയിലയിൽ കാൽസ്യം അടങ്ങിയിരിക്കുന്നത് കാൽസ്യം ഓക്സലേറ്റ് ക്രിസ്റ്റൽ രൂപത്തിലാണ്. എന്താ എളുപ്പത്തിൽ ഉണ്ടാക്കുകയല്ലേ വളർച്ചാ ഹോർമോൺ?

തിപ്പലിയിൽ ഒട്ടിച്ച കുറ്റിക്കുരുമുളകുമായി എബി

വീണാറാണി.ആർ/ കൃഷി അസിസ്റ്റന്റ് ഡയറക്ടർ

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പൂനയിലെ സ്പെഷാലിറ്റി ഹോസ്പിറ്റലിലെ ജോലി ഉപേക്ഷിച്ച് നാട്ടിലേക്ക് വണ്ടി കയറുമ്പോൾ മണ്ണിലിറങ്ങി അധ്വാനിക്കാമെന്നതായിരുന്നു എബിയുടെ തീരുമാനം. മൂന്നുവർഷത്തിനു ശേഷം നാട്ടിലേക്കുള്ള തിരിച്ചുവരവാണ് ശരിയെന്ന് എബി തെളിയിച്ചു കഴിഞ്ഞു. തൈ ഉത്പാദനം മുതൽ വൈവിധ്യവത്ക്കരണം വരെ കുരുമുളക് കൃഷിയിലെ അമരക്കാരനാണ് കാസർഗോഡ് പരപ്പയിലെ ഈ യുവകർഷകൻ.

റബ്ബറിന്റെ വിലക്കുറവ് മൂലമുണ്ടായ പ്രതിസന്ധി ഘട്ടത്തിലാണ് കുരുമുളക് കൃഷിയിൽ നിന്ന് തന്നെ തുടങ്ങാമെന്ന് എബി തീരുമാനിച്ചത്. കുരുമുളകിന്റെ കൂടിയ വിലയും തൈകൾക്കുള്ള ഡിമാന്റും പ്രചോദനമായി. കോഴിക്കോട് സെൻട്രൽ റിസർച്ച് സ്റ്റേഷനിൽ നിന്നും പരിശീലനം നേടി. ശ്രീകര, ശുഭകര തേവം,വിജയ് തുടങ്ങിയ അത്യുൽപാദന ശേഷിയുള്ള ഇനങ്ങളുടെ തൈകൾ ഉത്പാദിപ്പിച്ചുകൊണ്ടായിരുന്നു തുടക്കം. സാധാരണ നഴ്സറിയിൽ കുരുമുളക് കമ്പ് മുറിച്ചുനടുന്ന രീതിയിൽ നിന്ന് വ്യത്യസ്തമായി നാഗപതിയിലൂടെ മാത്രമേ എബി തൈകൾ തയ്യാറാക്കാറുള്ളൂ. ഓരോ മുട്ടിൽ നിന്നും ധാരാളം വേരിറങ്ങുന്ന നാഗപതി തൈകൾക്ക് കരുത്ത് കൂടും. തൈകൾക്ക് ഓരോ വർഷവും ആയിരകണക്കിന് നാഗപതികുഞ്ഞുങ്ങൾ എബിയുടെ നഴ്സറിയിൽ നിന്നും വിറ്റഴിയുന്നു. വൈകുന്നേരം 5 മണി മുതൽ 8 വരെയുള്ള സമയം മഴമറയ്ക്കകത്ത് നാഗപതി തൈകളുടെ പണിപ്പുരയിൽ ചെലവഴിക്കുന്നതാണ് എബിയുടെ രീതി.

കുരുമുളകിലുമുണ്ട് എബിയുടെ കൈയൊപ്പ്. നല്ല വില കൊടുത്ത് വാങ്ങിയ കുറ്റികുരുമുളകിൽ ദ്രുതവാട്ടരോഗം പടർന്നു കയറുന്ന കണ്ട എബിയുടെ മനസ്സിൽ ഉദിച്ച ആശയമാണ് തിപ്പലിയിൽ ഒട്ടിച്ച കുറ്റിക്കുരുമുളക്. മറ്റുള്ളവരിൽ നിന്നും എബിയുടെ നഴ്സറിയെ മികച്ചതാക്കുന്നതും തിപ്പലിയിലെ കുറ്റികുരുമുളക് തന്നെ.

തുടക്കത്തിൽ ഒന്നാമനായ വിജയ ആണ് എബിയുടെ തോട്ടത്തിലെ താരം. ഒന്നരവർഷം പ്രായമായ കുരുമുളക് നിറയെ കായ്ചുനിൽക്കുന്നത് കാണണമെങ്കിൽ എബിയുടെ തോട്ടത്തിൽ വരണം. താങ്ങുമരത്തിന്റെ വടക്കുഭാഗത്ത് നടുന്ന കുരുമുളകിന് ആദ്യം തന്നെ ട്രൈക്കോഡർമ സമ്പുഷ്ടീകരിച്ച ജൈവളം നൽകുന്നു. 4 മാസം വളർച്ചയെത്തിയാൽ ചെടിയുടെ അഗ്രം നുള്ളിക്കളയുന്നതാണ് എബിയുടെ ഒരു കുരുമുളക് വിദ്യ. പിന്നീട് വരുന്ന രണ്ട് ശാഖകൾ തഴച്ചു വളരും. ഒന്നര വർഷത്തിനുള്ളിൽ നിറയെ കായ്ക്കുന്നത് അനന്തരഫലം.

വില ഉയരുന്നു; തിരിച്ചു വരാം വാനിലയിലേക്ക്

പ്രമോദ്കുമാർ വി.സി.

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മലയോരങ്ങളുടെ വലിയ പ്രതീക്ഷയായി തൊണ്ണൂറുകളിൽ അവതരിച്ച കാർഷികവിള, വയനാട്ടിലെ കർഷകരെ ഒരു കാലത്ത് താങ്ങിനിർത്തിയിരുന്ന സുഗന്ധവ്യഞ്ജനം. അതെ തൊണ്ണൂറുകളിൽവയനാട്ടിലെ പല കർഷകരും പച്ചപിടിപ്പിച്ചിരുന്നത് മെക്സിക്കൻകാരനായ ഓർക്കിഡ് വംശത്തിൽപ്പെട്ട ഈ സുഗ്ധവിളയായിരുന്നു ആരാണ് താരമെന്നല്ലേ?

നമ്മുടെ സാക്ഷാൽ വാനില. എന്നാൽ, പിന്നീട് അതിന്റെ പ്രഭാവം മങ്ങുന്നതാണ് കണ്ടത്. രണ്ടായിരത്തിന്റെ പകുതിയോടെ വില പറ്റെ കുറയുകയും പല കർഷകരും കൃഷിതന്നെ പാടേ ഉപേക്ഷിക്കാൻ നിർബന്ധിതരായിത്തീർന്നു. പലരും പന്തലിൽ പടർത്തിയിരുന്ന വള്ളികൾ പറിച്ച് തീക്കൊടുത്തു. മറ്റുപലരും കൃഷിയിടങ്ങളിലേക്ക് ശ്രദ്ധിക്കാതെയായി, ചിലർ വിളകൾ മാറ്റി. എന്നാൽ കർഷകർക്ക് വീണ്ടും പ്രതീക്ഷയേകി വാനിലയുടെ വില വീണ്ടും ഉയരാൻ തുടങ്ങിയിരിക്കുന്നെന്ന വാർത്തകൾ വീണ്ടും കർഷകരെ ഇതിലേക്ക് ആകർഷിക്കുന്നു.

കാലാവസ്ഥയും മണ്ണും

വർഷത്തിൽ 15 മുതൽ 30 വരെ സെന്റിമീറ്റർ വരെ മഴ കിട്ടുന്നതും ഈർപ്പവും ചൂടുള്ളതുമായ സ്ഥലത്ത് വാനില നന്നായി വളരും. പക്ഷേ, ഈർപ്പം കൂടുന്നത് രോഗങ്ങളുണ്ടാക്കും. ജൈവവള സമ്പന്നമായ ഇളകിയ പൂഴിപ്പറ്റുള്ള മേൽമണ്ണിലും വെട്ടുകൽ മണ്ണിലും വരെ വാനില കൃഷി ചെയ്യാം.

സമുദ്രനിരപ്പിൽ നിന്ന് ഏതാണ്ട് 1500 മീറ്റർ വരെ ഉയരത്തിൽ സ്ഥിതി ചെയ്യുന്ന സ്ഥലങ്ങളിലാണ് വാനില കൃഷിക്ക് അനുയോജ്യം. വാനിലക്ക് രണ്ടു നടീൽ കാലമാണുള്ളത്. കാലവർഷം കനക്കുന്നതിന് മുമ്പ് മേയിലും കാലവർഷത്തിനും തുലാവർഷത്തിനും മധ്യേ സെപ്റ്റംബർ മുതൽ ഒക്ടോബർ വരേയും. കേരളത്തിലെ കാലാവസ്ഥാ സാഹചര്യത്തിൽ ഏറ്റവും നല്ലത് രണ്ടാമത്തേതാണ്.

തൈകൾ നടാം

വാനിലയുടെ വള്ളി മുറിച്ച് വേരുപിടിപ്പിച്ചതോ വള്ളികളുടെ കഷണങ്ങളോ ആണ് നടീൽ വസ്തുവാക്കാറ്. എന്നാൽ, പതിനഞ്ചു മുതൽ ഇരുപതു വരെ ഇടമുട്ടുകളുള്ള നീളൻ തണ്ട് നട്ടാൽ ചെറിയ തണ്ടുകളേക്കാൾ വേഗം പുഷ്പിക്കും. പക്ഷേ, നഴ്സറികളിൽ ഇത്രയേറെ നീളമുള്ള വള്ളികൾ നടാൻ കിട്ടില്ല. അങ്ങനെ വരുമ്പോൾ വള്ളികളുടെ ലഭ്യതയനുസരിച്ച് നടാം . ഏറ്റവും കുറഞ്ഞത് അഞ്ച് ഇടമുട്ടുകൾ അല്ലെങ്കിൽ അറുപത് സെന്റിമീറ്ററെങ്കിലും നീളമില്ലാത്ത തലകൾ നടാൻ ഉപയോഗിക്കരുത്.

നടീൽരീതി

തണ്ടിന്റെ ഇല നീക്കിയ ചുവടുഭാഗം താങ്ങുമരത്തിന്റെ ചുവട്ടിലെ ഇളകിയ മണ്ണിൽ പതിച്ചു വയ്ക്കണം. ഇതിന് മുകളിൽ രണ്ടു സെന്റിമീറ്റർ കനത്തിൽ നനഞ്ഞ മണ്ണ് വിതറണം. തണ്ടിന്റെ ചുവട്ടിലെ മുറിഭാഗം മാത്രം അൽപം മണ്ണിന് മുകളിലായിരിക്കണം.

കടചീയൽ രോഗം പിടിപെടാതിരിക്കാനാണ് ഇങ്ങനെ ചെയ്യുന്നത്. തണ്ടിന്റെ മുകൾഭാഗം താങ്ങുകാലിനോട് ചേർത്ത് കെട്ടണം. വയ്ക്കോൽ, ഉണങ്ങിയ പുല്ല്, കരിയില, തൊണ്ട് എന്നിവയിൽ ഏതെങ്കിലും ഉപയോഗിച്ച് ചുവട്ടിൽ പുതയിടണം. ഉണങ്ങിയപുല്ല്, വാഴയില, തേക്കില, ഉപ്പൂത്തിയില എന്നിവയിലേതെങ്കിലുമൊന്ന് ഉപയോഗിച്ച് തണ്ടിന് തണൽ നൽകണം. ചെറിയ തോതിൽ നനയ്ക്കണം. ഒരു മാസം കൊണ്ട് വേരുപിടിച്ചു മുളപൊട്ടും.

വളം ചെയ്യാം

എല്ലാവിധ ജൈവ വളങ്ങളും വാനിലയ്ക്ക് നൽകാം. കമ്പോസ്റ്റുകൾ, കാലിവളം, പച്ചില, ബയോഗ്യാസ് സ്ലറി, വിവിധ പിണ്ണാക്കുകൾ, എല്ലുപൊടി എന്നിവയാണ് ഉത്തമം. കടലപ്പിണ്ണാക്ക് കുതിർത്തതും ചാണകവും ചേർത്ത് ലായനി നേർപ്പിച്ച് മാസത്തിലൊരിക്കൽ ചെടിയുടെ ചുവട്ടിൽ ഒഴിക്കുന്നത് വളർച്ച വേഗത്തിലാക്കും.

രാസവളം നൽകുന്ന രീതിയിലാണെങ്കിൽ 17:17:17 എന്ന രാസവള മിശ്രിതം 1 കിലോ 100 ലിറ്റർ വെള്ളത്തിൽ എന്ന തോതിൽ കലർത്തി ചെടിയുടെ തണ്ട്, ഇല എന്നിവിടങ്ങളിൽ തളിച്ചുകൊടുക്കുന്നത് വള്ളികളുടെ വളർച്ചയെ സഹായിക്കും.

നനയ്ക്കാം

വേനൽക്കാലത്ത് നന വേണ്ട വിളയാണ് വാനില. ആഴ്ചയിൽ ചെടിയൊന്നിന് രണ്ടു മുതൽ മൂന്നു ലിറ്റർ വരെ വെള്ളം കിട്ടുന്ന വിധത്തിൽ നന ക്രമീകരിക്കണം. ചുവട്ടിൽ നനവുള്ള സാഹചര്യം നിലനിർത്താൻ പുതയിടാം. ഫെബ്രുവരി മുതൽ മേയ് വരെയുള്ള നാലുമാസം വാനിലയ്ക്ക് ആഴ്ചയിൽ രണ്ടു നനയെങ്കിലും കൂടിയേ തീരൂ.

വാനിലച്ചെടിയുടെ മുക്കാൽഭാഗം വേരുകളും മണ്ണിനു മുകളിലുള്ള ജൈവവസ്തുക്കളിലാണ് പറ്റിപ്പിടിച്ചാണ് വളരുന്നത്. അതുകൊണ്ടുതന്നെ പുതയിടണം. ചപ്പിലകളാണ് പുതയിടലിനുപയോഗിക്കുന്നത്. വർഷത്തിൽ മൂന്ന് തവണയെങ്കിലും പുതയിടണം. ചുവട്ടിലെ മണ്ണ് ഇളക്കാതെ വാനിലത്തണ്ടിൽനിന്ന് അൽപം മാറി വേണം പുതയിടാൻ. ഇങ്ങനെ ചെയ്താൽ പൂപ്പൽബാധ ഒഴിവാക്കാം.

നട്ടയുടനെ ഉണങ്ങിയയിലകളുടെ പുത, അതിനുശേഷം ചകിരി അടുക്കിയുള്ള പുത, ആറു മാസത്തിനുശേഷം പച്ചിപ്പുത എന്നിങ്ങനെയാണ് ചെയ്യേണ്ടത്. വാഴയില, വാഴത്തട എന്നിവകൊണ്ടും വളർച്ചയെത്തിയ വാനിലക്ക് പുതയിടാം.

താങ്ങുകൊടുക്കണം തണലും

താങ്ങുവേണ്ട വിളയാണ് വാനില. അതിനാൽ പടർന്ന് കയറാൻ പറ്റിയ താങ്ങുമരങ്ങൾ നട്ടുപിടിപ്പിക്കണം. വള്ളികളെ വെയിലിന്റെ കാഠിന്യത്തിൽ നിന്ന് രക്ഷിക്കാനും ഭാഗികമായ രീതിയിൽ തണൽ നൽകാനും ഇത് ഉപകരിക്കും. താങ്ങു മരച്ചില്ലകളുടെ ഇടയിലൂടെ അരിച്ചെത്തുന്ന സൂര്യപ്രകാശത്തിന്റെ 50 ശതമാനം വാനിലയ്ക്ക് മതിയാകും.

ശീമക്കൊന്നയാണ് കേരളത്തിൽ പൊതുവെ വളർത്തുന്ന താങ്ങുമരം. കൂടാതെ മുള്ളില്ലാ മുരുക്ക്, ചെമ്പകം, മൾബറി, കാട്ടാവണക്ക്, കാറ്റാടിമരം എന്നിവയും താങ്ങായി വളരുന്നു. ആറടി ഉയരവും കൈവണ്ണവുമുള്ള പൊക്കം അധികം വയ്ക്കാത്ത മരങ്ങളായാൽ നന്ന്. വാനില പടർത്താനുള്ള സൗകര്യത്തിനായി താങ്ങുമരത്തിന് നിലത്ത് നിന്ന് ഏകദേശം ഒന്നര മീറ്റർ ഉയരമെത്തുമ്പോൾവളർച്ച ക്രമീകരിക്കണം.

തോട്ടമടിസ്ഥാനത്തിൽ വാനില വളർത്തുമ്പോൾ താങ്ങുമരങ്ങൾ തമ്മിൽ ഒന്നര മീറ്ററും നിരകൾ തമ്മിൽ രണ്ടു മീറ്ററും അകലം ഉണ്ടായിരിക്കണം. വാനിലവള്ളി നടുന്നതിന് മൂന്നുമാസം മുമ്പെങ്കിലും താങ്ങുകാലുകൾ നട്ടു വളർത്തണം. കൃത്യമായ അകലത്തിൽ നട്ടിട്ടുള്ള തെങ്ങ്, കമുക് എന്നീ തോട്ടങ്ങളിൽ ഇടവിളയായും വാനില വാനില വളർത്താം. വാനിലയുടെ പൂവിടലിന് തണൽ ക്രമീകരണം ആവശ്യമാണ്.താങ്ങു മരങ്ങളുടെ കൊമ്പുകോതലിലൂടെ ആവശ്യാനുസരണം തണലിന്റെ അളവ് കുറയ്ക്കാനും കൂട്ടാനും കഴിയും.

പരാഗണം കർഷകൻ ചെയ്യണം

വാനിലയിൽ പരാഗണം കർഷകൻ കൃത്രിമമായി ചെയ്യേണ്ടതാണ്. സ്വയമേ പരാഗണം നടക്കില്ല. ഓരോ പൂവ് വീതമാണ് കൃത്രിമ പരാഗണം നടത്തേണ്ടത്. നീളം കൂടിയ തണ്ടുകളാണ് നടാനുപയോഗിച്ചതെങ്കിൽ നട്ട് മൂന്നാം വർഷം വാനില പൂവിടാൻ തുടങ്ങും. സാധാരണഗതിയിൽ വർഷത്തിൽ ഒരിക്കൽ മാത്രമേ വാനില വള്ളികളിൽ പൂക്കളുണ്ടാകാറുള്ളൂ. പച്ച കലർന്ന മഞ്ഞ നിറമാണ് പൂക്കൾക്ക്. ഇലയുടെ മുട്ടുകളിൽനിന്നാണ് പൂങ്കുലകൾ ഉണ്ടാകുന്നത്. ഒരു കുലയിൽ ഇരുപതോ അതിലേറെയോ പൂക്കളുണ്ടാകും. പൂവു വിരിയുന്ന അന്നു തന്നെ പരാഗണം നടത്തണം. കൈകളുപയോഗിച്ചാണ് കൃത്രിമ പരാഗണം നടത്തേണ്ടത്.

അഗ്രം കൂർപ്പിച്ച മുളം തണ്ടോ, ഈർക്കിലോ വലതുകൈയിലെടുത്ത് റോസ്റ്റല്ലം എന്ന ഭാഗം മുകളിലേക്ക് ഉയർത്തണം. പിന്നീട് ഇടതുകൈയുടെ തള്ളവിരൽ ഉപയോഗിച്ച് പൂമ്പൊടിയറകൾ താഴേക്കമർത്തി സ്റ്റിഗ്മയിലേക്ക് ചേർത്ത് പൂമ്പൊടി വീഴ്ത്തണം. പരാഗണം ശരിയായില്ലെങ്കിൽ പൂക്കൾ രണ്ടോ മൂന്നോ ദിവസത്തിനുള്ളിൽ കൊഴിഞ്ഞുപോകും. പരാഗണം നടത്തുമ്പോൾ കായയായി വളർന്ന് വരേണ്ടുന്ന ഭാഗത്ത് പോറലുകൾ വീഴരുത്. മഴക്കാലമാണെങ്കിൽ മഴ കഴിഞ്ഞു വേണം പരാഗണം ചെയ്യുവാൻ.

രാവിലെ 6 മുതൽഉച്ചയ്ക്ക് 12 മണി വരെയുള്ള സമയത്ത് പരാഗണം നടത്തുന്നതാണ് ഉത്തമം. സാധാരണയായി ഒരു പൂങ്കുലയിൽ ഒരു ദിവസം ഒരു പൂവു മാത്രമേ വിടരുകയുള്ളൂ . മൂന്നാഴ്ചക്കാലത്തോളം വേണ്ടിവരും ഒരു കുലയിലെ എല്ലാ പൂക്കളും വിരിഞ്ഞുതീരുവാൻ. പൂങ്കുലയിൽ ആദ്യം വിരിയുന്ന പൂക്കൾ ഏറ്റവും ചുരുങ്ങിയ കാലത്തിനുള്ളിൽ പരാഗണം ചെയ്യേണ്ടതുണ്ട്. ഇത് കായ്കൾ ഏതാണ്ട് ഒരേ കാലയളവിൽ മൂക്കാൻ സഹായിക്കുന്നു.

ഓരോ വള്ളിയിലും 18 മുതൽ 20 വരെ പൂങ്കുലകളും ഓരോ കുലയിലും ഇത്രയും തന്നെ പൂക്കളുമുണ്ടാകും . എങ്കിലും പൂങ്കുലയുടെ അടിഭാഗത്ത് വിടരുന്ന എട്ടോ പത്തോ പൂക്കൾ മാത്രമേ പരാഗണം നടത്തി കായ്കളാക്കി മാറ്റാവൂ. അതുപോലെ 10 മുതൽ 12 പൂങ്കുലകളിലേ പരാഗണം ചെയ്യേണ്ടതുള്ളൂ. എങ്കിൽ മാത്രമേ നല്ല വണ്ണവും ഗുണവുമുള്ള കായ്കൾ ലഭിക്കൂ.

ശരിയായ രീതിയിൽ പരാഗണം നടന്നുകഴിഞ്ഞാൽ കായ് അതിവേഗം നീളംവെച്ചു തുടങ്ങും. ആഴ്ചയിൽ ഏതാണ്ട് രണ്ടു സെന്റിമീറ്റർ എന്ന തോതിൽ ആറ് മുതൽ ഏഴ് ആഴ്ചകൊണ്ട് വേണ്ടത്ര നീളവും വണ്ണവും വയ്ക്കും. പക്ഷേ, ഒമ്പതു മുതൽ 11 മാസം വരെ വേണ്ടിവരും കായ് പാകമാകാൻ. ആറിഞ്ചിനു മേൽ നീളമുള്ള കായ്കളാണ് ഏറ്റവും നല്ലത്. ഇത് പറിച്ചെടുത്ത് വേണ്ടവിധം സംസ്കരിച്ച് വിപണിവിലയുടെ ഏറ്റക്കുറച്ചിലനുസരിച്ച് വിൽക്കാം. നമ്മുടെ കർഷകർക്ക് നല്ലൊരു ഇടവിളയായും ഇത് മാറും.