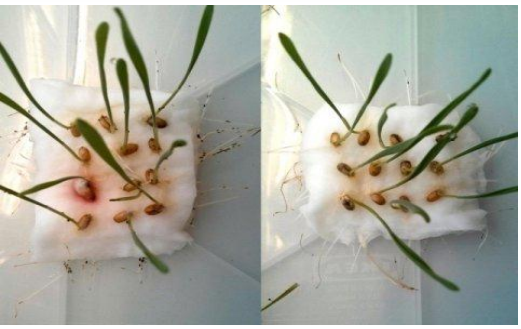
10:06

June 2018

AGRITitbits

Monthly Bulletin of Agricultural News



Agri Titbits is an effort to collect and preserve agricultural news, especially spices, appearing in newspapers and online media.

published by

Dr. K Nirmal Babu

compiled & prepared by

Jayarajan K

Ramesh Kumar P

ICAR-Indian Institute of Spices Research, Kozhikode

Spices

- Kerala a hub of processed spices export
- How to live longer: Add this spice to your meals to increase your life expectancy
- National policy for spices, an urgent need of the hour
- New turmeric variants to flood Telangana farms

Research News

- New type of photosynthesis discovered

Bio-Diversity

- Country's first biodiversity museum opens today
- What Is Biodiversity Loss and Why Is It a Problem?

Climate change

- Changing rainfall patterns cause for worry in India

Organic Farming

- With 619 farm clusters, Kerala's organic farm spreads to 24,491 hectares

ICAR in Print

- ICAR advises farmers to go for early aman paddy to cover losses due ...
- Cabinet approves 'Three Year Action Plan' of Agricultural Education Division & ICAR Institutes
- Charcoal could improve soil deteriorated by insecticides, shows ICAR study

IISR in Print

- Kerala women challenging men in coconut plucking
- Turmeric tech for farmers to bolster yield & exports

General

- Organic insect deterrent for agriculture
- ICSSR's new vision: make research relevant to policy
- Internet Plus Agriculture model to promote integrated rural development
- The 'Internet of Farming' is disrupting traditional agriculture
- Smart farming yields solutions
- A rice, lost and found
- Reimagining agriculture
- 11 Innovations That Could Build the Food of the Future

Malayalam News

SPICES

Kerala a hub of processed spices export

DECCAN CHRONICLE. JUN 6, 2018

The Indian spice export sector does business worth more than $ 2 billion.

KOCHI: Kerala's pepper and cardamom, once the main ingredients of the India's famed spices export basket, may not enjoy the same status in terms of quantity and value of exports. But spice traders from the state have reinvented themselves by making the state as the major hub of value-added spices and spices products exports from the country.

"The state government and the other authorities concerned seem to have not realised the transformation of Kerala as the main hub of processed spices and spice products", says Jojan Malayil chief executive officer of Bafna Enterprises, a Kochi-based spices export firm. All major players in the global spice sector have their processing and manufacturing facility in the state, he said.

Apart from Synthite, global players such as AVT McCormick, Plant Lipids, Ned Spices and several others dot the spice processing landscape and most of them are located in and around Kochi. The Indian spice export sector does business worth more than $ 2 billion and Kerala- based firms have a significant role in the business, said Prakash Namboodiri, chairman of All- India Spices Exporters Forum.

The workers agitation in a company such as Synthite needed to be handled with much sensitivity by the authorities concerned as this is one of the rare segments of business in which the state can claim a leadership position, said Malayil. During Apríl-Decermber 2017 India exported 791,145 tonne spices and spice products worth $ 2.04 billion as against 663,247 tonne worth $ 1.88 billion in the same period a year ago.

How to live longer: Add this spice to your meals to increase your life expectancy

EXPRESS.CO.UK-25-JUN-2018

HOW TO live longer: Research over the years has found some simple changes to your lifestyle can make for a longer and more satisfying lifespan. Certain foods you eat can help increase your life expectancy, and one recommended by experts to include in your diet is an antioxidant-boosting spice.

Study suggests nuts can help you live LONGER

How to live longer is a question many people start to ask themselves as they get old.

Quitting smoking can cut your risk of dying from cancer related to smoking and slash your risk of stroke.

And alongside exercise, eating a healthy, balanced diet is crucial to helping you live longer, according to the NHS.

One food recommended by medical consultant Dr Sarah Brewer and dietitian Juliette Kellow is black pepper.

Black pepper is heart-friendly as it cuts the need for salt and contains digestion-boosting piperine.

The medicinal and longevity properties of spices have been known about since ancient times, according to the two experts.

Now scientific studies are providing evidence to back up their potential health benefits, which include cancer protection and improving memory.

In their book titled 'Eat Better Live Longer', Dr Brewer and Ms Kellow say you should add spices liberally to your meals every day for salt-free flavourings.

The pair then go on to list the numerous health benefits of spices.

Protect against cancer

Several spices have been linked to protecting against cancer, including ginger and black pepper. But the strongest evidence so far is for turmeric, say Dr Brewer and Ms Kellow.

How to live longer: Add this spice to your meals to increase your life expectancy

9 Superfoods that can save your life

Superfoods to help you live longer - Analysis suggests even a small daily serving of nuts can cut the risk of coronary heart disease by 30 per cent, cancer by 15 per cent and premature death by 22 per cent. Here are the best superfoods to eat for a healthy life.

They add: "Several lab-based studies show that curcumin in turmeric seems to be able to kill cancer cells, particularly in the breast, bowel, stomach and skin, plus it even seem to prevent more from growing."

Fights inflammation

The duo write: "Lab-based tests show many spices act as anti-inflammatories, but it's curcumin (in turmeric) and ginger that top the list.

"Several studies how signs of inflammation are reduced in people when capsules containing these spices are taken.

"It's good news for fighting ageing as long-term inflammation can lead to health problems such as inflammatory bowel disease, some cancers, dementia and arthritis.

How to live longer: Add spices liberally to your meals every day

Pain reliever

Ginger's strong anti-inflammatory action may help to relieve pain associated with conditions such as arthritis, say Dr Brewer and Ms Kellow.

They add: "A review of five studies found taking ginger reduced pain by nearly a third and disability by 22 per cent in people with osteoarthritis.

"Another study found ginger was just as effective as an anti-inflammatory pain killer at reducing painful periods."

Eating this popular Japanese ingredient could also be the key to longevity.

National policy for spices, an urgent need of the hour

THE SUNDAY TIMES SRI LANKA-02-JUN-2018

The pungency of our cinnamon, pepper, cloves, nutmeg and much more launched many ships of the Portuguese, Dutch and the British. Forts were erected to keep the potential enemy at bay as this exotic 'spice island' was too good to lose. However, the spice legacy of the colonial island cannot afford to be complacent. Today 'forts' of modernity, lending the industry food and safety standards, good agronomic practices (GAP) and good manufacturing practices (GMP) need to be adopted, if we are to swim with the sharks. A national policy for our spices has been a pipe dream for too long and the call for it is now unprecedented.

The National Policy for Export Agriculture 2014-2025 which was prepared with in-depth input from multiple stakeholders is 'printed, available and thrown aside' as the founder Chairman of the Spice Council of Sri Lanka and the immediate Past Chairman of the National Chamber of Exporters, Sarada de Silva tells the Sunday Times.

"The industry is in a predicament when a complete U-turn has to be taken with each change- be it government, ministerial or even secretarial change," charges the third-generation cinnamon industrialist who points out that rather than reinventing the wheel, a consistent policy, along with a favourable environment should be realised sooner than later.

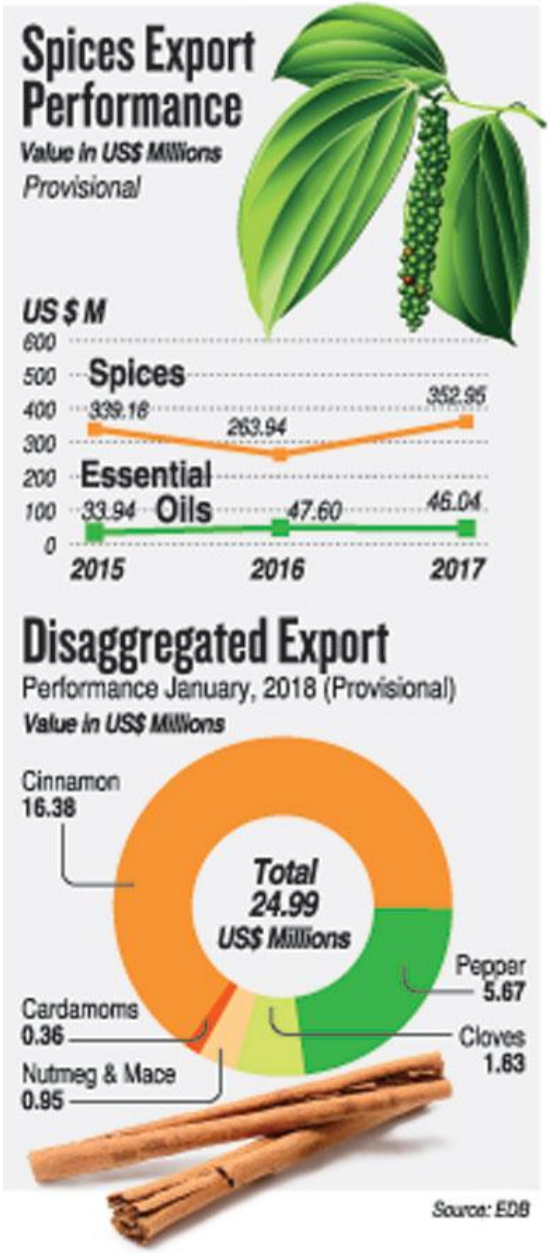
With multiple 'studies' and 'strategies' devised to put our spices on a more lucrative road, it is now more a situation of paying lip service to the industry than actually walking the talk. The policy, as Mr. De Silva reiterates cannot afford to change with each regime, but essentially create a level playing field for our spices. Sri Lanka 2018-2022 National Export Strategy (NES) which is now pending cabinet approval as reliable sources inform the Sunday Times, is seen to be offering impetus to expedite the National Policy for spices.

In 2017 our spice exports recorded US$ 352.95 million as Sri Lanka Export Development Board (EDB) figures affirm. The figure, as Mr. De Silva explains, is excluding the essential oils which are largely derived from spices. The export figure of essential oils in 2017 recorded US$ 46.04 million. Our spice export's actual potential is a billion dollar industry, standing out both in value and volume, for which right direction is imperative.

The spices — be they cinnamon, pepper or otherwise — are grown, harvested, processed and exported by the private sector and for the private sector to take long-term decisions and make long-term investments, long term policies are pressing. "Given the fact that agricultural returns are fairly long-term, far-thinking policies become even more valid," points out the industrialist. Among the policy elements, improving productivity, reducing cost of production, strengthening research and development, branding of local spices and registering a Geographical Identification (GI) protection for special spices such as Cinnamon and increasing employment opportunities are particularly significant. The long

awaited National Policy also aspires to impact our plantation sector which is now at cross roads, opines Mr. De Silva. “The macro picture has to be clear to win bigger players,” he notes, adding that currently the real threat is from poor quality standards and Phyto-sanitary standards. He also calls for regulatory standards for the export of spices.

Working towards higher productivity is also envisioned through such policy. Citing the experience of regional counterparts such as India, Vietnam and Cambodia, Mr. De Silva says that the potential for Lankan spices to surpass those of the region in terms of value is unlimited, given their intrinsic properties. Encouraging GMP and GAP enabling small players in the industry to benchmark themselves with the best players are also proposed by him. “In 1984 when the Indian Spices Board was set up, our export volume was far above theirs. Today, India is in the range of almost 100 US$ billion.”



The Geographical Indication (GI) which is mooted through a National Policy can multiply the export revenue for our spices, says Mr. De Silva who cites the example of Mexican Tequila which dominates the market capitalizing on its GI. “Mercifully, the Lion logo now tells Ceylon Cinnamon apart from Cassia, but if we can push for GI for Cinnamon followed by other spices, notably pepper and cloves, the marketing strength of these spices in the global market is infinite. The Crying need is for the creation of GI register locally.”

Championing the dignity of labour, while making spice-related employment attractive is also aspired by a cohesive policy. The ISO: 2000 certified cinnamon factories in Galle, Ratnapura and Matara are success stories which offers a cue in this aspect, points out the senior professional. With labour shortage being a double-whammy facing the industry, mechanizing it at every stage which permits it, is also tabled by him.

Revisiting the export agriculture’s vision and mission aligned with the current realities and thereby enabling a US$ 1,500 million export value by 2020 is the way forward, says the Director General, Department of Export Agriculture, Dr. A.P. Heenkende. With ‘quality’ being the catch word in the sector, sustaining it through pre-export surveillance measures is the norm today, rather than the exception, he adds. “The agro-climatic conditions render our spices, especially cinnamon, pepper, cloves and nutmeg to be superior in their composition and we cannot compromise the quality assurance of these spices in the global market,” observes Dr. Heenkende who alludes to the GMP Certificates which are

now issued by the Department of Export Agriculture in a bid to popularise GMP among small-scale cultivators and producers.

The 19 mini-labs established under a pilot project is also a move to add more teeth to the exercise.

Enhancing the value-added spice products could also boost the industry, for which muscle can be given by a consistent policy says the agriculturist. The Dhana Saviya home gardening project, productivity improvement programme and Youth Group programme are among the recent measures spearheaded by the Department to solidify the spice industry.

Prof. Buddhi Marambe, Chairman, Board of Study in Crop Science, Postgraduate Institute of Agriculture (PGIA), University of Peradeniya, avers that, despite the spice sector supporting about tens of thousands of families in the country and the global demand for spices taking a shift towards a continuous supply of high quality, value added spice products, our spice sector has not performed upto the expectations. Climate change and imperfect market systems are cited to be contributory to this state of affairs by the scholar. Moreover, low quality products and poorly-coordinated market channels have resulted in low value addition, poor incentives to the farmers/farms, and sluggish growth of the sector, he says. “A new policy with a realistic action plan is thus, needed to position the spice crops sector as the key driver for delivering about 10 % of GDP of Sri Lanka and the policy should aim at making Sri Lanka ‘The Spice Hub of Asia”, opines Prof. Marambe.

Prof. Marambe who was among the consultants to The Spice Sector Development Plan, which was launched in December 2014, by the then Ministry of Minor Export Crop Promotion, financially supported by the Food and Agriculture Organization (FAO) of the United Nations, further notes that a target-oriented development guided by the policy, will create an enabling environment to develop the sector, securing the livelihoods of cultivators and small-scale farmers and generating new employment.

A national policy on spice crops should focus on making the industry a national priority, identifying the sector as a key driver of the Sri Lankan economy, maintains Prof. Marambe. This process should be widely consultative, bringing in the state and private sectors agencies, professionals, University academia, industry experts, NGOs, growers and consumer representatives on board, he says. “This should be an integral part of the national economic development and poverty alleviation policies, aiming at export promotion, value addition, organically-grown spices, acceleration of growth of the sector, support of spice-based industries and services, creation of new employment for youth in spice-growing areas, and securing a fair living standards for the growers and producers,” he notes.

New turmeric variants to flood Telangana farms

THE HINDU-05-JUN-2018

Variants have lower duration and higher yield: scientists

A range of newly-developed turmeric variants would soon be launched commercially in farms across Telangana to better the yield and shorten the farming cycle.

In a consultative meeting organised at Centre for Excellence on turmeric value chain addition, farmers, scientists and horticulturists agreed that new turmeric variants would reduce the duration of cultivation by two months. Traditional variants including Erraguntur, Armoor and Duggirala red variants often take eight to nine months for cultivation whereas the new variants, including PTSN, ACC-48 and ACC-79, reduce cultivation time to six to seven months and have a higher yield.

The new variants were developed over the past three years as a result of collaboration between scientists of Indian Institute of Spice Research, Indian Council of Agricultural Research, Horticulture and Agriculture universities of Telangana and National Bank for Agriculture and Rural Development.

Speaking at the meeting, Director of Horticulture Department L. Venkatram Reddy asked farmers to use the new variant as, "they consume less water and produce more crop". The new variants are also resistant to rot and pests, thereby reducing dependence on harmful pesticides, he pointed out.

The Horticulture Department had introduced the new variants in some farms in Nirmal, Armoor, Nizamabad, Adilabad and Warangal. Farmers from seven districts of Telangana were present at the consultation organised on Tuesday. Telangana cultivates turmeric in 50,000 hectares. With the new variants, experts advised farmers to introduce modern irrigation techniques. Bed raising method of farming, paired row cultivation and drip irrigation would help reduce cost, scientists opined. The new variants would also increase the value of turmeric crop because their produce is richer in curcumin and oleoresin — the pigments found in turmeric. Both are extracted for commercial purposes. The new variants would also produce better turmeric powder for culinary purposes, experts found.

The variants would dominate the turmeric market by the coming year, it is expected.

RESEARCH NEWS

New type of photosynthesis discovered

SCIENCE DAILY-15-JUN-2018

The discovery changes our understanding of the basic mechanism of photosynthesis and should rewrite the textbooks. It will also tailor the way we hunt for alien life and provide insights into how we could engineer more efficient crops that take advantage of longer wavelengths of light.

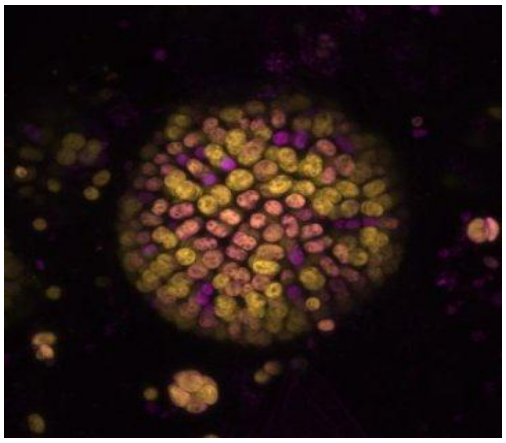
The discovery changes our understanding of the basic mechanism of photosynthesis and should rewrite the textbooks.

It will also tailor the way we hunt for alien life and provide insights into how we could engineer more efficient crops that take advantage of longer wavelengths of light.

The discovery, published today in Science, was led by Imperial College London, supported by the BBSRC, and involved groups from the ANU in Canberra, the CNRS in Paris and Saclay and the CNR in Milan.

The vast majority of life on Earth uses visible red light in the process of photosynthesis, but the new type uses near-infrared light instead. It was detected in a wide range of cyanobacteria (blue-green algae) when they grow in near-infrared light, found in shaded conditions like bacterial mats in Yellowstone and in beach rock in Australia.

As scientists have now discovered, it also occurs in a cupboard fitted with infrared LEDs in Imperial College London.



Colony of Chroococcidiopsis-like cells where the different colours represent photosynthesis driven by chlorophyll-a (magenta) and chlorophyll-f (yellow).

Photosynthesis beyond the red limit

The standard, near-universal type of photosynthesis uses the green pigment, chlorophyll-a, both to collect light and use its energy to make useful biochemicals and oxygen. The way chlorophyll-a absorbs light means only the energy from red light can be used for photosynthesis.

Since chlorophyll-a is present in all plants, algae and cyanobacteria that we know of, it was considered that the energy of red light set the 'red limit' for photosynthesis; that is, the minimum amount of energy needed to do the demanding chemistry that produces oxygen. The red limit is used in astrobiology to judge whether complex life could have evolved on planets in other solar systems.

However, when some cyanobacteria are grown under near-infrared light, the standard chlorophyll-a-containing systems shut down and different systems containing a different kind of chlorophyll, chlorophyll-f, takes over.

Until now, it was thought that chlorophyll-f just harvested the light. The new research shows that instead chlorophyll-f plays the key role in photosynthesis under shaded conditions, using lower-energy infrared light to do the complex chemistry. This is photosynthesis 'beyond the red limit'.

Lead researcher Professor Bill Rutherford, from the Department of Life Sciences at Imperial, said: "The new form of photosynthesis made us rethink what we thought was possible. It also changes how we understand the key events at the heart of standard photosynthesis. This is textbook changing stuff."

Preventing damage by light

Another cyanobacterium, Acaryochloris, is already known to do photosynthesis beyond the red limit. However, because it occurs in just this one species, with a very specific habitat, it had been considered a 'one-off'. Acaryochloris lives underneath a green sea-squirt that shades out most of the visible light leaving just the near-infrared.

The chlorophyll-f based photosynthesis reported today represents a third type of photosynthesis that is widespread. However, it is only used in special infrared-rich shaded conditions; in normal light conditions, the standard red form of photosynthesis is used.

It was thought that light damage would be more severe beyond the red limit, but the new study shows that it is not a problem in stable, shaded environments.

Co-author Dr Andrea Fantuzzi, from the Department of Life Sciences at Imperial, said: "Finding a type of photosynthesis that works beyond the red limit changes our understanding of the energy requirements of photosynthesis. This provides insights into light energy use and into mechanisms that protect the systems against damage by light."

These insights could be useful for researchers trying to engineer crops to perform more efficient photosynthesis by using a wider range of light. How these cyanobacteria protect themselves from damage caused by variations in the brightness of light could help researchers discover what is feasible to engineer into crop plants.

Textbook-changing insights

More detail could be seen in the new systems than has ever been seen before in the standard chlorophyll-a systems. The chlorophylls often termed 'accessory' chlorophylls were actually performing the crucial chemical step, rather than the textbook 'special pair' of chlorophylls in the centre of the complex.

This indicates that this pattern holds for the other types of photosynthesis, which would change the textbook view of how the dominant form of photosynthesis works.

Dr Dennis Nürnberg, the first author and initiator of the study, said: "I did not expect that my interest in cyanobacteria and their diverse lifestyles would snowball into a major change in how we understand photosynthesis. It is amazing what is still out there in nature waiting to be discovered."

Peter Burlinson, lead for frontier bioscience at BBSRC -- UKRI says, "This is an important discovery in photosynthesis, a process that plays a crucial role in the biology of the crops that feed the world. Discoveries like this push the boundaries of our understanding of life and Professor Bill Rutherford and the team at Imperial should be congratulated for revealing a new perspective on such a fundamental process."

BIODIVERSITY

Country's first biodiversity museum opens today

TIMES OF INDIA-04-JUN-2018

THIRUVANANTHAPURAM: The country's first biodiversity museum, at Vallakadavu here, will be opened to public by chief minister Pinarayi Vijayan on Tuesday. An initiative of the Kerala State Biodiversity Board, the museum includes a 3D theatre and galleries.

The 50-seater theatre would screen movies on plants and animals, said biodiversity board chairman S C Joshi, adding that the main aim was to create awareness among all sections of society about biodiversity conservation.

The museum also features Kerala's first ever Science on Sphere (SOS) system. An SOS system uses multimedia projections to stimulate animated images of earth, land, ocean etc, on a six-ft diameter sphere analogous to a giant globe. It provides real time data on weather and biodiversity conditions across the world accessed directly from NASA.

There are four permanent galleries on various topics - Biodiversity: The web of life, gateway of living world, global action for biodiversity and biodiversity conservation and sustainable utilization. An array of seeds and marine products are also put on display.

The Biodiversity Awards for the year 2017-18 will be prsented by the chief minister during the inaugural to be held at 4pm.

The museum will be open from 10.30am to 7.00pm on all days, except Monday.

What Is Biodiversity Loss and Why Is It a Problem?

Interesting Engineering-04-Jun-2018

Anything in a given area from the smallest organism to the largest are part of the biodiversity of a habitat.

There is so much life on this planet that it's estimated 86 percent of species are still undiscovered. Thanks to humans, though, we may never get the chance to find them all. Biodiversity loss is becoming a bigger problem than we ever thought it could be. It's estimated that half of all the species on the planet could go extinct by 2050 — only 32 years from now. What is biodiversity loss, and why is it such a big problem?

What Is Biodiversity Loss?

Biodiversity is defined as the totality of genes, species and ecosystems in a defined area. Everything from the smallest single-celled organism to the largest apex predator makes up the biodiversity of a given area.

Biodiversity loss, on the other hand, is the death of those ecosystems. Either the entire ecosystem is destroyed because of human intervention — including deforestation, urban development and farming — or enough key species in an ecosystem die that the ecosystem collapses on its own.

We're already experiencing biodiversity loss. It's estimated that in the last four decades, we've lost more than 50 percent of the planet's biodiversity. If the fact that we might lose more than 50 percent of the planet's plants and animals in just 32 years doesn't scare you a little bit, you might not be paying attention.

What Causes Biodiversity Loss?

What causes these natural ecosystems to collapse?

Sometimes the collapse of an ecosystem is the result of natural causes. Forest fires, floods and volcanic eruptions all have the potential to destroy an ecosystem in a given area. However, these natural types of biodiversity loss are normal — and the planet has a plan in place to restore them once the damage has passed. Some seeds, like those from a number of pine trees, won't even germinate unless their parent tree has burned in a wildfire.

Those aren't the kinds of biodiversity loss we should be concerned about.

Human intervention has caused the majority of biodiversity loss in the last few decades. Common causes include:

Deforestation: When we cut down a forest to use its lumber, or claim the land for agricultural purposes, we are destroying unique ecosystems that can't exist anywhere else.

Invasive Species: Species introduced in an area where they have no natural predators can decimate an ecosystem. Good examples of this are the pythons in the Florida Everglades and lionfish in the Gulf of Mexico. Most of these invasive species are linked directly to human intervention.

Pollution: Garbage dumped into the water supply, chemical runoff from industrial applications, and air pollution from cars and factories all have a negative effect.

Climate Change: Changes in the climate can happen naturally over millions of years — just look at the end of the last ice age. This time, though, climate change has been the result of human intervention. It's happening too quickly, and species can't adapt quickly enough, so they're dying out.

Overfishing: It's difficult to put a number on overfishing because most of the ocean is still unexplored, but it's estimated that anywhere from 60 to 90 percent of the ocean has been overfished or is on the verge of collapse.

Overpopulation: There are currently 7.4 billion people on the planet. Experts estimate that the planet is only capable of supporting roughly 10 billion souls, a number we're expected to reach and exceed in the next 100 years.

There are so many of us on the planet now that it's almost impossible not to have an impact on the world around us. What sort of impact will this loss of biodiversity have on us?

The Human Impact of Biodiversity Loss

As much as we like to try to keep ourselves apart from it, by building roads and houses to protect us from the elements, humans are intrinsically linked to the world around us. Biodiversity loss will affect us, too.

Maria Neira, director of WHO's Department for the Protection of the Human Environment, summed it up better than we ever could. "Human health is strongly linked to the health of the ecosystems, which meet many of our most critical needs."

We harvest plants from around the world for both modern and alternative medicine. Many of these medicines save lives, and we could lose half of these plants by 2050.

We harvest 200 billion pounds of food from the oceans every single year. Meat from wild animals also helps to sustain people around the world while bolstering their local economy.

Natural wonders like the Great Barrier Reef don't only contribute food to the local populations — they also help maintain Australia's economy by bringing in tourists and visitors from around the world.

We're not just threatening the health of the planet's ecosystems — we're threatening our own survival. Climate change alone is threatening bees and other migratory pollinators, and if we lose the bees, we lose the majority of our food supply. Bees alone pollinate 70 of the 100 plants that feed more than 90 percent of the world.

If those plants die, so will the animals that feed on them, and on and on up the food chain, until multiple ecosystems around the world collapse. Between that and the constantly growing human population, we can't afford to keep turning a blind eye to biodiversity loss. What can we do to start reversing this damage that we've done to the planet?

How to Reverse Biodiversity Loss

Trying to save the whole planet is a lofty goal, but it's not something you can do alone. It will take everyone making small changes in the way they live to create large, cumulative changes.

What can you do, in your own individual part of the world, to help protect biodiversity?

Recycle, Recycle, Recycle: The old adage to reduce, reuse and recycle is great, but at this point, we're just going to focus on the last part — Purchase products that are made with recycled materials. Plastic, paper, wood and metal can all be

recycled, so start there to make a difference. On the other side of the coin, recycle as much as you can. Campaign for recycling programs in your area. Make recycling cool again.

Buy Sustainable: We all love a well-cooked salmon filet or swordfish steak, but before you start stocking up on seafood, make sure you're buying fish that has been sustainably harvested. Avoid fish that are endangered like Bluefin tuna, and only purchase seafood that is labeled with the Marine Stewardship Council logo.

Drive Green: Everyone talks about reducing their carbon footprint, and the easiest way you can do this is to give up your gas guzzler in favor of a hybrid or electric car. These low- to no-emission vehicles have much less of an impact on the environment. If buying a new car isn't an option, try carpooling, public transportation, riding a bike or walking where you can.

Protect Local Habitats and Make Wildlife Welcome: We might not be able to save the world, but we can help improve our local areas. Take the time to clean up animal habitats, like beaches, forests and other undeveloped areas. Make your area welcoming for wildlife. Bird houses, bat houses and other housing can be great, as can planting local flora and turning your backyard into your own personal wildlife sanctuary.

Go Package-Free: Plastic packaging is one of the biggest wastes we experience on a daily basis. If you have one in your area, shop at a packing-free grocery store. These allow you to bring your own bags, jars and other reusable packaging to buy dry ingredients in bulk.

Compost: The average American generates roughly 4.4 pounds of garbage a day, much of it organic. Instead of tossing your vegetable peelings or coffee grounds, try setting up a compost pile for your organic waste. Not only does it keep your trash out of landfills, but it also makes killer natural fertilizer for flowers and plants — no chemicals needed.

Volunteer: There are probably plenty of organizations in your area that are working toward a greener tomorrow. You just have to look for them. Volunteer your time and help improve the area where you live.

Stand Up: Big companies are starting to get the picture, but there are still plenty that will exploit natural resources if given a chance. If you've got a big development company moving into your area that wants to cut down forests or drain local wetlands, it's up you to stand up and rally others to stand up to prevent this.

Donate: If donating your time isn't enough, consider donating some money to nonprofit organizations that are fighting to protect biodiversity around the world. There are many organizations that protect land, sea, and air in favor of a better tomorrow.

CLIMATE CHANGE

Changing rainfall patterns cause for worry in India

INDIA CLIMATE DIALOGUE-25-JUN-2018

The meteorological department's analysis of annual rainfall for the past 50 years has found significant increasing or decreasing trends in various districts that could put a spanner into India's food security scenario

A bone-dry village well in central India

Since June 13, there has been a hiatus in the advance of southwest monsoon in the country due to the weakening of its circulation pattern. This dry spell is expected to soon change as the monsoon is likely to advance further over Assam, some more parts of Maharashtra, Chhattisgarh, Odisha, West Bengal and parts of Jharkhand, Bihar, Madhya Pradesh and south Gujarat by June 25, as stated in the recent weather status and outlook of the India Meteorological Department (IMD). But, the dry spell is already a matter of concern.

As per the Hydromet Division of the IMD, between June 1 and June 22 this year, several meteorological sub-divisions in the northwest, northeast and east India have reported deficient (minus 59% to minus 20%) and large deficient rainfall (minus 99% to minus 60%).

For instance, East Uttar Pradesh, West Uttar Pradesh, East Rajasthan and West Rajasthan have reported a rainfall departure of minus 63%, minus 43%, minus 52% and minus 54%, respectively. Bihar, Jharkhand and Odisha, too, have had minus 38%, minus 49% and minus 31% deficient rainfall, respectively.

The situation is grim in the meteorological sub-divisions of Saurashtra and Kutch, and Gujarat region, which have reported rainfall departure of minus 97% and minus 91%, respectively.

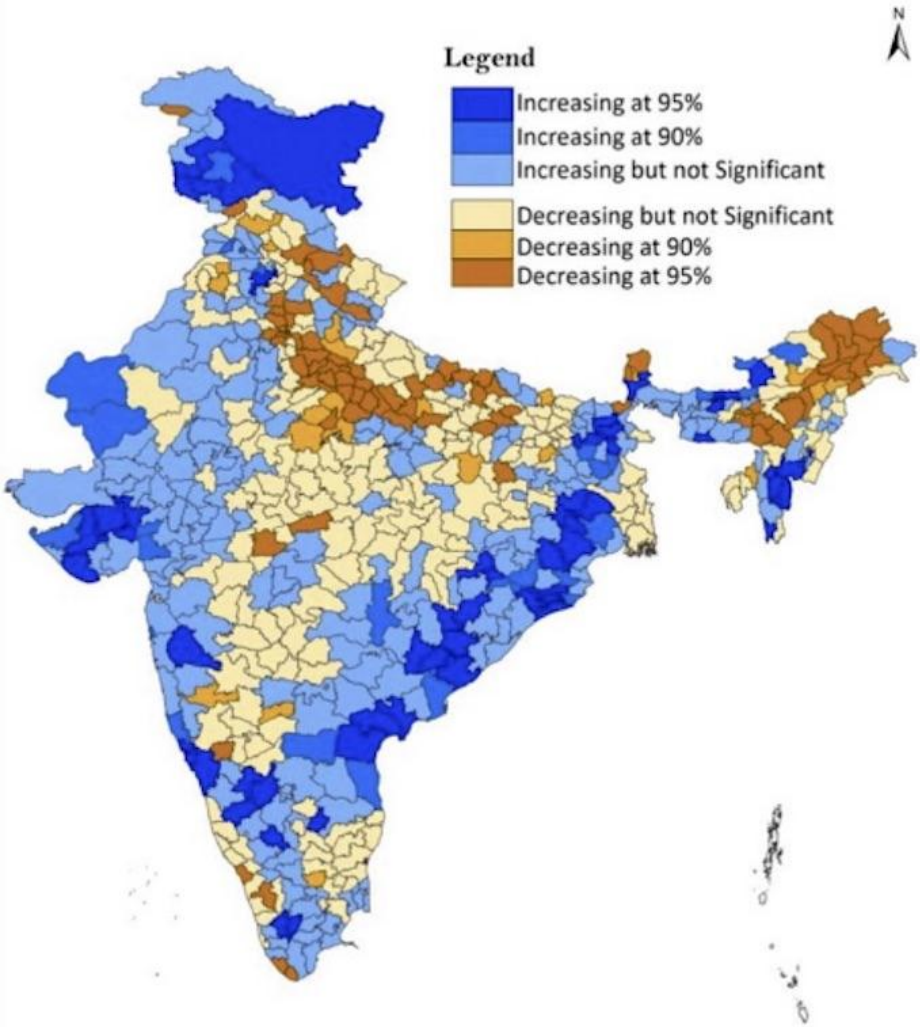
Overall, as of June 22, only 10 states and union territories (UTs) have reported normal rainfall (minus 19% to plus 19%) in the country. Eleven have reported deficient rainfall and three are in the category of large deficient. Meanwhile, eight states and UTs had excess (20% to 59%) and three had large excess rainfall (60% or more), respectively.

Whereas the southwest monsoon is expected to pick pace now and eventually cover the entire country with some delays, an IMD study, titled Long term rainfall trend over meteorological sub divisions and districts of India, published in July 2017 issue of MAUSAM, a quarterly research journal of the Met department, has found that the annual rainfall in the country is showing a significant increasing trend in 10% of the districts, whereas 13% of the districts show a significant decreasing trend.

Long-term trend analysis

Three scientists of the IMD — Surinder Kaur, Sumant Kumar Diwakar and Ashok Kumar Das — have studied long-term trend of annual and seasonal rainfall over different districts and meteorological sub-divisions of the country between 1901 and 2013. They

have also carried out annual rainfall trend analysis between 1961 and 2013. A total of 632 districts and 34 meteorological sub-divisions were included in their study and daily rainfall records from 6,995 rain gauge stations across the country were collected. Andaman and Nicobar Islands, and Lakshadweep were excluded from the study.



District-wise trend in annual rainfall between 1961 and 2013 (Source: Mausam Quarterly July 2018)

Based on the rainfall analysis, the researchers found that between 1961 and 2013, 64 districts (10.1%) show an increasing trend of annual rainfall, whereas 85 districts (13.4%) show a decreasing trend. Uttar Pradesh (UP) has maximum number of districts (32) showing a decreasing annual rainfall trend. These districts include Agra, Aligarh, Etawah, Firozabad, Gorakhpur, Kanpur, Mathura, Unnao, etc.

Meanwhile, Odisha has a maximum of 12 districts showing an increasing trend, such as Cuttack, Kalahandi, Koraput, Mayurbhanj, Puri, etc. Area wise, 97,663.9 sq. km area in Uttar Pradesh has a declining trend in annual rainfall, whereas 68,846.9 sq. km area in Odisha has an increasing trend.

Based on trend analysis of annual rainfall, "...the sub-divisions of West UP, East UP and Arunachal Pradesh are showing significantly negative trend in rainfall whereas the sub-divisions Odisha, Coastal AP (Andhra Pradesh) and Konkan and Goa are showing significantly positive trend at 95% (confidence level)", reads the 2017 study.

Overall, at national level, 10.3% area in the country (except Leh and Ladakh district, Andaman & Nicobar and Lakshadweep) has reported an increasing trend in annual rainfall between 1961 and 2013; and 8.03% area has reported a decreasing trend in annual rainfall during the same time period.

Apart from the annual rainfall trend, the IMD scientists have also studied monsoon rainfall between 1961 and 2013. And, the analysis shows: "The sub-divisions of West UP and East UP are showing significantly negative trend in monsoon rainfall whereas the sub-divisions Jammu & Kashmir, Odisha, S.I. (south interior) Karnataka and Konkan and Goa are showing significantly positive trend in monsoon rainfall at 95% (confidence level)".

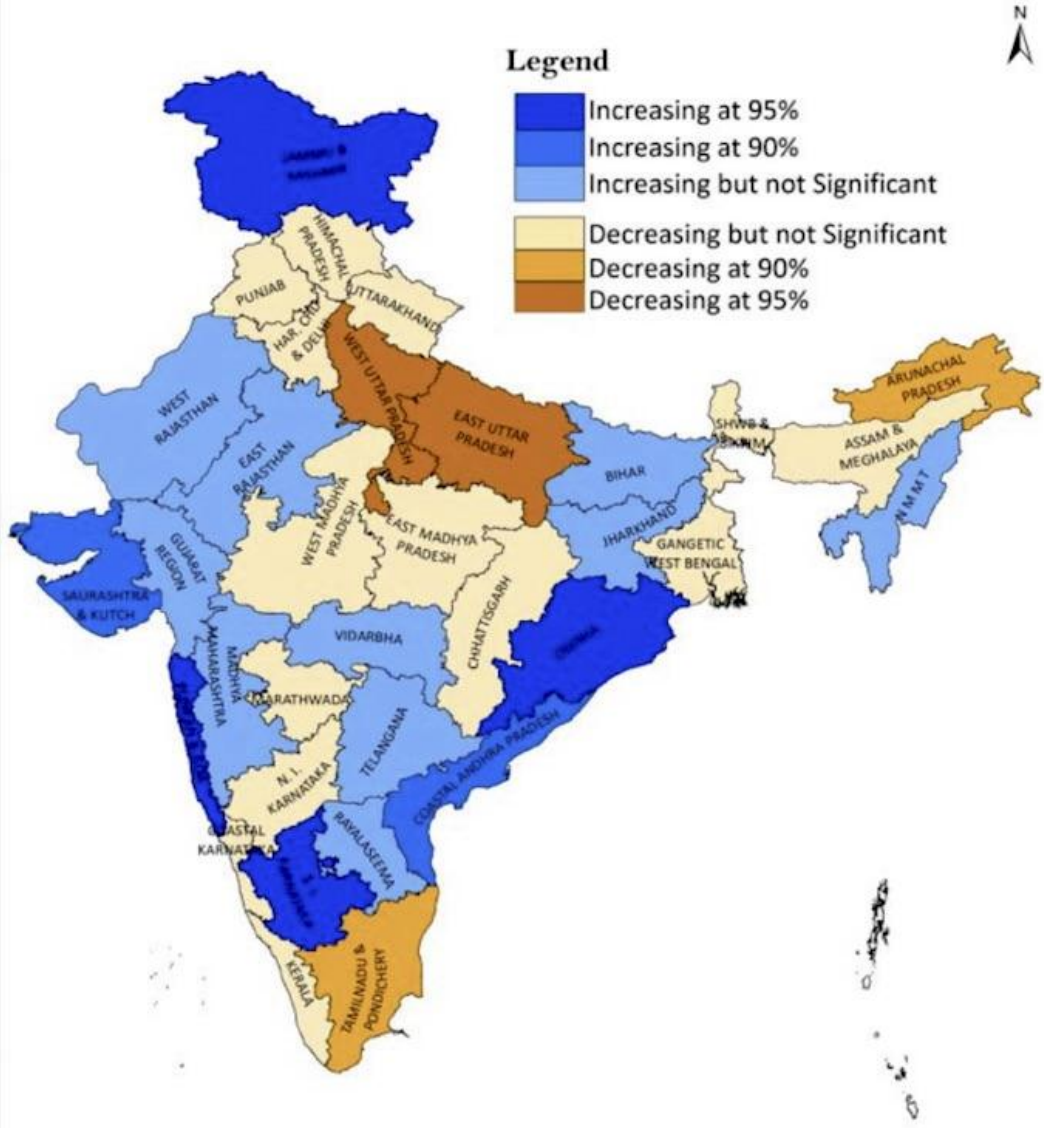
Also, no district is showing an increasing trend in rainfall in Uttar Pradesh, Uttarakhand, Delhi and Puducherry in both the periods. The IMD study also warns of "high variability in rainfall in the recent decades".

Concerns and impacts

The changing rainfall pattern in India is a huge concern as the country's water and food security is at a risk. According to a 2017 document of the Indian government's think tank NITI Aayog, Revitalising Rainfed Agriculture in India, India is already water stressed. Almost 52% of its cropped area remains without irrigation and some areas are chronically water stressed.

The share of canal in net irrigated area has declined from 39.8% to 23.6%, whereas groundwater sources has increased from 28.7% to 62.4% between 1950-51 and 2012-13. Because of lack of irrigation, a large number of farmers depended on monsoon rainfall to practice agriculture. For instance, as per the NITI Aayog document, of the total pulses, oilseeds and cotton produced in the country, 80% pulses, 73% oilseeds and 68% cotton come from rain-fed agriculture.

Meanwhile, the annual demand for cereals, pulses, edible oils, vegetables and fruits is rising a rate of 1.3%, 3%, 3.5%, 3.3% and 5%, respectively. The changing pattern of rainfall can put a spanner in India's food security.



Meteorological sub-division-wise monsoon rainfall trend between 1961 and 2013 (Source: Mausam Quarterly July 2018)

The authors of the IMD study warn: "Changes in climate over the Indian region, particularly during the SW monsoon, would have a significant impact on agricultural production, water resources management and overall economy of the country." Such climatic changes would also mean an increase in extreme weather events, droughts and floods.

Take the case of northeast India, which is facing destructive floods. As of June 22, Manipur has a rainfall departure of minus 60% (classified as large deficient), but is facing fury of the floods. As against the normal rainfall of 315 mm, Assam has so far received only 254.1 mm rainfall this southwest monsoon (minus 19%, on the borderline of normal category), but 14 people have lost their lives in flash floods and rainfall-induced landslides, whereas more than half a million people in the state have been affected by the floods.

ORGANIC FARMING

With 619 farm clusters, Kerala's organic farm spreads to 24,491 hectares

THE NEW INDIAN EXPRESS-16-JUN-2018

Paucity of cultivable land is a major issue in Kerala but the state seemed to be catching on with an organic farming revolution with 13,519.3 hectares of land already under organic farming and 10,972.

KOCHI:Paucity of cultivable land is a major issue in Kerala but the state seemed to be catching on with an organic farming revolution with 13,519.3 hectares of land already under organic farming and 10,972. 6 hectares under conversion for organic farming.

As per the latest data with Union Agriculture Ministry, Kerala has 619 farmer clusters which have taken up organic farming and is ahead of Karnataka with 545 clusters and Tamil Nadu 112 clusters.It's also surprising to note that the 619 farmer clusters have covered an area of 12,380 hectares while Karnataka has only 10,900 hectares and Tamil Nadu 2240 hectares under organic farming.The data also shows that 30,950 farmers in Kerala have benefitted from Paramparagat Krishi Vikas Yojana (PKVY) scheme between 2015 and 2018 and received Rs 50,000 per hectare.

State Agriculture Minister V S Sunil Kumar said the growth in organic farmland is a trend fuelled by various initiatives of the state government."There has been drastic increase in organic vegetables produce in the state. Nearly 93 per cent of vegetable farmed in the state is pesticide free," the minister said.As per Agricultural and Processed Food Products Export Development Authority (APEDA), the total organic produce stood at 11.801 lakh tonnes in 2016-17.

"Kerala is going to focus more on organic farming programs in the next few years as more farmers have started the transition process to organic," Sunil Kumar said."When it comes to promoting sustainable agriculture and its related environmental benefits, the state has to look more for cost-effective farming practices. We will be giving impetus to organic zero budget natural farming. Several programmes will be launched on avoiding GMOs or reining in the amount of toxic agrochemicals getting into our land and water," he said.

ICAR IN PRINT

ICAR advises farmers to go for early aman paddy to cover losses due ...

UNITED NEWS OF INDIA-24-JUN-2018

ICAR advises farmers to go for early aman paddy to cover losses due to floods

Udaipur, Jun 24(UNI) The ICAR has advised the farmers in Tripura to go for early aman paddy to make good the losses incurred due to the damage of aus paddy caused by the floods, especially in Unakuti, South Khowai and part of North Dhalai and Gomati.

An advisory issued by the Indian Council of Agricultural Research said,"Farmers are advised to go for early aman paddy in the areas where aus paddy is completely or more than 50 percent damaged. Long duration high yielding variety may be chosen. Early aman may minimize the losses by adopting an extra crop in between Kharif and Rabi and high yielding variety also may give some extra benefit."

"In lowland, submersible variety like Swarna Sub 1 or Ranjeet sub 1 may be selected," the advisory said, adding that adequate drainage system must be maintained in nursery bed to avoid water logging.

"It will be better if farmers can go for community nursery. In the field where damage is less than 30 to 40 percent- provide top dressing with Urea and MoP," the advisory stated.

The Scientist at ICAR Tripura also warned the farmers of fungal attack on aman paddy, in their report, and advised them to consult the local Agriculture Office on noticing the symptoms.

Cabinet approves 'Three Year Action Plan' of Agricultural Education Division & ICAR Institutes

JAGRAN JOSH-18-JUN-2018

The Union Cabinet chaired by Prime Minister Narendra Modi has approved the continuation of the Three Year Action Plan (2017-2020) of Agricultural Education Division and ICAR Institutes with an outlay of Rs 2225.46 crore for strengthening and developing higher agricultural education in India.

Objective

The scheme aims to generate quality human resources from the institutions of higher agricultural education.Key Highlights

• The action plan comprises several new initiatives including steps to attract talented students, reducing academic inbreeding and addressing faculty shortage.

• It will also take care of green initiatives, mitigating faculty shortage, international ranking, alumni involvement, promoting innovations, inspired teacher network, academia interface, technology-enabled learning, post-doctoral fellowships, agriculture education portal and scientific social responsibility.

• The plan would also provide support for strengthening and modernisation of infrastructure related to students and faculty amenities and capacity building of both faculty and students in cutting-edge areas through Niche Area of Excellence programme, which will improve teaching and encourage holistic development of the students.

• In addition, research on gender issues in agriculture and allied fields, formulating gender-equitable agricultural, policies/programmes and gender-sensitive agricultural-sector responses will be undertaken by ICAR-CIWA.

• On the other hand, ICAR-NAARM will cater to the capacity building needs of the human resources and stakeholders of the entire National Agricultural Research & Education System (NARES), leading to enhancing of competencies and capacities of the stakeholders including farmers, young scientists and students.

Background

• The Indian Council of Agricultural Research (ICAR) undertakes planning, development, coordination and quality assurance in higher agricultural education through partnership with 75 Agricultural Universities (AUs) established across the country.

• The human resource developed by Agricultural Universities has played a crucial role in transforming agricultural scenario to achieve self-sufficiency.

• The National Academy of Agricultural Research Management (NAARM) has played a key role in enhancing the capacities of individuals and institutions of National Agricultural Research and Education System (NARES) in agricultural research, education and technology management.

• The Central Institute for Women in Agriculture has been providing a leadership role in empowering farm women as in the changing agricultural scenario the roles and responsibilities of women in agriculture are indispensable.

Charcoal could improve soil deteriorated by insecticides, shows ICAR study.

RESEARCH MATTERS-20-JUN-2018

Scientists from Indian Institute of Soil Science, Bhopal, and Indian Institute of Agricultural Research, New Delhi, both part of the Indian Council of Agricultural Research (ICAR), have been studying the effects of climate factors and use of insecticides on the ability of soil to

consume methane. Their study reveals one of the harmful effects of the insecticide-Chlorpyrifos, and a way to tackle the issue.

Chlorpyrifos is a common pesticide used to control pests, like insects and worms. It has been used in agriculture, residential and commercial settings, being extensively used in cotton cultivation. As the planet continues warming due to climate change; pest infestation is also set to increase, according to earlier studies. With the increased infestation, the use of insecticides also increases, leading to deteriorated soil conditions. As safe alternatives to tackle an infestation still remains a challenge, indiscriminate use of pesticides are starting to take a toll on agricultural farms and biodiversity around the globe.

In the new study, scientists set out to determine the effects of pesticides and climate factors on the ability of a soil to consume methane. Working in a Vertisol (soil with high content clay) in central India, the team studied the effects of temperature, moisture holding capacity, and chlorpyrifos on the ability of a soil to consume methane and abundance of microbes in the soil. The team also studied the effects of adding biochar or charcoal to the soil.

The results of the study reveal a connection between the levels of chlorpyrifos and methane consumption of the soil. The rate and amount of methane consumption of the soil was at a lowest at 15o Celsius temperature, 60% moisture holding capacity, 10ppm chlorpyrifos and no biochar, and highest at 35o C, 100% moisture holding capacity, 1% biochar and no chlorpyrifos. The results also showed that, while chlorpyrifos inhibited the abundance of some types of microbes, like heterotrophic bacteria and methanotrophs, it stimulated the growth of another type of bacteria—Actinomycetes. Importantly, the study also revealed that biochar could stimulate methane consumption of the soil and abundance of microbes. This could provide us a way to tackle some of the harmful effects of chlorpyrifos.

“Study highlighted that use of chlorpyrifos under climate change factors may inhibit CH4 consumption but the use of biochar may alleviate the negative effect of the chlorpyrifos” conclude the authors about the results of the study.

IISR IN PRINT

Kerala women challenging men in coconut plucking

RURALMARKETING 27-JUN-2018

Coconut plucking which has traditionally been a male dominated practice, women in Kerala are now putting a tough competition...

ICAR-Indian Institute of Spices Research (IISR), Kozhikode has recently initiated a step towards empowering women through training in coconut plucking. Now, coconut plucking will no longer be considered a male bastion. Their female counterparts will give them a knife-edge competition as first batch of 'Friends of Coconut' completed their six day training at the IISR's Peruvannamuzhi Krishi Vigyan Kendra (KVK) in Kozhikode (Calicut), Kerala recently.

The institute recently conducted an 'all women' training programme on coconut climbing for a group of 20 women (20-35 years). The training was organised as part of the 'Friends of Coconut Tree' programme being implemented by the Coconut Development Board to train unemployed youth in the art of climbing coconut trees and caring for them. KVK, Peruvannamuzhi is the first to conduct a training programme exclusively for women as part of the Friends of Coconut Tree programme of the Board.

The programme covered introduction to coconut palm, climate, soil requirements and varieties, sessions on climbing machine-main parts, working and trial, nutrient management, recycling of palm waste, inter-cropping and mixed cropping, among other related issues. Besides, practical lessons on climbing coconut trees, sessions were also held on harvesting, tender and mature nut identification, identification of pests and disease of coconut and their management, crown cleaning aspects, seed nut procurement, safe handling of seed nuts and tender nuts, coconut nursery and its management among other skills.

Physical exercise towards the beginning of each day's training was another highlight of the programme. According to the trainees, coconut climbing is an easy task and they felt no physical exhaustion while using the machine. During the last session of the training, a 'Coconut Olympics' was also conducted in which the trainees were able to climb the palms within 48- 50 seconds, a feat equivalent to their male counterparts.

"The training gave us a sense of confidence that we can do anything if we have the will. Moreover, we are now able to earn a good amount by spending three to four hours a day," said, Aneela Mathew from Peruvannamuzhi, a woman who participated in the training programme. "Inspired by our success, many women are approaching us for training in coconut climbing using machines," Aneela added. "By using the machine I can climb 25 to 30 trees a day and manage to earn around 400 rupees within three hours,' said Reeja VG, another women trainee who has taken up coconut plucking as a livelihood.

"It's an ironical fact that Kerala, the land of coconut, is suffering from shortage of coconut pluckers for the past few years. As a solution for this, the Krishi Vigyan Kendra of IISR has conducted a series of training programmes in coconut climbing using machines in collaboration with Coconut Development Board. Many women are now taking up it as a profession and contributing a good share to their family income," a senior scientist at Indian Institute of Spices Research (IISR), Kozhikode said.

"KVK is now in the process of establishing a 'Coconut Climbers' Bank' in which the people trained from KVK can register their names. Anyone who needs the services of a coconut climber can contact the bank and avail the services of registered coconut climbers in their

own at a reasonable rate. Thus, this scheme will be beneficial to both the customer and climber," another scientist at the institute said.

Turmeric tech for farmers to bolster yield & exports

TIMES OF INDIA 18-JUN-2018

HYDERABAD: Turmeric farmers in Telangana have much to cheer. They will not only get access to the latest know-how, newer technologies and machinery to cultivate high-yielding and best varieties of turmeric to boost exports but also to reap the benefits. From not being able to procure even minimum support price for their produce to getting high returns is a possibility that was explained to farmers by Nizamabad MP Kalvakuntla Kavitha at a meeting organised here on Monday.

Research scientists and agricultural experts made presentations and explained to farmers options available to them to not just double but also treble their income at a 'turmeric workshop' organised by the Spices Board of India and the ministry of commerce and industry, government of India. "This is of immense help to a large number of farmers in Telangana and particularly Nizamabad where turmeric is cultivated in a large extent. By exposing them to newer and better varieties of seed and methods of cultivation, we want farmers to reap the benefits," Kavitha told TOI.

She urged farmers to go in for mechanised planting and said the government is planning to provide 200 machines to farmers this year. "If necessary, more machines will be procured," she said. Kavitha had several times represented to the Centre for a separate turmeric board to be established which, she said, could be based in Nizamabad. Instead, a special turmeric cell has been constituted for Telangana in the Spices Board of India. "Our main demand has been for a turmeric board. With the special turmeric cell, we can take care of the interests of more than one lakh turmeric growers," Kavitha said and thanked Union commerce minister Suresh Prabhu for the special cell.

Principal scientist of Indian Institute of Spices Research, Kozhikode, D Prasath made a detailed presentation on 'Technology to double the farmers' income' and explained about the varieties of turmeric, cultivation, latest machinery for planting, transplant technologies, nutrient management and post-harvest technologies.

Earlier, Kavitha urged Nabard officials to work out a mechanism to work with officially-constituted Rythu Samanvaya Samithis to provide assistance to farmers instead of demanding separate farmers' councils. She said if MGNREGA is linked to agriculture, it would benefit farmers and a representation would be made to chief secretary to take up with the Centre if turmeric farmers could get the benefit.

GENERAL

Organic insect deterrent for agriculture

SCIENCEDAILY.COM JUNE 6, 2018

Biodegradable crop protection products without risks or side effects

Traditional insecticides are killers: they not only kill pests, they also endanger bees and other beneficial insects, as well as affecting biodiversity in soils, lakes, rivers and seas. A team has now developed an alternative: A biodegradable agent that keeps pests at bay without poisoning them.

A team from the Technical University of Munich (TUM) has developed a biodegradable agent that keeps pests at bay without poisoning them: like mosquito repellent used by bathers in the summer, biotechnologically produced cembratrienol deters voracious insects. If aphids have the choice between wheat seedlings with (right) and without CBT-ol treatment (left), they avoid the treated seedlings.

"It's not just about the bees, it's about the survival of humanity," says Professor Thomas Brück, who heads the Werner Siemens Chair of Synthetic Biotechnology at TU Munich. "Without the bees that pollinate a wide variety of plants, not only would our supermarket shelves be quite bare, but within a short time, it would no longer be possible to supply the world's population with food."

Synthetically produced insecticides endanger not only bees but also beetles, butterflies and grasshoppers. They affect biodiversity in soils, lakes, rivers and seas. Their use has consequently been highly controversial for many years.

Repelling instead of poisoning

Brück and his team have now found an alternative: The insect repellent they have developed is biodegradable and ecologically harmless. Sprayed on plants, it works much like mosquito repellent used by bathers in the summer, spreading a smell that keeps away unwanted insects.

"With our approach, we are opening the door to a fundamental change in crop protection," says Brück. "Instead of spraying poison, which inevitably also endangers useful species, we deliberately merely aggravate the pests."

Bacteria as chemical factories

The Munich researchers were inspired by the tobacco plant, which produces cembratrienol in its leaves, CBTol for short. The plant uses this molecule to protect itself from pests.

Using synthetic biotechnology tools, Professor Brück's team isolated the sections of the tobacco plant genome responsible for the formation of the CBTol molecules. They then built these into the genome of coli bacteria. Fed with wheat bran, a by-product from grain mills, the genetically modified bacteria now produce the desired active agent.

Efficiency in small and large scales

"The key challenge during production was to separate the active ingredients from the nutrient solution at the end of the process," explains Mirjana Minceva, Professor of Biothermodynamics at the TUM Weihenstephan Campus.

The solution was centrifugal separation chromatography: a highly efficient process that works equally well on an industrial scale, but hitherto had never been used to separate products from fermentation processes.

Equally effective against bacteria

Initial investigations indicate that the CBTol spray is non-toxic to insects, yet still protects against aphids. Since it is biodegradable, it does not accumulate.

In addition, the bioactivity tests showed that cembratrienol has an antibacterial effect on gram-positive bacteria. It can thus be used as a disinfectant spray that acts specifically against pathogens such as Staphylococcus aureus (MRSA pathogen), Streptococcus pneumoniae (pneumonia pathogen) or Listeria monocytogenes (listeriosis pathogen).

ICSSR's new vision: make research relevant to policy

THE HINDU-27-JUN-2018

The apex body has sent the proposal to the government

In an attempt at making research projects awarded by the Indian Council of Social Science Research (ICSSR) move from “pure ideological research” to one that is in sync with policy imperatives, the apex social science research body has formulated a blue print of key areas for future research.

It has sent a vision document called IMPRESS (Impactful Policy Research in Social Sciences) to the government, sources say.

This apart, it has also made a tentative list of themes on which it would like to support research.

“We believe that social science research should focus on areas that can link research to pressing policy needs of the time. Social science is close to society and research in it should contribute to solving the problems we face,” a well-placed source said on condition of anonymity. The ICHR awards doctoral and post-doctoral fellowships. It also awards minor and major projects. In future, proposals that are related to the thrust areas are more likely to pass muster, though other proposals also can.

The document shared with the government identifies many thrust areas. These include research proposals on public private partnerships, food security, Make In India (a key policy initiative of the present government), federalism, regionalism and its implications, etc.

Significantly, one of the thrust areas mentioned in the document is the idea of simultaneous elections to the Lok Sabha and State legislative assemblies, another idea supported by the present government.

Fake news, paid news and media ownership also figure among the thrust areas for research, the official said.

The ICSSR has also internally formulated some key themes for research, apart from the document shared with the Ministry of Human Resource Development.

These include agrarian issues, farmers' distress, agricultural growth, poverty alleviation, revitalisation of manufacturing, trade and investment policy, liberalisation and lost opportunities, etc.

Internet Plus Agriculture model to promote integrated rural development

XINHUA-27-JUN-2018

BEIJING, June 27 (Xinhua) -- China will improve internet services and information technology (IT) infrastructure under the "Internet Plus Agriculture" model, as decided during a State Council executive meeting chaired by Premier Li Keqiang on Wednesday.

The move will promote integrated development of the primary, secondary and tertiary industries in rural areas and bring farmers more business opportunities that help increase their income.

The market will play a greater role in the implementation of the rural revitalization strategy. Internet technologies will be extensively applied to make agricultural production better targeted and effective and enable farmers to adapt to shifting market dynamics. All this is crucial to upgrading agricultural performance and raising farmers' income.

The meeting adopted several measures to develop the "Internet Plus Agriculture" model for integrated rural development, which is a high priority on the agenda of the Chinese government.

Premier Li pointed out in the government work report this year that China will advance supply-side structural reform in agriculture and develop the "Internet Plus Agriculture" model while using multiple channels to increase rural incomes, and that China will encourage the primary, secondary and tertiary industries to develop in an integrated way in rural areas.

As an important means for integrated rural development, the Internet Plus Agriculture model has made a notable difference in recent years, Li said.

"This model has played a key role in raising farmers' income and helping them tide over low prices of agricultural products. We should continue to apply it well as a matter of high priority," he said.

Statistics from the Ministry of Agriculture and Rural Affairs show that recent years have seen new forms of industry flourish in the rural areas driven by a boom of local e-commerce.

In 2017, the online retail sales in rural areas totaled 1.25 trillion yuan (about 191 billion U.S. dollars), among which the online sales of agricultural products approached 300 billion yuan. Over 28 million jobs were created as a result.

By the end of last year, a total of 7.4 million people had chosen to start businesses in rural areas by 2017, among which more than half used internet technology.

"Better tailored to the diverse consumer needs, most online agricultural goods can sell at higher prices than offline sales," Li said at the meeting.

"The Internet Plus Agriculture model will be critical for creating rural employment, increasing farmers' income and boosting rural development."

It was decided at the meeting to accelerate IT application in agricultural production. Big data, the Internet of Things and cloud computing will be harnessed for more efficient agricultural production management and for digitized, internet-based and smart agricultural production and operation, particularly in areas such as seed breeding, farmland management and pest control.

Information technology will also be more widely used in the distribution of agricultural products. The Internet Plus model will be implemented to widen the circulation of agricultural products. The services of e-commerce platforms and logistics efficiency need to be improved to better match the demand of e-commerce businesses and supply from small household farmers, family farms and farm cooperatives. Supporting facilities, such as processing, packaging, storage, preservation and cold chain logistics will be strengthened to improve the marketability of farm produce and resolve the underpricing of quality products.

The possibility of government purchase of services will be explored, and private entities will be encouraged to develop new internet-based business models that benefit the farmers and further encourage mass entrepreneurship and innovation in rural areas.

Internet infrastructure in rural areas will be improved. Agriculture-related public information and service platforms will be established. More training on IT application will be provided to small household farmers, new types of agricultural businesses and owners of agritainment, so that smart phones become a new and powerful farm implement.

"Government departments should intensify infrastructure building, particularly in broadband internet, logistics and information systems, and frozen food warehousing," Li said.

"Regulation and guidance for online platforms must be enhanced. Regulation needs to be prudent yet accommodating, with new regulatory approaches introduced when necessary. It is as important to nurture new business models as to protect consumer rights and interests in the process to boost the healthy development of the Internet Plus Agriculture model," Li said.

The 'Internet of Farming' is disrupting traditional agriculture

DIGITAL JOURNAL-17-JUN-2018

Generations of farmers have relied on knowledge and family expertise to grow food, but the sector is set for a surge of disruption at the hands of made-in-Canada artificial intelligence-powered systems.

Investment in artificial intelligence is growing in Canada. In 2017, venture capital investment in AI nearly doubled - to $12 billion. And looking at the agriculture sector, AI is helping farmers to increase crop yields, save costs and reduce environmental damages.

How is this possible? For generations, farmers have relied on their own knowledge of the land and past experience to get the most profit from their farms, regardless of if they had a dairy or raised food crops. With the new technologies available today, farmers can now target their use of fertilizers or herbicides, saving money and minimizing environmental damage.

Growing vegetables using robotics.

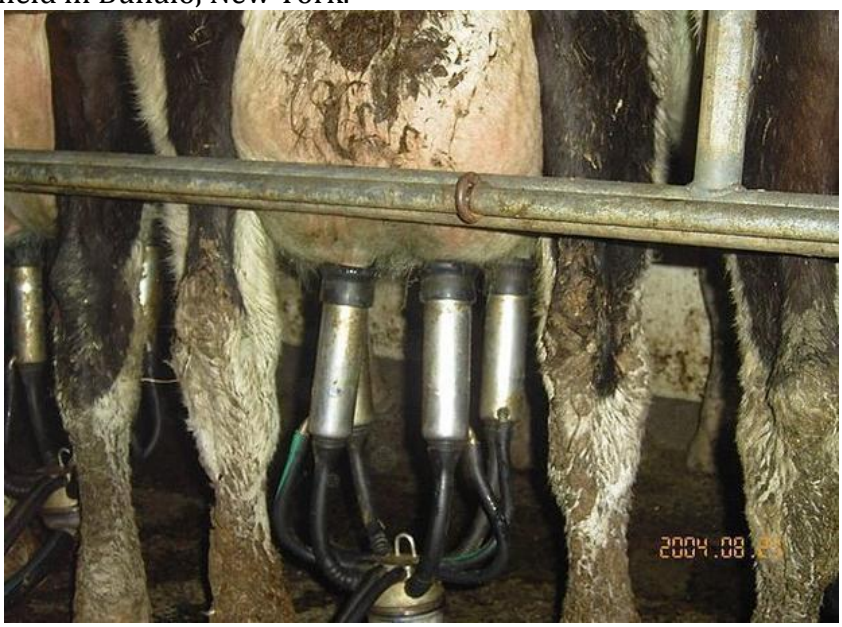
Bowery Farms

With AI, dairy farmers now have the option of getting accurate information on the levels of progesterone in milk, providing them with reliable data on when a cow is in heat and the optimum time to inseminate.

The technology can enhance farming practices, manage mastitis, reduce unnecessary antibiotic usage, and virtually eliminate the addition of low-quality, low-fat milk into bulk storage tanks.

SomaDetect - Technology for the dairy industry

Fredericton, New Brunswick-based SomaDetect, Inc. was founded in 2016 by Bethany Deshpande and her husband and business partner, Nicholas Clermont. In October 2017, the fledgling company was the $1 million grand prize winner of the fourth annual 43North competition, held in Buffalo, New York.

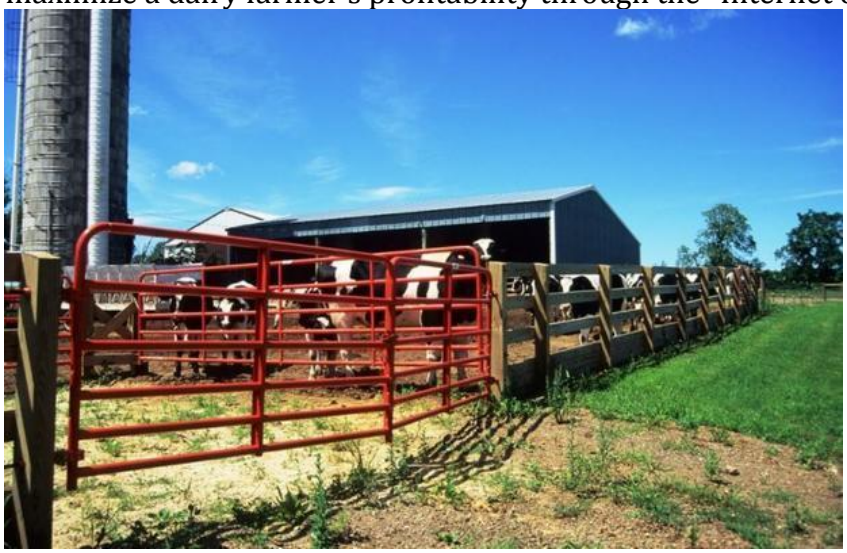


A photo of a cow being milked on a dairy farm in Girgarre, Victoria.

The technology allows dairy farmers to measure major indicators of milk quality and herd health, directly in the milking line. SomaDetect's technology does not require added chores or the use of chemicals, cartridges, or lost milk - It's all automatic.

SomaDetect sensors are installed at each milking stall and will identify each cow, test their milk and quickly provide farmers an array of metrics such as protein and fat counts, indicators of disease, hormones (progesterone) that manage reproduction and antibiotic residuals.

The company is now preparing to deliver commercial systems this fall that will test milk and use AI to maximize a dairy farmer's profitability through the "Internet of Cows."



SomaDetect

"We are in a fourth revolution in agriculture and AI is absolutely critical," said co-founder Bethany Deshpande. Deshpande points out that the technology is at an early stage - and farmers are just beginning to understand the power and full potential of AI.

"A lot of farmers have been demanding better technology, demanding better products for a long time and I think AI is a huge part of how they're going to get that."

Motorleaf - AI for greenhouse and indoor operators

Founded in 2015 by Alastair Monk and Ramen Dutta, Montreal, Quebec-based Motorleaf, Inc. has developed a system that acquires data from indoor growing operations and applies artificial intelligence and machine-learning algorithms to identify growing patterns.

Motorleaf Inc.

The Motorleaf system helps growers produce more, and a better quality product; by automatically adjusting to the needs of the crop. The company builds separate components, each of which has a specific set of functions. They can operate separately, or if you add onto the MotorLeaf HEART - operate as a larger whole.

The technology has already been proven in vegetable production operations. California greenhouse SunSelect used Motorleaf's technology in a trial that led to a 50-percent reduction in yield prediction error in tomatoes. These results were enough for SunSelect to adopt Motorleaf's algorithms after a short trial.

According to the Motorleaf website, "The Heart is the center of Motorleaf's monitoring and automation system. It can operate separately to monitor air temperature, relative humidity, and light levels and it can connect to the Powerleaf, Droplet, Driplet, Space Sensor and Space Sensor Plus to monitor and control what's important."

Smart farming yields solutions

INQUIRER.NET-21-JUN-2018

Remote-controlled drones spray pesticide at a tea plantation in Hangzhou, East China's Zhejiang province, on May 24. Technology companies are providing products and services that are both cutting-edge and affordable for agriculture.

HONG KONG — As heavy snow swept across China early this year, local media in Central China's Hubei province reported that farmers used unmanned aerial vehicles, or drones,

to spray de-icing agent, saving over 500 snow-covered vegetable greenhouses from collapse.

In the midst of climate change, technology is enhancing the resilience of the agriculture sector to weather and climate extremes, helping it face the challenges of producing more food to feed the world's growing population.

"Farming, being highly dependent on rainfall, soil health and temperature, is most vulnerable to change in climate," said Raj Paroda, former director-general of the Indian Council of Agricultural Research and a senior adviser of the Asia-Pacific Association of Agricultural Research Institutions (APAARI).

More than 2.2 billion people in Asia rely on agriculture to make a living, according to data from the Asian Development Bank. The region accounts for 90 percent of the world's rice production.

Although climate change will improve thermal conditions for agricultural production

in some areas, its negative effects on food security and overall agricultural development are more profound, including declining crop quality and yield, decreasing arable land quality, rising prices of water and fertilizers, and more crop pests and diseases.

"The projected climate change is likely to reduce agricultural production by 7 to 10 percent in the next decade (by 2030) and beyond, if no adaptation and mitigation measures are initiated seriously," said Paroda, adding that climatic variability affects most of the biological, physical and chemical processes that drive productivity of agricultural systems, including horticulture, livestock and fisheries.

"Agriculture is not only the cause but also the solution to climate change related problems," said Paroda.

He said agriculture is contributing a significant share of the greenhouse gas emissions that are causing climate change — 17 percent directly through agricultural activities and an additional 7 to 14 percent through land use changes.

Due to China's large population, the country's per capita arable land and fresh water resources are much lower than the global average, according to Lam Hon-ming, professor of the School of Life Sciences at the Chinese University of Hong Kong (CUHK). Lam is also the director of the State Key Laboratory of Agrobiotechnology, a CUHK partner laboratory.

"First-grade arable lands in China occupy less than half of the total arable lands," said Lam. "To boost and maintain crop yield, China has used a lot of fertilizers and chemicals in the field, posing a challenge to sustainable agriculture."

The country's total population is expected to reach 1.5 billion by 2030, and such an increase requires an extra 100 billion kilograms of grain to meet demand, according to the State Grain Administration.

Suitable strategies

Yet climate-related disasters account for the loss of 50 billion kg of grain in China every year, and climate change could further trigger uncertainties in the country's natural environment, according to the China Meteorological Administration.

A US$313 million project, funded by the Chinese government and the World Bank, is helping several hundred thousand rural households in six Chinese provinces adopt Climate Smart Agriculture (CSA) to strengthen their resilience to climate change. As a result, yields of crops like rice and maize have all increased with better irrigation systems and improved soil conditions through technology.

In addition, farmers now enjoy more policy incentives as the country stresses modern agriculture. Financial support and training will be provided to develop a new generation of professional farmers and encourage the growth of a more diverse agriculture business, according to the State Council, China's Cabinet.

Progress has been evident.

China saw zero growth in chemical fertilizer and pesticide use in 2017. A total of 800,000 hectares of farmland have been covered by pilot programs to rotate crops or to leave the land fallow for ecological conservation and sustainable production, with a target to reach 2 million hectares this year, according to Xinhua.

Shenzhen-based DJI, the world's largest commercial drone maker, launched its first farm-specific drone, the MG series, in 2015 to meet the country's demand for plant protection.

And other products such as its Phantom series high-end consumer drone have been used for agricultural science experiments, mapping and data analysis, said Xie Tiandi, DJI's director of communications.

Nearly 10,000 drones had been put into operation in China's agriculture sector as of September 2017, according to a report by online agriculture magazine Enongzi.

In a test by DJI, an MG-1P agricultural drone could spray about 90 mu (6 hectares) per hour, 90 times faster than a human.

Compared with ground spraying done manually, using agricultural drones for plant protection can save on pesticides and water usage, by 50 percent and 90 percent, respectively, Xie said. Separating humans and pesticides also greatly improves safety for farmers and workers.

Xie said technology companies can play an important role by providing products and services that are both cutting-edge and affordable for the industry.

For example, the MG series has reduced the unit price of a plant protection drone from more than 100,000 yuan (US$15,640) to as low as 29,999 yuan, which is much cheaper than many agricultural automation devices, said Xie.

DJI, through its Unmanned Aerial Systems Training Center, offers training courses for plant protection. The company has also supported training provided by professional service teams for plant protection and even local agricultural materials stations.

"Geospatial technologies like drones, satellite remote sensing and artificial intelligence (AI) play an important role not only in China but everywhere," said Paroda from APAARI.

Key advances

"China is much ahead in most of these (geo-spatial and AI technologies)…other countries need to learn from these initiatives," said Paroda, suggesting that a regional platform for

CSA could be formed to help other Asian developing nations to move forward at a faster pace.

But imparting technological advances to aging farmers in Asia can be challenging.

“There is a huge gap between existing technologies and the farmers that can apply them,” said Vanessa Teo, founder and CEO of the Brunei-based startup Agrome IQ, which provides agricultural business intelligence and data analytics.

The company aims to support farmers through the decision-making process to plan for an efficient and profitable farm.

“To ensure food security for 9 billion people by 2050, farms will need to be more resilient to climate uncertainty, and data will play a huge role in the process of farm optimization,” said Teo.

Currently, Agrome IQ’s platform collects specific data such as soil, genetics and weather, then provides information to support the farm management process.

“With our platform, farmers will have a step-by-step guide on how to grow their crop instead of relying on general information from a variety of sources, and also we provide a tracking system … to ensure the resources are efficiently allocated to the farm,” said Teo.

The company also offers educational technology programs to cultivate innovation-based future farmers. The curriculum has been integrated into international schools and agricultural vocational training schools in Brunei, and Teo hopes to expand the platform to other member states in the Association of Southeast Asian Nations, as well as the Chinese mainland and Hong Kong.

As the Asian region has a high concentration of smallholder farmers, Paroda said it is important to ensure they can have access to new knowledge and technologies.

“Science, technology and engineering will continue to play a major role,” said Lam at CUHK. “Science will help to pinpoint the problem and predict the consequences.”

A rice, lost and found

THE HINDU-21-JUN-2018

Another threat this niche farming faces is of rising land prices

The farmers of Ezhikkara, a local cooperative bank and a responsible travel company come together to revive the farming of Pokkali, a rice endemic to Kerala

“If you are ready to buy Basmati for ₹100, why not Pokkali? But why would anyone buy Pokkali, without a story?” asks Gopinath Parayil of The Blue Yonder, a pioneering Responsible Travel company. What is the story? What is this Pokkali rice?

To find out we set off on a ferry from Kadamakkudy to Ezhikkara, one of the places in Kochi famous for its Pokkali fields .

There I meet Echappan, a Pokkali farmer who says, “What is special about Pokkali is that it needs neither pesticides nor manure to grow.”

He explains in detail. There is only one yield of Pokkali rice a year. After four months of Pokkali farming, shrimps are raised in the same fields for another five months. The scales they shed dry up and become manure for the next Pokkali cultivation. Moreoveronly the grain is harvested, leaving behind the tall stems to decay. This becomes food for the shrimps and also acts as a shelter from predators.

Pokkali can stake a claim on the title of being ‘organic’. It is one of those rare varieties that grow in saline and fresh water. Even if pesticides were to be added, as the sea water rose and fell everyday the pesticides would only get washed away.

Said to have come from the Western Ghats with the flooding of the river Periyar in the fourteenth century, the rice evolved naturally, over the years, adapting to the salinity of the coastal areas. To survive the tides the plant adapted by growing taller; around 1.5 meters. Hence the name Pokkali (‘pokkam’ meaning height). It is grown nowhere else but in three districts of Kerala—Ernakulam, Alappuzha and Thrissur.

In saline water

“Because of climate change and global warming the sea level is rising. Saline water is going inland. And here we have a rice that can grow in a saline atmosphere. This is probably an answer for the future,” says Gopinath.

While all of this is true, Echappan says, “There is no profit from Pokkali. But only if we grow Pokkali, do we get good shrimps.”

Last year he spent ₹ 1,57,000 on the crop and harvested grains worth ₹ 72,000. The government helped him with the deficit. “The problem is that we still use the same technology we used 120 years ago,” says Ranjith of Palliyakkal Service Co-operative Bank, a group that has been working with the farmers of Ezhikkara for over a decade. “ Because Pokkali fields exist nowhere else in the world , no foreigner invented any [machines] and so nothing came here... Even none of the agencies under the Indian Council of Agricultural Research have so far been able to help with this.”

Another threat this niche farming faces is of rising land prices. Many struggling farmers sell their land for the huge offers they receive, many a time to those with no interest in farming but in building. It is the mission of the Palliyakkal Bank “to preserve a tradition of making a living from Pokkali farming and its related means, while living on one’s own land with headheld high.”

As a part of the Bank’s attempts to create multiple sources of supplementary income, alongside Pokkali and fish farming they now include Responsible Tourism, supported by The Blue Yonder. “Creating better places for people to live, so that there is a better place for people to visit.” Gopinath says, describes his company thus “the swimming-pool-tourism concept is over. Travellers are coming to gain experiences and Pokkali has the potential to drive experiential holidays.”

They work so closely with the villagers there that wherever we went, we were met with an ear to ear smile.

His company’s tourism plans include “cycling for an hour from Varappuzha to the stunning Kadamakkudy; a ferry ride to Ezhikkara, a visit to some of the farms.” They also

offer rides on canoes, fresh home-made food, and even a dinner on top of the Chinese fishing nets.

Their plans for the locals are even more ambitions, like opening profit making e-libraries in the middle of farms, training in the craft of canoeing and swimming to reduce water accidents and so on. “There is an eight acre model project location now, [where] you can see Pokkali, fish farms and vegetables, owned, operated and managed by the local community. Tourism is one small step that will ensure that there is a sustainable, consistent source of income for them.”

But due to lack of mechanisation, unavailability of labourers, and improper distribution channels, Pokkali rice was lost, except for local consumption. The farmers here attempted to revive it in 2010 and 2011, but failed as the supply chain was not ready. One of the interventions, in 2012, which was to later become an inspiration for many, was when about 300 student volunteers of Palliative Care came down from Kozhikode and Malappuram districts to helped farmers facing labour crisisharvest their grains.

“Before this very few were willing to get into the water... seeing such well-educated kids from well-off families get into the fields, even old timers here came forward to help, and this greatly helped push the movement forward” says M P Vijayan, the secretary of Palliyakkal Bank. But by 2016 the situation was so bad that when they attempted to revive it again, they could not even find enough grains in Ezhikkara to sow. But these are not people who would let the rice wither away. From the six tons of grains they had to buy that year, they grew 200 tons. A major portion of this has been set aside for an even wider farming this year, partnering with 35 other panchayats.

“To successfully bring back agriculture to the now barren fields of Kerala intervention by politicians, departments, or the Government scattered here and there is not enough. We have to make use of all the possibilities of the place, bring them together under [one] umbrella, make everyone who is interested a part of this and solve their problems,” says Vijayan. Alongside the Bank’s attempts to standardise Pokkali farming, by bringing about a standard rating system, similar to the BIS Hallmark for gold, “We wish to make farming cool,” says Gopinath, to bring “pride in saying that he or she is a Pokkali farmer… Pokkali is not just a rice or land, it is a lifestyle, a tradition and a culture.”

Reimagining agriculture

FORTUNE INDIA - 12 JUN 2018

One of the people pushing for change in agriculture is Rohtash Mal, founder and managing director of EM3, an agricultural startup that wants to “re-imagine agriculture” as a transformative enterprise and not as an event of nature. I had earlier met Mal when he headed telecom behemoth Airtel, and later, tractor manufacturer Escorts. He has also had stints at Maruti Suzuki and BILT.

It’s clear that Mal has brought his learnings from the corporate world to farming. He is very clear that farming can break out of the cycle of natural disasters, suicides, and debt only “when agriculture is treated like an industry, where every small parcel of land is treated as a profit and loss account in order to create enough surpluses to be reinvested in the land for better production next year”.

Mal, who set up EM3 in 2013 with his son Adwitiya, a financial services professional who last worked with the insurance multinational AXA, says his aim is to make farming services easily available. In the ubiquitous idiom of the day, it's the "uberisation of farming".

Mal's preferred term for what he does is "farming as a service". He says his job is to make global technologies and farm equipment accessible to and affordable for Indian farmers. Basically, he offers farm machinery like tractors and harvesters to smallholders on a pay-per-use basis. On offer is some high-tech machinery including a laserguided levelling machine which Mal claims can cut water usage by 30% or so.

Farm mechanisation, says Mal with all the zeal of a preacher, can cut cultivation costs by 25% and raise productivity by 20%. And that means a significant rise in income for farmers. Farmers and even governments are clearly convinced. Just a few months ago, EM3 signed an agreement with the Rajasthan government to open 1,240 farm mechanisation centres across the state. There are already 22 such centres across Madhya Pradesh. These centres are called Samadhan Techno Kheti, and Mal plans to focus on the north and east of the country in the near future.

Each Samadhan centre costs around Rs 2 crore to build; each has upwards of five tractors and 25-30 other pieces of farm equipment. Typically, it takes two years for a centre to break even. Luckily for Mal, funding isn't a huge issue.

His idea of farming has caught the imagination of global fund managers. The U.S.-based Soros Economic Development Fund and London-headquartered Global Innovation Fund (a nonprofit supported by British Department of International Development, the U.S. Agency for International Development, the Swedish International Development Cooperation Agency, Australia's Department for Foreign Affairs and Trade, and the Omidyar Network) have pumped in Rs 101 crore (including Rs 15 crore as line of credit) in EM3's second round of funding. In the first round in 2015, Bengaluru based Aspada Investments had put in $3.3 million (Rs 20.8 crore).

Mechanisation is only a start; Mal has a different vision of farming which involves technology and finance as well as planters and harvesters. He's also an ambassador for farming, inviting companies in Israel, Britain, and Japan to visit India and partner EM3 in solving farming problems here. But more often, you're likely to meet Mal coming out of the offices of tech giants such as IBM, Ericsson, Cognizant, and Nokia. "If we are in the agricultural services business, then anything that is technology-based and can be used to better the life of the farmer is our business," he says.

The introduction and use of new technologies— satellite imagery, data analytics, soil chemistry, Big Data, apps, artificial intelligence, and sensors—in the farming sector is enough to propel the $400 billion agricultural economy—17.34% of the overall gross domestic product—to $1 trillion in the next five years or so. I clearly don't look too convinced, so Mal shows me his calculations.

Even if the country's productivity were to double, which is a conservative estimate insists Mal, the agriculture economy could easily touch $800 billion. According to a recent McKinsey study, the farm mechanisation market in India is worth $112 billion and growing at 16% year-on-year. This can add at least $50 billion-$70 billion to the agri economy. Similarly, even if there is a small increase in government credit to farmers from the Rs 9,75,000 crore earmarked in Budget 2017-18, it too will expand the country's farm economy.

By now, Mal is on a roll. “If every year the farmer decides to get even half the total area under cultivation analysed—nearly 220 million acres—at Rs 1,000 per acre, it could easily add another Rs 22,000 crore to the agricultural economy,” he says. He has reason for this optimism: For perhaps the first time, agriculture is seeing the coming together of easy credit to farmers, accessible and affordable farm technologies, and a large market. Add to this the value of data scientists providing accurate weather forecasts, health of crops, crop-related news, and so on, as well as agri-focussed e-commerce and I see that Mal’s $1 trillion estimate may actually be conservative.

While Mal is looking at technology as the next big thing for his company, there are plenty of others who see technology as a tool to help farmers right now. “What we are doing is digging deep into the trisection of three important technologies—satellite imagery, robotics, and Big Data—to improve the condition of the Indian farmer. Twenty-first century robotics and sensing technologies have the potential to solve the problems that are as old as farming itself,’’ says Ashhar Farhan, a former software engineer with Microsoft and now director at Hyderabad-based agricultural company Daana.

Farhan’s current project: building a tiny satellite, about the size of a standard Rubik’s cube with the electronics and processing power of a high-end smartphone. I’m a bit underwhelmed by this, till Farhan explains that the magic lies in the payload that will be attached to this tiny satellite. That’s a bunch of sophisticated electronics and circuitry that will be able to track every paddy plant in a 2,000 km radius. Farhan says once enough data is gathered from the satellite, the computer itself can differentiate between healthy and non-healthy plants by matching them with the millions of pictures of healthy plants already present in the cloud. I came to talk farming and instead got a lesson in satellite technology.

Farhan is not the only person marrying agriculture with technology. There’s a space-age farming revolution happening in Karnataka’s Chikballapur district, where remote sensing satellites are used to map the region. The man responsible is P.P. Nageswara Rao, a soft-spoken bespectacled scientist who specialised in astrobiology, geoinformatics, geodesy, and surveying at the Indian Space Research Organisation (ISRO). Using his ISRO-honed skills, Rao says he has developed a plant health indicator index with the help of satellite imaging; “a healthy plant reflects a different colour on the satellite than a sick one”, he says. What he and his assistant did was to create what they call the “NDVI—Normalised Difference Vegetation Index. If the NDVI of a plant is low, then the plant is suffering from distress and needs immediate attention like fertilisers or pesticides”.

Correctly identifying weak plants and using precision farming has helped farmers in the region drastically cut their use of nitrogen, phosphorous, and potassium fertilisers from 20,000 kg for 16 hectares to just 1,900 kg without any loss in productivity. And with a little help from the Gandhi Krishi Vigyan Kendra at the University of Agricultural Sciences, Karnataka, Rao and his assistant were able to do a detailed analysis of the soil. “We were able to measure the soil fertility per square metre of the land and provide sensor assessment of the input needs of the farmers,” he says. Such a technology can be used to

map other parts of the country because the satellite orbits around the world and its camera can focus anywhere.

Meanwhile, in Hubbali in Karnataka, Srinivasulu Reddy, founder and CEO of SkyKrafts, is busy building drones that can be used on farms. He says he specialises in "spraying drones and multi-spectral imaging drones for precision farming". He's extremely proud of the fact that his 14-member team developed a 20-litre spraying drone in 60 days.

Mal, Rao, Reddy, and a host of other scientists and entrepreneurs are betting big on a simple equation: Satellite imagery + data analytics + precision farming = reduced input costs + higher productivity + lesser wastage = more income for farmers.

Of course, things are never that simple in real life. With the help of Mal and his ilk, it's possible for farmers to reduce input costs and increase productivity. But Amir Ullah Khan, visiting professor at the Indian School of Business in Hyderabad and an agricultural expert, says that's not enough: "One of the major challenges before Indian farmers is not just price discovery but also bringing produce to the market at the same time [leading to a supply glut], resulting in lower realisation for their produce. If some farmers delay their harvesting for better prices, they are branded as hoarders."

The real problem with policymakers today, he says, is that they do not know whose interests they are protecting: consumers or farmers. "The government clearly needs to make up its mind whose side it is on", he says. Right now, as soon as prices rise (good for farmers), they take drastic measures like banning exports, etc.

Policy has a huge role to play in any potential agricultural transformation. Take 100% foreign direct investment in multi-brand retail, a proposal that has been hanging fire for longer than I care to remember. Why does this matter to farmers, you may well ask. Simply because international retail giants such as Walmart and Carrefour with the financial muscle to build warehouses and cold chains that can delay sale of perishable items, make the supply chain far more efficient by weeding out middlemen and bring in the latest technology and standards that are sorely lacking in agriculture today. Connecting 2,50,000 panchayats through the promised broadband connectivity, can be the other game changer in terms of price discovery because even farmers in the most remote areas will know when to sell and at which mandi.

Farhan, I thought, would be among the loudest in seeking technology improvements for farmers, and indeed he is. What he's really passionate about promoting, however, is organic farming. Input costs are low—no pesticide or fertiliser—and the land is not adversely affected, he tells me.

One of the big issues for organic farmers is the lack of a regular, assured market. That's why Daana is working with the likes of Amazon and Big Basket, trying to develop a customer base online and provide produce on demand. This helps in better price discovery and higher sales. As important, farmers can use the cold chains and warehouses belonging to the retailers. "We need to find the Indian Alibaba for agriculture; Alibaba in China turned out to be a saviour for small and mediumsized industries in China," adds Farhan.

Once organic produce finds a good online market, he says, buyers can start ranking farmers on the basis of quality and freshness, spurring farmers to improve. "It will probably start out as a gourmet thing, but over time as the numbers grow, you will start a new way of doing farm marketing. You can just change one part of the wheel and expect to transform agriculture as a whole."

There's something about farming that seems to produce zealots. Reddy of SkyKrafts is equally passionate when he talks of how his drones can change farming in India. But, unlike Farhan, Reddy says using pesticides and other chemicals is not necessarily a bad thing. "It is wrong to say that the overuse of chemicals is destroying the soil. Indian farmers only use 1.5 litres of fertilisers per hectare compared to 10 litres used elsewhere in the world," he says .

The answer to improved productivity, Reddy tells me, is not in increasing the amount of fertiliser and pesticide but to target that properly. His drones can help here. "Data already shows that we can reduce pesticide consumption by 50% if we use precision agriculture and we are trying to accomplish that," says Reddy.

He then tells me about the camera-fitted drone developed by SkyKrafts. Backed by some nifty cloud-based software, these drones survey fields and can actually diagnose the health of the crop, report the onset of infestation, and even advise farmers on how to increase yield and prevent further damage to crops. It sounds pretty futuristic to me. But Reddy is dissatisfied. His dream is to figure out an electronic way to tell the exact amounts of fertiliser in the soil. "Once we can do that," he says, "it will change the face of agriculture."

The optimism around technology is palpable when I speak to the likes of Mal, Reddy, Farhan, and Rao. I'm almost as carried away about the use these people are making of tools like the Internet and satellites. This could be just what we need to finally have some food security, I think, as I prepare to speak to a few more scientists to validate this.

Cue disappointment as I hear that age-old problems still survive. Farming may go high-tech, but unless seeds keep pace, all improvements will be cosmetic. Or that's what scientists at research institutes think. "Till the government allows farmers to adopt genetically modified (GM) crops, there is little chance of an agricultural transformation that we are talking about," says P. Ananda Kumar, director of the Indian Institute of Rice Research.

But isn't GM bad? Globally, scientists are arguing about the merits of seeds that have been manipulated to make them resistant to pests and drought. In India, the government is debating allowing GM seeds in food crops. Kumar sees little benefit in the endless debate. "After all," he says in a matterof-fact way, "it is already working in 28 countries covering 185 million hectares and 15 crops."

So far, there has been a marked reluctance on the government's part to allow genetically modified food crops, given that the research around this is still far from satisfactory to many. Kumar has no time for this. The government's own committee of scientists, including the Biotechnology Regulatory Authority of India, has given the go-ahead to use GM food seeds, he says. Kumar believes that the demonstrated success of Bt cotton, using which has made India the largest cotton producer in the world, should be enough to get farmers on board.

Modified seeds for brinjal and mustard have been argued about for years now. "It is time that the Indian government or the political leadership heed the advice of its own scientists than some vested interests using scare-mongering tactics in the media," says Kumar caustically. Elsewhere, K.K. Narayanan, founder and chairman of Kottaram Agro-Foods, gets agitated when I ask about Bt brinjal. These technologies, which can add Rs 60,000 crore every growing season, are left "sitting on the shelf", he says. Bhagirath Choudhary, founder director of New Delhi-based South Asia Biotechnology Centre, adds that farmers

themselves will not have any problem shifting to GM seeds once they see profits flowing in. “Unfortunately, that is not happening because no one is allowed to demonstrate the benefits of GM crops to the farmers,” he says.

Others argue that tampering with food crops could affect the health and safety of consumers over the long term. There’s also a compelling argument made over the “terminator seed”, which allows farmers to use the seeds just once; every growing season will mean fresh seeds have to be bought. Add to that the concern over pests mutating to grow resistance to Bt crops—as has been observed in India in case of Bt cotton and bollworm—the debate is unlikely to be resolved in a hurry.

Meanwhile, “rural will be the biggest play” when it comes to investment, says Kenneth Andrade, founder and chief investment officer of Old Bridge Capital Management. It’s big business, he says, reeling off statistics. Technology means that some 65% of the farmer population is electronically connected with mandis, which means price discovery is easier. Allowing 100% FDI in food processing will mean a huge boost to that industry. And with e-retail and other markets opening up, there has been a marked increase in the number of cold chains and warehouses across the country.

Little wonder that Mal is busy planning many more Samadhan centres and getting more tech into fields. “It’s all about taking the latest technology from the laboratory to the farm,” he says.

11 Innovations That Could Build the Food of the Future

June, 19th 2018

Is humanity on the brink of retiring farming forever? These 11 innovations in food technology could be the future of food production.

The future of food production, innovation and engineering could look very different from what we have taken for granted in the present day. The incorporation of several disciplines into the singular process of producing food could see the advent of a so-called post-animal bio-economy.

The adoption of things like 3D printing, lab-grown meat, the blockchain. vertical farming and cellular culturing could see agriculture and animal husbandry (for food) extinct. Just think about that for a second - we could literally be on the brink of retiring the very innovation that made civilization possible.

Whatever the case may be, the future of food technology will never be the same again. These 11 are fine examples of the strides being made in this field today.

1. 3D Food Printing Could Change Food Forever

One interesting development in food technology is the work of institutes like TNO who are developing a means of 3D printing food. With the massed proliferation of 3D printing over the last few years, this development was probably an inevitability.

The technology will work as you anticipate - by building the end product layer by minute layer. This solution will offer endless possibilities for the shape, texture, composition, and ultimately, taste of food products in the future.

3D printing can probably be likened to the replicators in Star Trek, albeit a lot slower and more cumbersome. Like Star Trek, 3D printing will let you customize the final dish to your specific demands and tastes - just like cooking for yourself but without all the work.

TNO believe that this technology will be popular with food producers, retailers, and consumers alike. Whether it will usurp the growing momentum in robotic chefs (more on them later) or compliment them - only time will tell.

The future of food production looks interesting indeed. Plus 3D printing will greatly reduce the waste produced from 'conventional' cooking and could be used to promote healthy high-tech food and completely redefine how we produce 'recipes'.

Once the technology is refined it will provide unlimited possibilities for novel food designs by manipulating the ratio of ingredients to its final physical form on the plate. We start to see 'chefs' of the future combining their culinary talents to push the limits of the artistic form of the food sculptor.

2. High-Pressure Processing Could Extend The Shelf Life of Food 10x

One of the main concerns for food producers is how to extend the shelf life without compromising the taste or quality of the food. This has been an ongoing problem since time immemorial with early solutions like smoke or salt curing, fermentation and other solutions in common use since antiquity.

Many of these were used well into the 19th Century and beyond until reliable alternatives were devised by visionaries like Louis Pasteur and Lloyd Hall.

Brand new techniques currently in development include a process called High-Pressure Processing (HPP). This is a conservation technique that could quadruple or even extend by 10 times the shelf life of food products in the not too distant future.

High-Pressure Processing is a cold pasteurization process that introduces foods sealed in packaging into a high isostatic pressure environment (300-600 MPa) that is transmitted by water. That is more pressure that can be found at the base of the Mariana Trench.

This technique effectively inactivates micro-organisms to guarantee food safety. This combination of high pressure and low-temperature environment safely maintains the taste, food, appearance, texture and nutritional value of food.

High-Pressure Processing respects the sensorial and nutritional properties of food, because of the absence of heat treatment, and maintains its original freshness throughout the shelf-life. Another benefit of HPP is the fact that no irradiation or chemical preservatives need to be introduced in the process.

3. Automated Grading Systems Like Aris' AQS-System Could Replace Thousands of Workers

Companies like Aris have started to deliver innovative food production using something called an AQS-system. This system is used to grade and sort chickens (and potentially other animals) efficiently and accurately. AQS lets Aris' clients sort chickens by their shape, size, color and any other characteristics desired.

This relatively new system can manage in excess of **12,000 chickens** in one hour greatly improving food production efficiency.

Aris's AQS-system is, by all accounts, the first of its kind. It uses a camera system and software programme to detect a suite of variations (like color) on the examined specimen. This system registers many profile deviations like broken wings or missing parts, poor coloration etc, and can even learn and improve itself over time.

The AQS-system also collects data from the products and product streams to feed and control the entire slaughterhouse operating system.

Aris have also devised similar systems for grading plants like Orchids, Potplants, and other seedlings at impressive rates per hour. These kinds of automation could completely replace human alternatives as they provide a greater level of accuracy and can operate tirelessly without needing to take breaks or holidays.

4. Insect Protein Could Replace Beef, Chicken, Pork, and Lamb

Although eating arthropods, like insects, is par for the course for many nations around the world it is a bit rarer in the 'West' - if we disregard things like lobsters and crabs of course. This is set to change with Kickstarter companies like Exo hoping to make insect protein bars and other foodstuffs commonplace in our diets.

The startup blew its funding goal of $20,000 in less than 72 hours and managed to raise $55,000 in total. They have since attracted investment from the likes of the rapper Nas and the one and only Tim Ferriss.

With this level of investment in the company, it seems many key players are confident that insect protein could become the next big thing. It goes without saying that the farmers, chefs, and startups involved in the burgeoning insect-protein industry want bugs to become as common as beef—and maybe even replace it.

If its popularity grows it could spark an entirely new industry and create hundreds, if not thousands, of jobs.

Exo is not the only kid on the block with our insect-protein manufacturers quadrupling their revenue between 2014 and 2015 according to Fortune.

Insect protein tends to contain about 60% protein, is packed with vitamin B12, has more calcium than milk. It also has more iron than spinach and can supply you with all the essential amino acids your body needs.

Insect meat is also better for the environment compared to its lumbering four-legged alternatives. It requires much less water (about 455 liters to make 72 grams of crickets compared to 6 grams of beef) and requires much less physical space.

Although it might seem unpalatable to eat insects in their 'natural' form, it can easily be ground up and used to replace other protein in your favorite recipes.

5. Robo Chefs Could Change the Way We All Cook Food

Restaurants and celebrity chefs might become a thing of the past if companies like Moley have anything to say about it. They have been busy developing one of the world's first automated kitchens - a so-called robochef.

Moley's robochef is the product of a collaboration between Moley and other companies like Shadow Robotics, Yachtline, DYSEGNO, Sebastian Conran and Stanford University Professor Mark Cutkosky.

It consists of a pair of fully articulated and automated robotic arms that can, for all intent and purpose, replicate the movement of humans arms and hands. Moley believes that their robotic chef has the same level of dexterity as that of any human alternative - especially when it comes to speed and sensitivity.

This robot chef takes its cue from famous chefs whose cooking skills are being followed to the letter by the robot. Each recorded 'recipe' is not only a list of ingredients and a set of instructions but also a complete and accurate replay of the original chef's actual motions and movements.

As exciting as this all might sound, this technology won't be cheap with estimates of it each robot chef costing $15,000 initially - though if you are a regular patron at a Michelin Star Restaurant this might sound like a bargain.

In the long run, the company plans to produce self-contained 'kitchen' that is operated by touch screen or via a smart device app. It will, in effect, be like a takeaway restaurant but at home - you could even order on your way home from work and have it ready by the time you arrive.

6. Lab-Grown Meat Could Make Animal Farms and Abattoirs Obsolete

Lab-grown meat, otherwise known as in vitro animals or "clean meat" could be on sale very soon indeed. It could also make meat production a new form of sustainable engineering.

This kind of 'meat' is grown from stem cells that are harvested by biopsy from donor livestock and then cultured in a lab for a few weeks.

In vitro meat is very popular with environmentalists who believe it could greatly reduce the environmental impact of large-scale animal husbandry. Some estimates believe that

'greenhouse gas' emissions, most notably methane, could be reduced by 96% if it were adopted large scale.

The technology is being developed by companies like JUST who hope to bring its products to market at some point in 2018. Products like chicken nuggets, sausage, and even foie gras could be created by this technique.

Of course, public opinion and the market's 'invisible hand' will ultimately dictate the commercial success of this new industry. However, some polls indicate that a significant percentage of people are open to eating 'clean meat'.

It is currently very expensive compared to the more traditional method of growing meat with costs of around $2,400 to make 450 grams of beef. As the technology matures and efficiency improves it is not out of the question that these costs will fall dramatically.

7. Vertical Farming Could Be The Future of Agriculture

Vertical farming could be the future of large-scale agriculture in the future. With more and more people moving into cities and traditional agriculture requiring large tracts of land the solution to future crop production could be to farm 'upwards'.

The concept is nothing new and was first proposed by Dickson Despommier who noted that an upscaling of the concept of rooftop gardens could be the future of farming. He envisaged purpose built farming 'towers' that could allow crops to be produced on every single level of the buildings, including the roof.

Although initially considered to be a utopian ideal some prototypes have actually been built in the last few years. For instance, prototypes have been built including a three-story VF Suwon, South Korea, over 50 'vertical farms' in Japan, a commercial vertical farm in Singapore that opened in 2012, and another in Chicago that was built in an old industrial building.

These kinds of farms generally fall into one of two categories - hydroponics (plants are grown in a basin of nutrient-enriched water) or aeroponics (roots are exposed and sprayed with nutrient-enriched mist). Neither requires any soil and artificial lighting tends to also be incorporated unless sunlight is in abundance.

These kinds of farms have some clear advantages over more traditional means of agriculture. Physical ground space is minimized, all-year-round farming is possible and agrochemicals are eliminated.

8. Blockchain Could Revolutionise The Agri-Food Supply Chain

Whenever you hear the term blockchain you can be forgiven for instantly thinking of Bitcoin or other cryptocurrencies. Yet, another interesting potential application of the technology could be to improve traceability in the agri-food supply chain.

Being a distributed and collective public ledger system, blockchain has the potential for making every transaction in an agricultural supply chain transparent, traceable, verifiable and have no third party oversight.

There have been a few examples of series issues with traceability in recent years that could have been easily resolved a lot quicker if a blockchain ledger system had been used:-

- A blockchain system could have easily and quickly identified the source of contamination during the 2017 multi-state Salmonella outbreak that infected over 200 people in the US. Months of investigation finally traced the source of contamination to imported Maradol papayas from Mexico.

This would have been abundantly clear if a blockchain system had been employed to record and trace transactions throughout the food supply chain.

- The 2013 horsemeat 'scandal' in the United Kingdom could have been quickly resolved if a blockchain system had been employed. This scandal involved meat product labels failed to disclose the presence of horse meat.

Blockchain could have, in theory, provided traceability across the entire process and quickly resolved the issues at hand before they got too serious. This would be especially true for sources of major contamination - like a single supplier.

Food giants like Wal-Mart, Nestle, and Unilever, to name but a few, are already working with IBM to apply blockchains to their food supply chains. According to Forbes, a trial blockchain system could trace an exact farm supplier for a particular food product in 2 seconds - a task that would normally take over 6 days to complete.

Source: *Didem Durukan McFadden/Instagram*

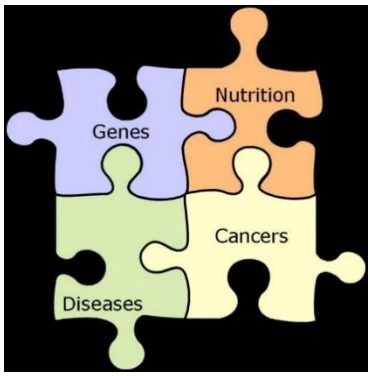
9. Personalized Nutrition Could be the Future of Eating Plans

Personalized Nutrition is the concept of tailoring your diet to the specific means in which your genetic makeup predisposes you to react to different foods and other consumable products.

The concept is not new but some companies are already offering it to their clients. "Nutrigenomics" as it's called, is widely considered to be too far in its infancy for public consumption.

According to Rasmus Neilsen, a geneticist at the University of California, Berkeley:-

"We still don’t have the ability to accurately predict the most healthy diet for an individual … with or without the use of genomics."



Companies like DNAFit, Nutrigenomix, and Habit all offer services that promise to tailor your eating plan to your very DNA. They all ask for a sample of your genetic materials before preparing a customized diet plan - some will also prepare and send your meals for you (for an extra fee).

Researchers have been investigating the like between a person's unique genetic makeup and how they react to foods differently from other people. Some people, for instance, are able to absorb certain essential nutrients more efficiently than others.

Once this discipline becomes more sophisticated it is widely accepted that food and nutrition supply will move away from a "one-size-fits-all" approach to a truly unique and personally tailored eating plan.

10. Plant-Based Proteins Could Be the Future of Protein Supply

Proteins (technically speaking amino acids) are essential to build and maintain muscles, keep your bones in tip-top shape and keep your brain running like clockwork. If you don't get enough meat in your diet you will quickly begin to lose energy, hair, muscle mass and cognitive functionality.

Although 'conventional' sources of protein like animals, eggs, and fish are excellent sources (obviously) so to are some plant-based foods. These kinds of foods contain incredible amounts of nutrient-dense properties that your body and brain can use to help you feel your best.

Also, unlike animal-based protein, plant-based protein is easier to 'grow' and less damaging to the environment just like insect-based protein.

Good sources of plant-based protein include, but are not limited to; chickpeas, lentils, barley, almonds, quinoa, spinach, peanuts, kidney beans; to name but a few.

There are also plant-based meat substitutes like tempeh and tofu.

Although they have clear benefits over animal-based proteins there are various downsides to them too. Every single course of plant-based protein does not contain all the amino acids you need - this can be circumvented by eating a variety of them in your diet.

They are also less easily absorbed by the body when compared to animal proteins and tend to lack vitamin B12.

11. Cellular Agriculture

Cellular agriculture is often touted as a means to end to the post-animal bio-economy. But what is it exactly?

As the name suggests it a means of agricultural production but built on cell cultures rather than large-scale productions like traditional farms. This process comes in two forms:-

- acellular products and;

- cellular products.

The former are products made from organic molecules like protein and fat but contain no living cells. Cellular products, on the other hand, are primarily made from or contain living or once-living cells.

The final products are essentially the same as regular foods harvested from animals but are made in a very different way indeed.

Acellular products, for instance, use microbes like yeast or bacteria. By inserting the relevant genes into something like a yeast cell, the colony could be 'programmed' to produce, en masse, regular 'animal products' like milk.

രാജ്യത്തിനാവശ്യം വിളയധിഷ്ഠിത 'പ്രിസിഷൻ' കൃഷി

മാതൃഭൂമി-**26-JUN-2018**

രാജ്യത്ത് കാർഷിക മേഖലയിൽ പ്രതിസന്ധികൾ വർദ്ധിച്ചു വരുന്നു. 2017 ലെ ഇക്കണോമിക് റിവ്യൂവിൽ ഇന്ത്യയിലെ കാർഷിക മേഖലയിലെ വളർച്ച 2.1 ശതമാനമായി കുറഞ്ഞിട്ടുണ്ട് .

കുറയുന്ന വരുമാനം

2015-16 ലെ കേന്ദ്ര ബജറ്റിൽ 2022 ഓടെ കർഷകന്റെ വരുമാനം ഇരട്ടിയാക്കുമെന്ന് പ്രഖ്യാപിച്ചിരുന്നു. എന്നാൽ 2015-16 ൽ ദേശീയ സാമ്പിൾ സർവ്വെ അനുസരിച്ച് പ്രതിശീർഷ വരുമാനം 96,500 രൂപയായിരുന്നു. ഇത് 1,83000 രൂപയാകണമെങ്കിൽ കാർഷിക മേഖല 10.4 ശതമാനം വാർഷിക വളർച്ച കൈവരിക്കേണ്ടതുണ്ട് . എന്നാൽ കഴിഞ്ഞ നാലു വർഷക്കാലയളവിൽ ശരാശ വാർഷിക വളർച്ച 1.85 ശതമാനം മാത്രമാണ്. ഈ കണക്കുകൾ സൂചിപ്പിക്കുന്നത് വരുമാനം ഇരട്ടിയാക്കൽ പ്രസ്താവനയിലൊതുങ്ങുമെന്നാണ്.

കാർഷിക രാജ്യമായ ഇന്ത്യയിൽ ഒരു ഹെക്ടറിൽ താഴെ വിസ്തൃതിയുള്ള 70 ശതമാനം കാർഷിക കുടുംബങ്ങളും കൃഷി നഷ്ടത്തിലാണ് നടത്തുന്നത്. 15 ശതമാനം പേർക്ക് നാമമാത്രമായ ലാഭം ലഭിയ്ക്കുമ്പോൾ 14.5 ശതമാനം കാർഷിക കുടും ബങ്ങൾക്ക് മാത്രമാണ് കൃഷി ലാഭകരമായി നടത്താൻ സാധിക്കുന്നത്.

ചെറുകിട കൃഷിരീതികളാണ് രാജ്യത്ത് കൂടുതലായി നിലവിലുള്ളത്. കാർഷിക മേഖലയ്ക്കാവശ്യമായ ഗുണമേന്മയുള്ള വിത്ത്, വളം എന്നിവയുടെ അഭാവം

നില നിൽക്കുന്നു. ജൈവകൃഷി വിപുലപ്പെടുത്തുമെന്ന പ്രഖ്യാപനവും, ഉല്പ്പന്ന ഗുണനില വാര നിയന്ത്രണത്തിനുള്ള റഗുലേറ്ററി അതോറിറ്റിയും പ്രസ്താവനകളിലൊതുങ്ങു മ്പോൾ, സുസ്ഥിര കൃഷിരീതി പ്രാവർത്തികമാക്കുക എന്നത് ഏറെ ശ്രമകരമായ കാര്യമാണ്.

വിപണനത്തിനുള്ള അസംഘടിത രീതിയും, കാർഷിക കാലാവസ്ഥ മുന്നറിയിപ്പു കളുടെ അഭാവവും, മൂല്യ വർദ്ധിത ഉല്പന്ന നിർമ്മാണം സംസ്കരണം എന്നിവയിലെ അപര്യാപ്തതകളും കാർഷിക പ്രതിസന്ധിയ്ക്ക് ആക്കം കൂട്ടുന്നു.

തരിശ്ശായി കിടക്കുന്ന സ്ഥലങ്ങളിൽ കൃഷിയിറക്കാനുള്ള നിർദ്ദേശങ്ങളിൽ നെൽകൃഷി മാത്രമെ പാടുള്ളൂവെന്ന നിബന്ധന ഒഴിവാക്കേ തു . കടുത്ത ജല ദൗർലഭ്യത നേരിടുമ്പോൾ നെൽകൃഷിയ്ക്ക് മറ്റു വിളകളെ അപേക്ഷിച്ച് ഏഴിരട്ടി വെള്ളം ആവശ്യമാണെന്നതാണ് ഇതിനു കാരണം!

സ്മാർട്ട് പ്രിസിഷൻ കൃഷിരീതികൾ

കർഷകർക്ക് കൃഷി ലാഭകരമാകണമെങ്കിൽ നിരവധി കാര്യങ്ങൾ ശ്രദ്ധിക്കേണ്ടതുണ്ട് . കാർഷിക മേഖലയിലെ അനിശ്ചിതത്വം ഒഴിവാക്കേണ്ടതുണ്ട് . മണ്ണ്, വെള്ളം, കാലാവസ്ഥ, ഭൂപ്രകൃതി എന്നിവയെക്കുറിച്ചുള്ള വിവരങ്ങൾ വില്ലേജടിസ്ഥാനത്തിൽ ലഭ്യമാക്കേ തു . സോഷ്യൽ മീഡിയ, വിവര സാങ്കേതിക വിദ്യ എന്നിവ അനുവർത്തിച്ചുള്ള മുൻകൂർ മുന്നറിയിപ്പുകൾ എസ്.എം.എസ്, മൊബൈൽ ആപ്പുകൾ, വെബ് പോർട്ടലുകൾ എന്നിവയിലൂടെ ലഭ്യമാക്കേണ്ടതുണ്ട്.

അന്തരീക്ഷോഷ്മാവ്, ആർദ്രത, കാറ്റിന്റെ വേഗത, ദിശ, മഴയുടെ തോത്, സൂര്യപ്രകാശം തുടങ്ങിയ എല്ലാ വിവരങ്ങളും യഥാസമയം ലഭ്യമാക്കുന്ന ഓട്ടോമാറ്റിക് കാലാവസ്ഥാ സിസ്റ്റം ഗ്രാമതലത്തിലാവശ്യമാണ്. ഇതിനിണങ്ങിയ രീതിയിൽ കാർഷിക സ്ഥാപനങ്ങൾ അറിവു കേന്ദ്രങ്ങളാകണം.

മണ്ണ്, വിത്ത്, വെള്ളം, കാലാവസ്ഥ എന്നിവ വിലയിരുത്തി മാത്രമെ കാർഷിക - മേഖലയിൽ ഉല്പാദനക്ഷമത ഉയർത്താൻ സാധിക്കൂ. ഇതിനിണങ്ങിയ മുന്നറിയിപ്പുകൾ. എസ്.എം.എസ്, മൊബൈൽ ആപ്പുകൾ, വെബ് പോർട്ടലുകൾ, സോഷ്യൽ മീഡിയ എന്നിവയിലൂടെ ലഭ്യമാക്കേണ്ടതുണ്ട്.

അന്തരീക്ഷോഷ്മാവ്, ആർദ്രത, കാറ്റിന്റെ വേഗത, ദിശ, മഴയുടെ തോത്, സൂര്യ പ്രകാശം തുടങ്ങിയ എല്ലാ വിവരങ്ങളും യഥാസമയം ലഭ്യമാകുന്ന ഓട്ടോമാറ്റിക് കാലാവസ്ഥാ സിസ്റ്റം ഗ്രാമതലത്തിലാവശ്യമാണ്.
- മണ്ണ്, വിത്ത്, വെള്ളം, കാലാവസ്ഥ എന്നിവ വിലയിരുത്തി മാത്രമെ കാർഷിക മേഖലയിൽ ഉല്പാദനക്ഷമത ഉയർത്താൻ സാധിക്കുകയുള്ളു !

ഇതിനിണങ്ങിയ മുന്നറിയിപ്പുകൾ ഗ്രാമങ്ങൾ അടിസ്ഥാനമാക്കിയോ, ഗ്രാമപഞ്ചായത്തടിസ്ഥാനത്തിലോ അറിവു കേന്ദ്രങ്ങളിലൂടെ ലഭ്യമാകുന്നതും, മുൻകൂർ മുന്നറിയിപ്പുകൾ നൽകുന്നതും 40 ശതമാനത്തോളം വിള നഷ്ടം ഒഴിവാക്കാൻ സാധിക്കും.

ഇതിനിണങ്ങുന്ന നോളഡ്ജ് മാനേജ്മെന്റ് സിസ്റ്റം, എം.എസ്. സ്വാമിനാഥൻ ഫൗണ്ടേഷൻ, കാബ് ഇന്റർനാഷണൽ, ഇക്രി സാറ്റ് തുടങ്ങിയ ഏജൻസികൾ നടപ്പിലാക്കി വരുന്നു.

ഇന്നവേഷനും സാങ്കേതിക വിദ്യയും

ഇന്ന് കാർഷിക മേഖലയിൽ സാങ്കേതിക വിദ്യകളും ഇന്നവേഷനും അനു വർത്തിച്ചുള്ള പ്രിസിഷൻ കൃഷിരീതിയ്ക്ക് പ്രസക്തിയേറുന്നു.

പ്രിസിഷൻ കൃഷി അഥവാ കൃത്യതാ കൃഷി നിലവിലു ങ്കിലും ഉല്പാദനം മുതൽ വിപണനം വരെയുള്ള വിവിധ തലത്തിൽ പ്രിസിഷൻ ഇടപെടലുകൾ രാജ്യത്ത് വേ ത പ്രാവർത്തികമാക്കിയിട്ടില്ല.

- മണ്ണ്, വെള്ളം, വിത്ത്, കാലാവസ്ഥ, പരിചരണം, മുന്നറിയിപ്പുകൾ, വിപണി, വിപ് ണന മാന്ദ്യം, പ്രകൃതി ദുരന്തങ്ങൾ മുതലായവ വ്യക്തമായി മനസ്സിലാക്കി ഉത്പാദനച്ചി ലവ് കുറച്ച് ഉല്പാദനം വർദ്ധിപ്പിക്കാനുള്ള മാർഗ്ഗങ്ങൾക്കാണ് പ്രിസിഷൻ കൃഷിരീതി യിൽ പ്രാമുഖ്യം നൽകുന്നത്. വ്യക്തമായ ഡാറ്റ വിലയിരുത്തിയുള്ള ഡിജിറ്റൽ വള ലഭ്യത ശുപാർശ, മണ്ണിന്റെ ഘടനയ്ക്കായുള്ള സോയിൽ വേൾഡ്, വിപണി ലഭ്യമിട്ട ഉല്പാദന പ്രക്രിയ മുതലായവയ്ക്കെല്ലാം പ്രിസിഷൻ രീതി കരുത്തേകുന്നു. കൃഷി യും, ഐ.ടി. യും സമന്വയിപ്പിച്ചുള്ള അഗ്രി അനലിറ്റിക്സ് മൈക്രോ സോഫ്റ്റ്, ടെകഹീന്ദ്രയും ഹൈദരബാദിലെ

കാർഷിക ഗവേഷണ സ്ഥാപനമായ ഇക്രിസാറ്റ് (ICRISAT) മായി ചേർന്ന് നടപ്പിലാക്കി വരുന്നു. ഇന്റർനെറ്റ് ഓഫ് തിംഗ്സ്, സെൻസ റുകൾ, സാറ്റലൈറ്റ് ഇമേജുകൾ ഡാണുകൾ എന്നിവ ഇതിനായി പ്രയോജനപ്പെടുത്തി വരുന്നു.

സംരംഭകത്വവും ഉല്പാദന ക്ഷമതയും

2050 ഓടു കൂടി ലോക ജനസംഖ്യ 1000 കോടിയിലെത്തുമെന്നും ഇന്ത്യയിലിത് 1.7 ബില്ല്യനാകുമെന്നാണ് കണക്ക്. ഇതിനായി കാർഷിക സംരംഭങ്ങൾക്ക് കൂടുതൽ പരി - ഗണന ലഭിക്കേ തു . മണ്ണ് പരിശോധന, കൃഷിയിറക്കൽ തുടങ്ങി സംസ്കരണം, വിപണനം വരെയുള്ള വിവിധ ഘട്ടങ്ങളിൽ പ്രിസിഷൻ ഇടപെടലുകൾ അനുവർത്തി ക്കാവുന്നതാണ്. ഉല്പാദനച്ചെലവ് കുറച്ച് ഉല്പാദനം വർദ്ധിപ്പിക്കുകയെന്ന രീതി യ്ക്കാണ് പ്രിസിഷൻ കൃഷി രീതിയിൽ പ്രാമുഖ്യം നൽകുന്നത്. നെതർലാന്റ് ഈ രംഗത്ത് അനുവർത്തിയ്ക്കുന്ന രീതി ഇരട്ടി വിളവ്, പകുതി ചെലവിൽ എന്നതാണ്. ഒരു ചതുരശ്ര മീറ്ററിൽ 9 മാസക്കാലയളവിൽ ഇന്ത്യയിലെ തക്കാളി വിളവ് 20 കി. | ഗ്രാമാണ്. നെതർലൻഡ്സിൽ ഇത് 70 കി.ഗ്രാമോളം വരും.

കാർഷിക മേഖലയിൽ നിന്നുള്ള വരുമാനം വർദ്ധിപ്പിയ്ക്കാൻ മൂന്ന് രീതിയി ലുള്ള ഇടപെടലുകൾ ആവശ്യമാണ്. ഇപ്പോഴുള്ള പ്രതിസന്ധിക്ക് പെട്ടെന്ന് പരിഹാരം കാണാനുതകുന്ന ഇടപെടലുകളിൽ വില സ്ഥിരത, സുതാര്യത എന്നിവ അനുവർത്തി ക്കണം. സാങ്കേതിക വിദ്യയും, ഇന്നവേഷനും അവലംബിക്കാൻ വ്യക്തമായ ഡാറ്റ കൾ അനുവർത്തിച്ചുള്ള പ്രിസിഷൻ ഫാമിംഗ്, ഭൗതിക സൗകര്യ

വികസനം ഉറപ്പുവരുത്തണം.

സംയോജിത രീതിയിൽ വിളകൾക്കിണങ്ങിയ End to end solution നും - പ്രാവർത്തികമാക്കേണ്ടതുണ്ട്. ഗവേഷണത്തിലൂടെ ഉരുത്തിരിച്ചെടുത്ത സാങ്കേതിക വിദ്യകൾ കർഷകരിലെത്തിക്കണം. ഇതിനാവശ്യമായ വിജ്ഞാന വ്യാപനം, പുത്തൻ ടെക്നോളജി രൂപപ്പെടുത്തൽ, അഗ്രി സംരംഭകത്വത്തിന്റെ ഭാഗമായി ബിസിനസ് മോഡൽ ഉരുത്തിരിച്ചെടുക്കൽ എന്നിവയ്ക്ക് പ്രാധാന്യം നൽകേണ്ടതുണ്ട് .

ലളിതം സുന്ദരം എയർ പ്ലാന്റ്സ്

മനോരമ Y 18 JUNE 2018

ചെടികൾ വളർത്തി പരാജയപ്പെട്ടവർക്കായി ചട്ടിയും മണ്ണുമൊന്നുമില്ലാതെ നിഷ്പ്രയാസം പരിപാലിക്കാൻ ഇതാ ഒരുകൂട്ടം വിചിത്ര സസ്യങ്ങൾ. 'എയർ പ്ലാന്റ്സ്' എന്നറിയപ്പെടുന്ന ഇവ 'ടില്ലാൻസിയ' ഗണത്തിൽപെടുന്നവയാണ്. ഒരാഴ്ചത്തേക്കു നനയ്ക്കാൻ മറന്നാലും ഈ ചെടികൾക്ക് ഒന്നും സംഭവിക്കില്ല. അന്തരീക്ഷത്തിൽ തങ്ങിനിൽക്കുന്ന ഈർപ്പവും ധാതുലവണങ്ങളും ആഗിരണം ചെയ്ത് ഇവ വളർന്നോളും. ചിലയിനങ്ങൾ

മനോഹരമായ പൂക്കൾകൊണ്ട് നമ്മെ ആനന്ദിപ്പിക്കുകയും ചെയ്യും. ലോകമാകമാനം സസ്യപ്രേമികൾക്കു പ്രിയപ്പെട്ട അലങ്കാരച്ചെടിയാണ് ഈ ബ്രോമീലിയാഡ് കുടുംബാംഗം. എയർ പ്ലാന്റുകളുടെ പരിപാലനത്തിനും കൈമാറ്റത്തിനുമായി ക്ലബുകൾപോലുമുണ്ട് ഇപ്പോൾ.

പ്രകൃതിയിൽ മരപ്പൊത്തിലും മരത്തിന്റെ കമ്പിലും, പാറയിലും മറ്റും സ്വാഭാവികമായി കാണപ്പെടുന്ന ഇവയുടെ അറുനൂറിനു മേൽ ഇനങ്ങൾ ലഭ്യമാണ്. നന്നേ കുറുകിയ തണ്ടിൽ കുത്തിനിറച്ചതുപോലെ കട്ടിയുള്ള ഇലകൾ ഇവയുടെ സവിശേഷതയാണ്. പാതി തണലുള്ളിടത്തും ഒരു പരിധിവരെ വെയിലത്തും പരിപാലിക്കാം. പുല്ലിന്റേതുപോലുള്ള വേരുകൾ ഏതു പ്രതലത്തിലും പറ്റിപ്പിടിച്ചു വളരാൻ ചെടിയെ സഹായിക്കുന്നു. ഒറ്റനോട്ടത്തിൽ ഉണങ്ങിയ കുഞ്ഞൻ കൈതച്ചെടിയാണെന്നു തോന്നും ഇവയിൽ പലതും. ചെടികൾ വളർത്താൻ കഴിയില്ലെന്നു കരുതുന്ന ഡ്രിഫ്റ്റ് വുഡിലും, ശംഖിന്റെ പുറത്തും, അക്വേറിയത്തിന്റെ ഭിത്തിയിലും വെള്ളാരംകല്ലിലുമൊക്കെ എയർ പ്ലാന്റുകൾ വേരുകൾ ഉറപ്പിച്ചു നന്നായി വളരും.

ഇലകളിൽ നിറയെ ചോക്കുപൊടിപോലുള്ള നേർത്ത ആവരണം ആവശ്യമായ ജലവും ധാതുലവണങ്ങളും അന്തരീക്ഷത്തിൽ നിന്നു വലിച്ചെടുക്കാനും ഒപ്പം വരണ്ട കാലാവസ്ഥയിൽ വളരാനും ചെടിയെ സഹായിക്കുന്നു. ചില ഇനങ്ങൾക്ക് ഈ ആവരണം നല്ല കനത്തിലുള്ളതുകൊണ്ട് ഇലകൾക്കു മങ്ങിയ വെള്ളനിറമായിരിക്കും.

ഇത്തരം ചെടികൾ വെയിലുള്ളിടത്തും വളർത്താം. നനയും വളവും വല്ലപ്പോഴും നൽകിയാൽ മതി. മറ്റൊരിനം എയർ പ്ലാന്റുകളിൽ ആവരണം അത്രയ്ക്കു വ്യക്തമായി കാണാറില്ല. ഇവയ്ക്കു കൂടുതൽ തണലും നനയും ആവശ്യമാണ്. ഇളം തവിട്ട്, ചുവപ്പ് നിറങ്ങളിൽ ഇലകൾ ഉള്ള ചെടികളും ലഭ്യമാണ്. എയർ പ്ലാന്റ് വർഗത്തിലെ സ്പാനിഷ് മോസ് ഒറ്റനോട്ടത്തിൽ നരച്ചു നീളമുള്ള താടിരോമങ്ങൾ പോലെയാണ്. ഇലകളും തണ്ടുകളുമെല്ലാം മങ്ങിയ ചാരനിറത്തിൽ ഒരേ രൂപത്തിലാണു കാണപ്പെടുന്നത്.

പൂവിടുന്നതിനു മുന്നോടിയായി നടുവിലുള്ള തളിരിലകൾ ആകർഷകമായ ചുവപ്പ്, മഞ്ഞ, പിങ്ക് നിറങ്ങളിലാകും. പിന്നീട് ഇലച്ചാർത്തുകൾക്കിടയിൽനിന്നാണു മനോഹരമായ പൂക്കൾ വിരിഞ്ഞുവരിക. വർണ ഇലകളിൽനിന്നു വേറിട്ട നിറമായിരിക്കും പൂക്കൾക്ക്. കടും ചുവപ്പ്, നീല, പിങ്ക്, മഞ്ഞ എന്നീ നിറങ്ങളിലുള്ള പൂക്കൾ ഒന്നുരണ്ട് ആഴ്ചക്കാലം ചെടിയിൽ കാണാം.

നടീൽവസ്തു

നന്നായി വളർച്ചയെത്തിയ ചെടിയുടെ ചുവട്ടിൽനിന്ന് സ്വാഭാവികമായി തൈകൾ (പപ്സ്) ഉണ്ടായി വരും. പൂവിടുന്ന ഇനങ്ങളിൽ പലതും പൂവിട്ടുകഴിഞ്ഞാൽ തൈകൾ ഉൽപാദിപ്പിക്കും. പൂവിടാത്ത ഇനങ്ങളിൽ ചിലപ്പോൾ ഇലകളുടെ ചുവട്ടിൽ നിന്നുപോലും തൈകൾ ഉണ്ടായിവരുന്നതായി കാണാം. ഒന്നുരണ്ട് ഇഞ്ച് വലുപ്പമായ തൈ, വേരുകൾ ഇല്ലെങ്കിൽപോലും അടർത്തിയെടുത്തു വളർത്താം.

നടീൽ രീതി, പരിപാലനം

എയർ പ്ലാന്റ് പലവിധത്തിൽ വളരും. ഏറ്റവും ലളിതമായ രീതിയിൽ നേർത്ത വള്ളിയിൽ ചെടി തൂക്കിയിട്ടു വളർത്താം. പളുങ്കുപാത്രത്തിൽ ചെറിയ വെള്ളാരംകല്ലുകൾക്കിടയിൽ ചുവടുഭാഗം ഇറക്കിവച്ചും മോടിയാക്കാം. ഡ്രിഫ്റ്റ്വുഡിൽ പലതരം എയർ പ്ലാന്റുകൾ ഒരുമിച്ചു വളർത്തി മിനി ഗാർഡൻ തന്നെ ഒരുക്കാം. ചെടിയുടെ വേരുഭാഗം സൂപ്പർഗ്ലൂ ഉപയോഗിച്ച് ഡ്രിഫ്റ്റ്വുഡിലേക്ക് ഒട്ടിച്ചുവയ്ക്കാനും സാധിക്കും. ഈ വിധത്തിൽ സൂപ്പർ ഗ്ലൂ ഉപയോഗിച്ച് എയർ പ്ലാന്റുകൾ വലിയ വെള്ളാരംകല്ല്, ശംഖ്, അകോറിയത്തിന്റെ ഭിത്തി തുടങ്ങി ഏതുതരം പ്രതലത്തിലും വളർത്താം. എയർ പ്ലാന്റ് ഉപയോഗിച്ചു തയാറാക്കുന്ന ടെറേറിയത്തിനു നല്ല പ്രചാരമുണ്ട്.

സ്പ്രിങ്പോലെ കുട്ടയുടെ ആകൃതിയിൽ ചുറ്റിയെടുത്ത കമ്പിക്കുള്ളിൽ ഇറക്കിവച്ചും ചെടി ആകർഷകമാക്കാം. പലയിനങ്ങളുടെയും വേരുകൾ കാലക്രമേണ, വളരുന്നിടത്തു പറ്റിപ്പിടിച്ച് ചെടിയെ ഉറപ്പിച്ചുനിർത്തും. വള്ളിയിൽ തൂക്കിയിട്ടു വളർത്തുന്നവ സാവധാനം എല്ലാ വശങ്ങളിലേക്കും തൈകൾ ഉൽപാദിപ്പിച്ച് ഗോളാകൃതിയിലാകും. ബോൺസായ് ചട്ടിയിൽ ബോൺസായ് ചെടിക്കു ചുറ്റും എയർ പ്ലാന്റിന്റെ കുള്ളൻ ഇനങ്ങൾ വളർത്തി കൂടുതൽ ആകർഷകമാക്കാം.

വളരെ സാവധാനം വളരുന്ന എയർ പ്ലാന്റുകളിൽ ചിലയിനങ്ങൾ ഒരു വർഷംകൊണ്ടു രണ്ടുമൂന്ന് ഇഞ്ച് മാത്രമേ വളർച്ച കാണിക്കുകയുള്ളൂ. മഴക്കാലത്തു ചെടി അന്തരീക്ഷത്തിലുള്ള ഈർപ്പം ആവശ്യാനുസരണം വലിച്ചെടുത്തുകൊള്ളും. ഈ സമയത്തു ചെടി വല്ലപ്പോഴും നനച്ചാൽ മതിയാകും. വേനൽക്കാലത്തു മൂന്നു നാലു ദിവസത്തിലൊരിക്കൽ സ്പ്രേയർ ഉപയോഗിച്ച് ചെടി മുഴുവനായി നനയ്ക്കണം. ചെടിയുടെ ഇലകൾ അകാരണമായി പുറകോട്ടു ചുരുളുന്നത് ജലാംശം കുറഞ്ഞതിന്റെ ലക്ഷണമാണ്.

ആവശ്യമെങ്കിൽ മഗ്ഗിലെടുത്ത വെള്ളത്തിൽ ചെടി മുഴുവനായി ഒരു മണിക്കൂർ മുക്കി കുതിർക്കുന്നത് അധിക ജലാംശം നഷ്ടപ്പെടുന്നതു പരിഹരിക്കാൻ ഉപകരിക്കും. മാസത്തിലൊരിക്കൽ നനജലത്തിൽ പൂർണമായി ലയിക്കുന്ന എൻപികെ 19:19:19 (രണ്ടു ഗ്രാം / ലീറ്റർ വെള്ളം) കലർത്തി നൽകുന്നത് ചെടിയുടെ ആരോഗ്യകരമായ വളർച്ചയ്ക്കും നല്ല പൂക്കൾ കിട്ടാനും സഹായിക്കും. നേരിട്ടു വെയിലുള്ളിടത്തു വളർത്തുന്നവയ്ക്ക് അധിക നന നൽകാൻ ശ്രദ്ധിക്കണം. എയർ പ്ലാന്റുകളുടെ വേരുകൾക്കൊപ്പം ഇലയും ചെടിക്ക് ആവശ്യമായ ജലവും ധാതുലവണങ്ങളും വലിച്ചെടുക്കാൻ കഴിവുള്ളവയാണ്. ഇലകൾക്കും വേരുകൾക്കും ചുറ്റിലുമായി നന്നായി വായുസഞ്ചാരം നൽകുന്നത് ചെടിയുടെ സുഗമമായ വളർച്ചയ്ക്കു നന്ന്. വളർത്തുന്നിടത്ത് ഈർപ്പം അധികമായാൽ ചെടി അപ്പാടെ ചീഞ്ഞുപോകാൻ സാധ്യതയുണ്ട്. ഇലകൾക്കു കാണുന്ന കറുപ്പുനിറം ചീയൽ രോഗത്തിന്റെ ബാഹ്യലക്ഷണമാണ്. ഇത്തരം ചെടികൾ നന മിതപ്പെടുത്തി ഈർപ്പം കുറഞ്ഞിടത്തേക്കു മാറ്റി സ്ഥാപിക്കണം.

ഇഞ്ചി വിലയ്ക്ക് മേന്റെ 'പഞ്ച്'

മനോരമ Friday 22 June 2018

ഇഞ്ചിവില ഉയർന്നു. കർഷകർക്കു പ്രതീക്ഷ. 20 രൂപ വിലയുണ്ടായിരുന്ന ഇഞ്ചിക്ക് നെടുങ്കണ്ടം കർഷക മാർക്കറ്റിൽ 60 രൂപവരെയെത്തി. കറി ആവശ്യങ്ങൾക്കായി കടകളിൽനിന്നു വാങ്ങുന്ന ഇഞ്ചിയുടെ വില 70 മുതൽ നൂറുവരെയാണ്. ജില്ലയിൽ ഇഞ്ചിക്കൃഷിക്ക് അനുകൂല കാലാവസ്ഥയാണെന്നു കർഷകർ പറയുന്നു. കാലവർഷത്തെ ആശ്രയിച്ചാണ് കൃഷി ആരംഭിക്കുന്നത്. സമുദ്രനിരപ്പിൽനിന്ന് 1500 മീറ്റർ ഉയരത്തിൽവരെ ഇഞ്ചി കൃഷി ചെയ്യാം. മണൽമണ്ണ്, ചെളിമണ്ണ്, ചരൽമണ്ണ് എന്നിവിടങ്ങളിൽ കൃഷി നടത്താം. ജൈവാംശം കൂടുതലുള്ള മണ്ണാണ് കൃഷിക്കു കൂടുതൽ അനുയോജ്യം. മണ്ണിൽനിന്ന് വളാംശം കൂടുതൽ വലിച്ചെടുക്കുന്നതിനാൽ ഒരു സ്ഥലത്ത് തന്നെ തുടർച്ചയായി കൃഷി ചെയ്യുന്നത് നല്ലതല്ല. ചുക്കിന് പറ്റിയ ഇഞ്ചിയിനങ്ങളാണ് മാരൻ, വയനാട്, മാനന്തവാടി, ഹിമാചൽ, വള്ളുവനാട്, കുറുപ്പംപടി, ഐഐഎസ്ആർ-വരദ, ഐഐഎസ്ആർ-രജത, ഐഐഎസ്ആർ-മഹിമ എന്നീ ഇനങ്ങൾ. റിയോ ഡി ജനീറോ, ചൈന, വയനാട് ലോക്കൽ, തഫൻജീയ, ഓളിസോറെസിൻ എന്നിവയാണ് പച്ച ഇഞ്ചിക്കു നല്ലത്.

മുൻവർഷത്തെ കൃഷിയിൽനിന്നു ശേഖരിക്കുന്ന വിത്ത് ഇഞ്ചിയാണ് നടീൽ വസ്തു. എട്ടു മാസമാകുമ്പോൾ തന്നെ കരുത്തുള്ള നല്ല ഇഞ്ചി വിത്തിനായി കണ്ടുവയ്ക്കണം. ഇവ കിഴങ്ങിനു കേടുവരാത്തക്ക രീതിയിൽ വേണം പറിച്ചെടുക്കുവാൻ.

ഒരു ഹെക്ടറിലെ കൃഷിക്ക് 1500 കിലോ വിത്തുവേണ്ടിവരും. വിത്ത് 15 ഗ്രാമിൽകുറയാതെ കഷണങ്ങളാക്കി 20 മുതൽ 25 സെന്റിമീറ്റർ അകലത്തിൽ അഞ്ച് സെന്റിമീറ്റർ താഴ്ചയുള്ള കുഴികളെടുത്ത് നടാം. ആവശ്യമുള്ള നീളത്തിലും വീതിയിലും ബെഡ് തയാറാക്കി അതിൽ ചെറിയ തടങ്ങളെടുത്തും വിത്തുപാകാം.

ഒരു ഹെക്ടർ സ്ഥലത്ത് കൃഷിക്ക് അടിസ്ഥാന വളമായി ജൈവവളം 30 ടണ്ണും യൂറിയ 150 കിലോഗ്രാമും രാജ്ഫോസ് 250 കിലോഗ്രാം, പൊട്ടാഷ് 90 കിലോഗ്രാം എന്നിവയും വേണ്ടിവരും. നടീൽ സമയത്ത് ട്രൈക്കോഡർമ, സ്യൂഡോമോണാസ്, മൈക്കോറൈസ എന്നീ ജീവാണുവളങ്ങൾ ചേർക്കുന്നതു രോഗസാധ്യത കുറയ്ക്കും. ആറാം മാസം മുതൽ വിളവെടുക്കാം. ചുക്ക് ആക്കാൻ 245 മുതൽ 260 ദിവസങ്ങൾക്കുള്ളിൽ പറിച്ചെടുക്കണം. ഒരു ഹെക്ടറിൽനിന്ന് 25 ടൺ വരെ പച്ചയിഞ്ചി ലഭിക്കും.

സർക്കാർ ജീവനക്കാരന്റെ മുപ്പതു സെന്റിലെ ഹരിതവിസ്മയം

Thursday 14 June 2018 04:29 PM IST

വീട്ടുപേര് ഹരിതം. ചെറുഗേറ്റ് കടന്നു വീട്ടിലേക്കു കടക്കുമ്പോൾ ചെറുമുറ്റവും നാലഞ്ചു സെന്റിൽ ഒതുങ്ങുന്ന ചെറുവീടും ഒഴിച്ചാൽ മുഴുവൻ ഹരിത കാഴ്ചകൾ. വീട്ടുപേര് അന്വർഥമാക്കുന്ന ഹരിത കാന്തി.എന്തൊക്കെയാണ് കൃഷി എന്നു ചോദിക്കാൻ വരട്ടെ! ഈ കൃഷിയിടത്തിൽ എന്തില്ല എന്നേ ചോദിക്കേണ്ടി വരികയുള്ളൂ. ആലപ്പുഴ ജില്ലയിലെ തെക്കേക്കര പഞ്ചായത്തിൽ വാത്തികുളങ്ങരയിലെ ഹരിതം വീട്ടിൽ ബാബുവും ഭാര്യ ആശയും ഏഴാം ക്ലാസ്സിൽ പഠിക്കുന്ന അഹല്യയും ഒന്നാം ക്ലാസ്സിൽ പഠിക്കുന്ന അതുല്യയ്ക്കും ഒപ്പം ബാബുവിന്റെ അമ്മയും അടങ്ങുന്ന ചെറു കുടുംബത്തിന് കഴിക്കാൻ ഉള്ളതൊക്കെ ഈ കൊച്ചു തുണ്ടുഭൂമിയിൽനിന്ന് ഉണ്ടാക്കുന്നു.

'ഒറ്റ വൈക്കോൽവിപ്ലവം' എന്ന കൃതിയിൽ മസനോബു ഫുക്കുവോക്ക വരച്ചു കാട്ടുന്നതുപോലൊരു കൃഷിയിടം. മണ്ണിളക്കാതെ തനിയെ വളരുന്ന വിളകളെക്കുറിച്ചാണ് ഫുക്കുവോക്ക പറയുന്നത്. പക്ഷേ 'ഹരിതം' വീട്ടിലെ ബാബു മണ്ണിളക്കാതെയും നട്ടുകൊടുക്കാതെയുമുള്ള കൃഷിയല്ല ചെയ്യുന്നത്. കഴിഞ്ഞ ആറു വർഷംകൊണ്ട് സ്വയം നട്ടു നനച്ചു പരിപാലിച്ചതാണു രണ്ടു വലിയ തെങ്ങുകൾ ഒഴികെ എല്ലാ വിളകളും.

ആധുനിക കൃഷിശാസ്ത്രത്തിലെ സാമ്പ്രദായിക രീതികളിലല്ല ഇവിടെ കൃഷി. ശാസ്ത്രമനുസരിച്ച് ഓരോ വിളയ്ക്കും നിശ്ചിത ഇടയകലവും, വരിയകലവുമൊക്കെ പാലിക്കണം. എന്നാൽ സൂര്യപ്രകാശത്തിന്റെ ലഭ്യതയ്ക്ക നുസരിച്ച് പലതരം വിളകൾ അടുത്തടുത്തായി കൃഷി ചെയ്തിരിക്കുകയാണ് ഇവിടെ. തെങ്ങുകൾക്കു ചുവട്ടിൽതന്നെ ജാതിയും കൊക്കോയും പലതരം ഫലവൃക്ഷങ്ങളും നന്നായി വളരുന്നു.

അത്തി, ഇലന്ത (ബെർ), ഡ്രാഗൺ ഫ്രൂട്ട്, ലിച്ചി, ബർബറ, സ്റ്റാർ ഫ്രൂട്ട്, ഓറഞ്ച്, ആപ്പിൾ, ചാമ്പ, സപ്പോട്ട, പേര, ആത്ത, മുലയൻ ആത്ത, പുലാസാൻ, നെല്ലി, നെല്ലിപ്പുളി, ഞാവൽ, പപ്പായ, മുന്തിരി, പാഷൻഫ്രൂട്ട് എന്നിങ്ങനെ സ്വദേശിയും വിദേശിയുമായ മിക്ക പഴവർഗങ്ങളും ഇവിടെയുണ്ട്. വെള്ളക്കുളമ്പ്, മയൂരി, ഹിമാപസന്ത് തുടങ്ങിയ മാവിനങ്ങൾ. എല്ലാം ഒട്ടുമാവുകൾ. മുട്ടൻ വരിക്കയിനം പ്ലാവിന് ആറു വർഷം പ്രായം. മൂന്നാം വർഷം മുതൽ കായ്ച്ചു തുടങ്ങി. ആണ്ടിൽ 20 ചക്കയിൽ കൂടുതൽ കിട്ടും. ഒരു ചക്ക മൂന്നു – നാലു കിലോ തൂക്കം വരും. ഫലവൃക്ഷങ്ങൾ മിക്കതും കായ്ച്ചു തുടങ്ങിയതോ കായ്ച്ചുകൊണ്ടിരിക്കുന്നതോ ആണ്. കൊക്കോ, വാളംപുളി, കുടംപുളി, കറിവേപ്പ്, കറിനാരകം, ചെറുനാരകം എന്നിവയുമുണ്ട്. എല്ലാം ഗ്രാഫ്റ്റ് തൈകളായതിനാൽ പൊക്കത്തിൽ വളരില്ല. തെങ്ങ് കുള്ളൻ ഇനം രണ്ടെണ്ണം. നിറയെ കുലച്ചു നിൽക്കുന്നു.

തെങ്ങുകയറ്റയന്ത്രമുപയോഗിച്ച് ബാബു തനിയെ കയറി ആവശ്യാനുസരണം തേങ്ങ പറിച്ചെടുക്കും. ജാതിക്ക രണ്ടു തരത്തിൽ ഉപയോഗിക്കുന്നു. ജാതിക്കയുടെ പുറംതോട് അച്ചാറിനും ചമ്മന്തിക്കും ഉപയോഗിക്കും. ജാതിപത്രിയും ജാതിക്കായും മസാലക്കൂട്ടായും രസക്കറി ഉണ്ടാക്കാനും ഉപയോഗിക്കും.

കൊക്കോ ചോക്ലേറ്റ് ആക്കുന്നു. അതിങ്ങനെ: കൊക്കോ കായ്കൾ കുട്ടികൾക്ക് മധുരം നുകരാൻ നൽകും. മാംസളഭാഗം കുട്ടികൾ കഴിച്ചശേഷം വിത്തുകൾ നന്നായി കഴുകി വെയിലിൽ ഒരാഴ്ച ഉണക്കും. അതിനുശേഷം കായ്കൾ ചീനച്ചട്ടിയിലിട്ട് കടല വറുക്കുംപോലെ വറുത്തെടുക്കും. വറുത്തെടുത്ത കായ്കളുടെ പുറംതോട് പൊട്ടിച്ചു പരിപ്പ് വേർപെടുത്തും. വേർപെടുത്തിയ പരിപ്പ് മിക്സിയിൽ പൊടിച്ചെടുക്കുന്നു. കൊക്കോപ്പൊടി സമം പശുവിൻപാലും പഞ്ചസാരയും ചേർത്ത് പാത്രത്തിൽ വച്ചു തിളപ്പിച്ച് കുറുക്കിയെടുക്കുന്നു. നന്നായി കുറുകാൻ അൽപം മൈദയോ ഗോതമ്പുപൊടിയോ ചേർത്തു കൊടുക്കാം. നന്നായി കുറുകിയ ശേഷം ഫ്രിഡ്ജിലെ ഫ്രീസറിൽ വച്ച് തണുപ്പിച്ച് മുറിച്ചെടുത്താൽ കൊക്കോ ചോക്ലേറ്റ് തയാർ.

പറമ്പിൽ അവിടവിടെ നിറയെ വാഴകൾ. നേന്ത്രൻ, ഞാലിപ്പൂവൻ, കാവേരി, പാളയംകോടൻ. ഇലയും, വാഴപ്പിണ്ടിയും, കൂമ്പും, കുലയും എല്ലാം വീട്ടിലെ ഉപയോഗത്തിനെടുക്കും. കൂടാതെ, വിവിധയിനം പച്ചക്കറികൾ. മിക്കതും 365 ദിവസവും വിളവെടുക്കും. കോവൽ, പാവൽ, പടവലം, പയർ, ചീര, വഴുതന, നിത്യവഴുതന, വെണ്ട, മത്തൻ, കുമ്പളം, വെള്ളരി, തടിയൻ, പച്ചമുളക്, തക്കാളി, കാരറ്റ്, കോളിഫ്ളവർ, കാബേജ്, വാളരിപ്പയർ അങ്ങനെ നീളുന്നു പച്ചക്കറികളുടെ പട്ടിക.

കപ്പയും ചെറുചേമ്പും, വെട്ടുചേമ്പും, ചേനയും, കാച്ചിലും (കാവത്ത്) കിഴങ്ങും ആവശ്യത്തിനുണ്ടാവും. കപ്പ മിക്ക ദിവസവും വിളവെടുക്കാനുണ്ടാവും. അതു മൂടോടെ പിഴുതെടുക്കാറില്ല. ബാബുവിന്റെ ചെറുകുടുംബത്തിന് അന്നു വേണ്ടതു മാന്തിയെടുക്കുകയാണ് പതിവ്. രണ്ടു കിഴങ്ങുതന്നെ രണ്ടു കിലോയിൽ അധികമുണ്ടാവും. ഒരു മൂട് കപ്പ പൂർണമായും വിളവെടുക്കാൻ ഒരാഴ്ച വേണ്ടി വരും. കപ്പ പിഴുതാൽ ഉടൻ പുതിയൊരു കപ്പക്കമ്പ് നടും. വാഴക്കുല വെട്ടിയാൽ അന്നുതന്നെ പുതിയൊരു വാഴവിത്തും നടും. പയറു തീർന്നാൽ ഉടൻ ആ തടത്തിൽ വഴുതന നട്ടിരിക്കും.

എല്ലാ ദിവസവും വിളവെടുക്കണമെങ്കിൽ എല്ലാ ദിവസവും എന്തെങ്കിലും നട്ടുകൊണ്ടിരിക്കണമല്ലോ. മുട്ടയ്ക്കായി കുറച്ചു കോഴിയും താറാവും കാടയുമുണ്ട്. കൂട്ടിലിട്ടും, വലയടിച്ചും അവയെ വളർത്തുന്നു. അടുക്കള അവശിഷ്ടമാണ് പ്രധാനമായും തീറ്റ. വല്ലപ്പോഴും കോഴിയെയും താറാവിനെയുംകാടകളെയും കശാപ്പു ചെയ്ത് ഇറച്ചിയായും ഉപയോഗിക്കും.
രണ്ടു കുളമുണ്ട്. ഒരു കുളം അക്വാപോണിക്സ് രീതിയിൽ സിമന്റിൽ തീർത്തിരിക്കുന്നു. ചെറിയൊരു പമ്പ് ഉപയോഗിച്ച് വെള്ളം റീ-സൈക്കിൾ ചെയ്യുന്നു. സിമന്റ് കുളത്തിന്റെ വക്കിൽ പാലക് ചീരയും. കൊഴുപ്പച്ചീരയും, ചുവന്ന ചീരയും, ബീൻസും വിളയിക്കുന്നു. ടാങ്കിൽ അനാബസ്, റെഡ് ബെല്ലി ഇനങ്ങളിൽപ്പെട്ട മത്സ്യങ്ങളെ വളർത്തുന്നു, അവയ്ക്കു തീറ്റ പ്രത്യേകമായി നൽകും.

പുരയിടത്തിൽ നേരത്തേയുള്ളതും രണ്ടു മൂന്നു സെന്റ് വിസ്തീർണത്തിൽ ഏഴടിയിലധികം താഴ്ചയുള്ളതുമായ മറ്റൊരു കുളത്തിൽ നാടൻ മീനുകളായ വരാലും, കൈതക്കോരയും, മുഷിയും, കുറച്ച് ഗിഫ്റ്റ് തിലാപ്പിയയും വളരുന്നു. ഇവയെ ആവശ്യാനുസരണം ചൂണ്ടയിട്ടും, വലയിട്ടും പിടിക്കും.

പാലിനു കാസർകോട് കുള്ളൻ ഇനത്തിൽപ്പെട്ട പശുവുണ്ട്. അടുക്കളയിൽനിന്നുള്ള കഞ്ഞിവെള്ളവും അൽപം പുല്ലും മതി ഇതിനു തീറ്റ. അതിരിൽ വേലിയായി പലതരം തീറ്റപ്പുല്ലുകൾ നട്ടുവളർത്തുന്നുണ്ട്.

ടെറസിൽ വച്ച ചട്ടികളിൽ ഇഞ്ചിയും മഞ്ഞളും പച്ചമുളകും വഴുതനയും വെണ്ടയും വളർത്തുന്നു. ടെറസിൽ പന്തലിട്ട് കോവലും പാവലും പടവലവും പയറും വളർത്തുന്നുണ്ട്. ഒപ്പം ചെറുചാക്കുകളിൽ ചെറുകിഴങ്ങും, കാച്ചിലും (കാവത്ത്). പറമ്പിൽ അവിടവിടെയായി കുറെ കമുകുകളുണ്ട്. ചെറുമരങ്ങൾ നട്ടുവളർത്തി അവയിൽ കുരുമുളക് പടർത്തിയിരിക്കുന്നു.

വളത്തിനായി ഒരു മണ്ണിരക്കമ്പോസ്റ്റു യൂണിറ്റുണ്ട്. കുല വെട്ടിയ വാഴകളും, കായ്ച്ചു തീർന്ന പച്ചക്കറിച്ചെടികളും കരിയിലകളും ചാണകവും ഒക്കെ ഉപയോഗിച്ചു കമ്പോസ്റ്റ് ഉണ്ടാക്കി വിളകൾക്ക് വളമായി നൽകുന്നു. ആവശ്യമെങ്കിൽ രാസവളങ്ങളും നൽകാറുണ്ട്. പക്ഷേ രാസകീടനാശിനികൾ തീരെ ഉപയോഗിക്കാറില്ല. വേപ്പധിഷ്ഠിത കീടനാശിനികളും സ്യൂഡോമോണാസും, ബ്യൂവേറിയയും ചില ഇലച്ചാറുകളുമൊക്കെ ഉപയോഗിച്ച് സസ്യങ്ങളിലെ കീട-രോഗങ്ങളെ നിയന്ത്രിക്കുന്നു.

മുപ്പതു സെന്റിലെ ഹരിത കാഴ്ചകൾ തീരുന്നില്ല. എന്നാലും വിളകൾ ഒന്നെണ്ണി നോക്കി, 87 എണ്ണം.ഇനി കുറച്ചു പാടം വാങ്ങി നെൽകൃഷി ചെയ്യാനുള്ള പുറപ്പാടിലാണ് തെക്കേക്കര കൃഷിഭവനിലെ അസിസ്റ്റന്റ് കൃഷി ഓഫിസറായ ബാബു.

തിരിച്ചടികളിൽ തളർന്ന് കുരുമുളകു കൃഷി

Tuesday 12 June 2018 11:01 AM IST

by മനോരമ ലേഖകൻ

Facebook Twitter Google+ Print Mail

+ − Text Size

കാലം തെറ്റി പെയ്ത കനത്ത മഴ കുരുമുളകു കൃഷിക്കു തിരിച്ചടിയായി. വിളവെടുപ്പിനു ശേഷം ഇലപൊഴിച്ച ചെടികൾ പുതുമഴയിൽ തളിർത്തു തിരിയിടേണ്ടതാണ്. മാർച്ച്, ഏപ്രിൽ മാസങ്ങളിൽ വൻതോതിൽ മഴ പെയ്തതിനാൽ ചെടികൾ തളിർത്തു. എന്നാൽ തിരിയിട്ടില്ല. ചിലയിടങ്ങളിൽ വിളവെടുപ്പിനു മുൻപു ചെടികൾ തളിർത്തതും കൃഷിക്കു തിരിച്ചടിയായി. കഴിഞ്ഞ വർഷം കിലോയ്ക്ക് 500 രൂപ വിലയുണ്ടായിരുന്ന കുരുമുളകിന്റെ ഇപ്പോഴത്തെ വില 350 രൂപ മാത്രം.

കുരുമുളകു വിലയിടിവു തടയാനുള്ള കേന്ദ്ര സർക്കാരിന്റെ തറവില പ്രഖ്യാപനം നടപ്പിലായില്ല. കിലോഗ്രാമിന് 500 രൂപയാണു കേന്ദ്ര സർക്കാർ നിശ്ചയിച്ചിരുന്ന മിനിമം തുക. കുറഞ്ഞ വിലയ്ക്ക് ഇന്തൊനീഷ്യയിൽനിന്നും വിയറ്റ്നാമിൽനിന്നും വൻതോതിൽ കുരുമുളക് ഇറക്കുമതി ചെയ്യുന്നതാണു വില കുറയാൻ കാരണമെന്നു കൊച്ചിയിലെ മൊത്തക്കച്ചവടക്കാർ പറയുന്നു.

കീടങ്ങളെ തുരത്താനും വിളവു വർധിപ്പിക്കാനും ചില നാട്ടറിവുകൾ

Tuesday 12 June 2018 10:51 AM IST

by മനോരമ ലേഖകൻ

കർഷകർ വർഷങ്ങളായി പരീക്ഷിച്ചു വിജയിച്ച നാട്ടറിവുകൾ തലമുറകളായി കൈമാറുന്നവയാണ്. കീടങ്ങളെ തുരത്താനും വിളവു വർധിപ്പിക്കാനും സഹായിക്കുന്ന ചില നാട്ടറിവുകൾ:

- പച്ചക്കറി വിത്തുകൾ കുതിർത്തശേഷം നട്ടാൽ മുളയ്ക്കു നല്ല കരുത്തു കിട്ടും.
- പടർന്നുവരുന്ന പച്ചക്കറികൾ കിഴക്ക് ദിശയിലേക്കു പന്തൽ ഇട്ടു വളർത്തണം. നന്നായി വളരും.
- പച്ചക്കറികളിലെ ഉറുമ്പുശല്യം ഒഴിവാക്കാൻ മഞ്ഞൾപ്പൊടി കുറുക്കിയ മിശ്രിതം ഉപയോഗിക്കാം.
- പച്ചക്കറി തോട്ടത്തിൽ ബന്തി ചെടി നടുന്നതു കായ്തുരപ്പൻ പുഴു, നിമാവിരകൾ എന്നിവയെ പ്രതിരോധിക്കും.

നമ്മൾക്കാവശ്യമുള്ള ഏലക്കായ നമ്മുടെ വിട്ടിലെ മരത്തണലിൽ വളർത്തിയെടുക്കാൻ കഴിഞ്ഞാൽ അതിൽപ്പരം ആനന്ദം മറ്റൊന്നുമില്ല.

പ്രമോദ്കുമാർ വി.സി.

Published: Jun 8, 2018, 05:55 PM IST

ലോകത്താകമാനം പ്രസിദ്ധിയാർജിച്ച സുഗന്ധവിളയാണ് ഏലക്കായ. വിപണിയിൽ ലഭിക്കുന്ന ഏലക്കായയിലും തേയിലയിലുമാണ് സുഗന്ധദ്രവ്യങ്ങളിൽ ഏറ്റവും കൂടുതൽ കീടനാശിനികൾ അടങ്ങിയിരിക്കുന്നതെന്ന് പല പരിശോധനകളും തെളിയിച്ചിട്ടുണ്ട്. തോട്ടവിളയുടെ ഗണത്തിൽ മാത്രമാണ് മലയാളികൾ ഏലത്തെ കണക്കാക്കിയിരിക്കുന്നത്. ഹൈറേഞ്ച് മേഖലയിൽ മാത്രമേ ഇത് നന്നായി വിളയൂവെന്നും നമ്മൾ മുൻധാരണ പ്രകാരം മനസ്സിലാക്കിവെച്ചിരിക്കുന്നു. എന്നാൽ, നമ്മൾക്കാവശ്യമുള്ള ഏലക്കായ നമ്മുടെ വിട്ടിലെ മരത്തണലിൽ വളർത്തിയെടുക്കാൻ കഴിഞ്ഞാൽ അതിൽപ്പരം ആനന്ദം മറ്റൊന്നുമില്ല. മാത്രമല്ല കീടനാശിനിയുടെയും രാസവളത്തിന്റെയും മറ്റും ഒരുവിധ സമ്പർക്കവുമില്ലാത്ത ഏലക്കായ കിട്ടുകയെന്നുവെച്ചാൽ അതും നല്ലതല്ലേ.

കാലാവസ്ഥ

ചൂടുകുറഞ്ഞ കാലാവസ്ഥയിൽ മരത്തണലുകളിലാണ് സാധാരണയായി ഏലം കൃഷി ചെയ്തുവരുന്നത്. കേരളത്തിൽ ഇടുക്കി, വയനാട്, പാലക്കാട്, പത്തനംതിട്ട, കോഴിക്കോട് എന്നിവിടങ്ങളിലാണ് സാധാരണയായി ഏലം കൃഷിയുള്ളത്. അവിടങ്ങളിൽ തോട്ടങ്ങളിലും പുരയിടങ്ങളിലും ഏലക്കായ കൃഷി ചെയ്തുവരുന്നു. ഏലക്കായയ്ക്ക് അനുയോജ്യമായ കൃത്രിമ സാഹചര്യം വീടുകളിൽ നമുക്ക് സൃഷ്ടിക്കാം. വിളവിന്റെ അനുപാതം സാധാരണ സാഹചര്യങ്ങളിലും കൃത്രിമ സാഹചര്യങ്ങളിലും വളരെയധികം വ്യത്യാസമുണ്ടായിരിക്കും. സാധാരണ സാഹചര്യങ്ങളെ അപേക്ഷിച്ച് വിളവ് കുറവായിരിക്കും കൃത്രിമ സാഹചര്യങ്ങളിൽ. എന്നിരുന്നാലും പുരയിടത്തിൽ അതിന് സാഹചര്യമൊരുക്കിയാൽ വിഷമടിക്കാത്ത ഏലക്കായ രുചിക്കാം.

സ്ഥലം തിരഞ്ഞെടുക്കാം

നല്ല തണലും തണുപ്പുമുള്ള സാഹചര്യങ്ങളിലാണ് ഏലക്കായ വളരുക. അതിനാൽ തടമെടുക്കാൻ നമ്മുടെ പുരയിടത്തിലെ തണുപ്പുള്ള തണലുള്ള സ്ഥലം തിരഞ്ഞെടുക്കണം. തടമെടുക്കാൻ കിളച്ചൊരുക്കിയ സ്ഥലത്ത് ചതുരശ്ര മീറ്ററിന് അഞ്ച് കിലോഗ്രാം തോതിൽ ജൈവവളം ചേർത്ത് നന്നായി ഇളക്കിയതിന് ശേഷം നിരപ്പാക്കി തടമെടുക്കുക. തൈകൾ ഒരു മീറ്റർ അകലത്തിലാണ് നടേണ്ടത്. ഓരോ ആറുമാസവും കൂടുമ്പോഴാണ് വീണ്ടും ജൈവവളം ചേർത്തു കൊടുക്കേണ്ടത്.

തൈകൾ

വീട്ടിൽ ഏലം കൃഷി നടത്താൻ നിങ്ങൾ തയ്യാറായാൽ അടുത്ത പ്രശ്നം തൈകൾ എവിടെ നിന്നു ലഭിക്കുമെന്നതാണ്. കാർഷിക സർവകലാശാലയുടെ ഔട്ട്ലെറ്റുകളിലും മലയോര നഴ്സറികളിലും സാധാരണയായി തൈകൾ ലഭിക്കാറുണ്ട്. അടുത്തുള്ള കൃഷിഭവനുകളിൽ അന്വേഷിച്ചാൽ തൈകൾ എളുപ്പം ലഭിക്കുന്ന സ്ഥലങ്ങൾ അറിയാൻ കഴിയും. മൂന്നുവർഷമാണ് ഏലത്തിന് കായകൾ ഉണ്ടാവാൻ വേണ്ടത്. കൃത്രിമ സാഹചര്യത്തിലും അതിന് മാറ്റമൊന്നും കാണാറില്ല. രോഗങ്ങളും കീടങ്ങളും ബാധിക്കുമ്പോൾ നാം സാധാരണയായി ഉപയോഗിച്ചുവരുന്ന വേപ്പധിഷ്ഠിത കീടനാശിനികൾ തളിക്കണം. മൂപ്പെത്തിയ കായകൾ പറിച്ച് വെയിലത്തുണക്കി സൂക്ഷിച്ചു വെച്ച് ഉപയോഗിക്കാം.

Content highlights: Cardamom cultivation, Agriculture, Organic farming, How to grow cardamom plant in home?

മഴക്കാലത്തെ കൃഷി പരിചരണ മുറകൾ

Mathrubhum 25 June 2018

കേരളത്തിൽ ആറ് ഋതുക്കൾ ഉണ്ടെങ്കിലും, ഏതാണ്ട് നാലെണ്ണമാണ് നമുക്ക് കൃത്യമായി അനുഭവപ്പെടുന്നത് . ഈ ഋതുക്കൾക്കനുസരിച്ചായിരിക്കണം നാം വിളകൾ കൃഷി ചെയ്യേണ്ടത്. അങ്ങനെ വരുമ്പോൾ മാത്രമേ ആ വിളയ്ക്ക് രോഗപ്രതിരോധശേഷി കൈവരികയുള്ളൂ. ആ വിളകളെയാണ് കാലാവസ്ഥ സൗഹൃദ വിളകൾ എന്നതുകൊണ്ടുദ്ദേശിക്കുന്നത്. അത്തരം വിളകളാണ് സർവ്വഗുണ സമ്പുഷ്ടവും , ആരോഗ്യസംരക്ഷണത്തിന് ഉതകുന്നതും.

ഇനിയുള്ള മാസങ്ങളിൽ മഴയെ പഴിചാരി നാം കൃഷി ചെയ്യാതിരിക്കരുത്. ഈസമയങ്ങളിൽ മുളക് ,വഴുതന ,തക്കാളി , വെണ്ട, പാവൽ, പടവലം തുടങ്ങിയവയെല്ലാം നട്ടുവളർത്താൻ പറ്റിയ സമയമാണ് . പരിചരണമുറകൾ അല്പം മാറ്റം വരുത്തിയാൽ മാത്രം മതി. വർഷകാലം കൃഷി പരിചരണമുറകൾ നമുക്ക് രണ്ടായി തരംതിരിക്കാം . **1. ബാഗിലോ ചട്ടിയിലോ ഒക്കെ ചെയ്യുന്ന കുടുംബകൃഷി. 2. സമഗ്ര പുരയിട കൃഷി**

(1) കുടുംബകൃഷി അഥവാ ഹോംസ്റ്റഡ് ഫാമിങ്

ഒരു വീട്ടിലേക്ക് ആവശ്യമായ എല്ലാത്തരം പച്ചക്കറികളും ഒന്നര സെന്റിൽ ഉൾപ്പെടുത്തി ജലസേചനം ആയാസരഹിതമാക്കാൻ , തുള്ളിനനയും നടത്തിയാൽ ഒരു ദിവസം അരമണിക്കൂർ മാത്രം ചെലവഴിച്ചാൽ ഏകദേശം ഒരു കിലോ പച്ചക്കറികൾ നമ്മൾക്ക് ഉത്പാദിപ്പിക്കാം.

രാസവളങ്ങളും രാസകീടനാശിനികളും ഒന്നുമില്ലാതെ ,ജൈവവളങ്ങൾ വില കൊടുത്ത് വാങ്ങാതെ വീട്ടിൽ തന്നെ ഉത്പാദിപ്പിക്കുകയും ചെയ്യാം. ഇതിനായി 60 ചട്ടി/ഗ്രോ ബാഗ് നിറക്കൽ ആണ് ആദ്യത്തെ ജോലി. അതിനായി മണ്ണ്, മണല് ,തണലത്ത് ഉണങ്ങിയ ചാണകം എന്നിവ 1:1:1 എന്ന അനുപാതത്തിൽ ഏതാണ്ട് മുക്കാൽ ഭാഗത്തോളം നിറയ്ക്കാം.

ഇതിൽ ട്രൈക്കോഡർമ സമ്പുഷ്ടീകരിച്ചത്, പി ജി പി ആർ മിക്സ് (പ്ളാന്റ് ഗ്രോത്ത് പ്രമോട്ടിങ് റൈസോബിയം) മണ്ണിര കമ്പോസ്റ്റ്, ജീവാണുവളങ്ങൾ ആയ സ്യൂഡോമോണസ് കരിയില പൊടിച്ചത് , പാതി കരിഞ്ഞ ഉമി എന്നിവയെല്ലാം ലഭ്യതയനുസരിച്ച് ചേർക്കുന്നത് നല്ലതാണ് . ഇവയെല്ലാം ഒന്നര സെന്റിൽ വിന്യസിക്കണം. ഏഴു മീറ്റർ നീളവും 6 മീറ്റർ വീതിയുമുള്ള സ്ഥലം തെരഞ്ഞെടുക്കുക. സൂര്യപ്രകാശത്തിന്റെ ലഭ്യതയ്ക്കനുസരിച്ച് ചിത്രത്തിൽ കാണിച്ചിരിക്കുന്നപോലെ ഒരുവശത്ത് പയർ, പത്ത് കവർ , വെള്ളരി ,പാവൽ, പടവലം, കുക്കുമ്പർ എന്നിവ രണ്ട് കവറുകളിലായി നാലു മൂലകളിലും സ്ഥാപിക്കുക. അവയ്ക്ക് പടർന്നുകയറാൻ പന്തൽ നൽകേണ്ടതാണ്.

പ്ലാസ്റ്റിക് ഷീറ്റുകൾ 1 അടി സ്ക്വയറിൽ /റൗണ്ട് ,മുറിച്ചെടുക്കുയെന്നതാണ്. നടുഭാഗത്തായി 3 സെന്റീമീറ്റർ വ്യാസമുള്ള ദ്വാരം ഉണ്ടാക്കണം. ഈ ഷീറ്റുകൊണ്ട് നിങ്ങളുടെ ചട്ടിയോ അല്ലെങ്കിൽ ഗ്രോബാഗ് മൂടിവെക്കുക. മധ്യഭാഗത്തുള്ള ദ്വാരത്തിൽ വിത്ത് തൈ മുളപ്പിച്ചത്, അല്ലെങ്കിൽ വിശ്വാസയോഗ്യമായ സ്ഥലങ്ങളിൽ നിന്നും വാങ്ങിച്ചത്, വിത്തു തൈകൾ നടുക. തൈകൾ നട്ടശേഷം സ്യൂഡോമോണസ് കൊടുക്കണം.
താങ്ങിനിർത്തുന്നതിനായ് താങ്ങ് നൽകണം. എത്ര ശക്തമായ മഴയിലും ഈ പ്ലാസ്റ്റിക് ഷീറ്റ് ' ഒരു കനോപ്പി' ആയി പ്രവർത്തിക്കുന്നതുമൂലം ചെടിയുടെ വളർച്ചയ്ക്ക് ഒരു കുഴപ്പവും ഉണ്ടാവുകയില്ല. അതുകൂടാതെ ശക്തിയായ വെയിലിനെ പ്രതിരോധിക്കാനും, വർഷകാലത്ത് ചുവട്ടിൽ പുല്ലു പിടിക്കുന്നത് ഒഴിവാക്കാനും ഇതിലൂടെ നമുക്ക് സാധിക്കുന്നു.

ഗ്രോബാഗിൽ നടാൻ പ്രോട്രേകളിൽ മുളപ്പിച്ച ഇഞ്ചിത്തൈകൾ

Mathrubhumi June 4 2018

ഡോ. ജലജ എസ് മേനോൻ/ കേരള കാർഷിക സർവ്വകലാശാല

Published: Jun 4, 2018, 05:35 PM IST

ഈ വർഷം പതിവിലും നേരത്തേ എത്തിയ തെക്കു പടിഞ്ഞാറൻ കാലവർഷത്തോടെ മലയാളക്കരയാകെ തകൃതിയിൽ കൃഷി പണിയിൽ മുഴുകിയിരിക്കുകയാണ്. അടുക്കള തോട്ടത്തിലേയ്ക്കും മട്ടുപ്പാവ് കൃഷിയിലേയ്ക്കും വേണ്ട വിത്തും തൈകളും വാങ്ങിക്കൂട്ടുന്ന കാലം. ഇക്കൂട്ടത്തിൽ വാങ്ങിക്കാവുന്ന ഒന്നാണ് പ്രോട്രേ ഇഞ്ചിത്തൈകളും.

ഇഞ്ചിയുടെ ഭൂകാണ്ഡങ്ങൾ ചെറുകഷ്ണങ്ങളാക്കി മുറിച്ച് പ്രോട്രേകളിൽ മുളപ്പിച്ചാണ് തൈകൾ തയ്യാറാക്കുന്നത്. മറ്റു പച്ചക്കറി തൈകൾ തയ്യാറാക്കുന്നതുപോലെ ആധുനിക നഴ്സറി സംവിധാനത്തിൽ ചിട്ടയായ പരിചരണത്തോടെ വളർത്തിയ തൈകൾക്ക് രോഗപ്രതിരോധശേഷിയും കരുത്തും കൂടുതൽ തന്നെയാണ്.

വിത്തിഞ്ചിയ്ക്കു പകരം ഈ തൈകൾ ഫലപ്രദമാണെന്ന് പഠനങ്ങൾ തെളിയിച്ചു കഴിഞ്ഞു. നാൽപത്തിയഞ്ചു ദിവസം പ്രായമായ പ്രോട്രേ ഇഞ്ചിതൈകൾ ആണ് നടേണ്ടത്. ഭൂകാണ്ഡം തീരെ കുറവായതിനാൽ വളർച്ചയുടെ ആദ്യകാലങ്ങളിൽ അധികപോഷണം നൽകാൻ ശ്രദ്ധിക്കണം.

മറ്റു പച്ചക്കറികൾക്കൊപ്പം വീട്ടിൽ നിത്യമസാലയ്ക്കുള്ള പച്ചയിഞ്ചി കൂടി നടാൻ ആഗ്രഹിക്കാത്തവർ വിരളം. വീട്ടുവളപ്പിലെ ചെറുതണലിൽ പോലും പൂർണ്ണമായും മഴയെ ആശ്രയിച്ച് കുറഞ്ഞ ചിലവിൽ കൃഷി ചെയ്യാവുന്ന സുഗന്ധവിളയാണ് ഇഞ്ചി. സ്ഥല പരിമിതിയുള്ളവർക്ക് മട്ടുപ്പാവിലോ, ബാൽക്കണിയിലോ, മതിൽപ്പുറത്തോ, വേലിയരികിലോ,

നടപ്പാതയ്ക്കരികിലോ ഗ്രോബാഗ് വച്ച് ഇഞ്ചിതൈ നട്ടുവളർത്താവുന്നതേയുള്ളൂ. മാത്രമല്ല ഗ്രോബാഗ് ഇഞ്ചികൃഷിയിൽ ഉത്പാദനം തുലോം കൂടുതൽ തന്നെയാണ് എന്നാണ് പഠനങ്ങൾ സൂചിപ്പിക്കുന്നത്. വർഷം മുഴുവൻ ഇഞ്ചി ലഭിക്കാൻ ഇഞ്ചിത്തൈകൾ എക്കാലവും നടാം എന്ന മേന്മ കൂടിയുണ്ട്.

ഒരടി വ്യാസമുള്ള ഗ്രോബാഗുകളോ ചട്ടികളോ വെള്ളംകെട്ടി നിൽക്കാത്ത മറ്റ് സംഭരണികളോ നടാനായി ഉപയോഗിക്കാം. മതിയായ നീർവാർച്ചയുണ്ടെന്ന് ഉറപ്പുവരുത്തണം. നാൽപത്തിയഞ്ചു ദിവസം പ്രായമായ ഇഞ്ചിതൈകൾ രണ്ടെണ്ണം വീതം ഒരു ബാഗിൽ നടാവുന്നതാണ്. നടുന്ന ചെറുകുഴിയിൽ ട്രൈക്കോഡെർമ സമ്പുഷ്ട കാലിവളം ഇട്ട് കൊടുക്കുന്നത് ഗുണം ചെയ്യും. നട്ടതിനുശേഷം ശീമക്കൊന്ന പോലുള്ള പച്ചിലവളങ്ങൾ കൊണ്ട് പുതയിട്ടു കൊടുക്കാനും ശ്രദ്ധിക്കണം.

മറ്റ് പച്ചക്കറിത്തൈകൾക്ക് നൽകുന്ന പോഷക ലായനികൾ 10-15 ദിവസം ഇടവിട്ട് ആദ്യ നാളുകളിൽ തളിച്ച് കൊടുക്കുകയോ ഒഴിച്ച് കൊടുക്കുകയോ ചെയ്യുന്നത് വളർച്ച മെച്ചപ്പെടുത്തും.

ഇഞ്ചിയുടെ പ്രധാന വളർച്ചാക്കാലം മഴക്കാലം തന്നെ. ആയതിനാൽ ഈ സമയത്ത് പരമാവധി വളർച്ച ത്വരിതപ്പെടുത്തിയാൽ ഉയർന്ന വിളവ് പ്രതീക്ഷിക്കാം. കൃഷി സാഹചര്യവും ഇനവും കണക്കിലെടുത്ത് ആവശ്യമെങ്കിൽ രാസവളങ്ങൾ നൽകാം. പലതരം ജൈവവളങ്ങൾ കൂട്ടിക്കലർത്തി കൊടുക്കുന്നതും പച്ചിലവളങ്ങൾ ധാരാളം ഇട്ടുകൊടുക്കുന്നതും പോഷകകുറവ് പരിഹരിക്കാൻ ഒരു പരിധിവരെ സഹായിക്കും.

ഒരിക്കൽ ഇഞ്ചി നട്ട അതേ ഗ്രോ ബാഗിൽ അടുത്ത വിളയായി ഇഞ്ചിതന്നെ നടുന്നത് ഒഴിവാക്കേണ്ടതാണ്.

രണ്ട് പ്രോട്രേ തൈകൾ വീതം നട്ട ഗ്രോബാഗിൽ നിന്നും ശരാശരി 500 ഗ്രാം മുതൽ ഒരുകിലോ വരെ പച്ച ഇഞ്ചി പ്രതീക്ഷിക്കാം. പരിമിതമായ അളവിൽ നാലുരൂപ നിരക്കിൽ പ്രോട്രേ ഇഞ്ചിതൈകൾ കാർഷിക സർവ്വകലാശാല വിപണന കേന്ദ്രങ്ങളിൽ ലഭ്യമാണ്.