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State committed to agriculture development, says Minister

Call for need-based regional centres of excellence



Minister for Urban Development and Agriculture R. Vaithilingam presenting the 'Best Woman Scientist Award' to D. Vijayalakshmi, Assistant Professor, Crop Physiology, at the 45th Foundation Day and Open and Distance Learning Graduation Day of the Tamil Nadu Agricultural University in Coimbatore on Wednesday. —Photo: S. Siva Saravanan

State Government was committed to agriculture and farmers' development, said Minister for Urban Development and Agriculture R. Vaithilingam at the 45th Foundation Day and Open and Distance Learning Graduation Day at the Tamil Nadu Agricultural University here on Wednesday.

Education and agriculture were the two focus areas of development of the Government. To boost agriculture, the Government had given Rs. 5,500 crore in interest-free loans to farmers. It had fought hard to increase to 148 feet the height of the Mullaiperiyar Dam and distributed Rs. 40 crore worth inputs.

Minister for Municipal Administration S.P. Velumani said that the Government had provided 100 per cent subsidy for small and marginal farmers for installing drip irrigation system and 75 per cent for other farmers. The State Government's initiatives resulted in increase in yield and it getting the Krishi Karman Award. Agriculture Production Commissioner Rajesh Lakhoni asked the agriculture scientists to work hard to ensure doubling paddy and pulses production and tripling millet production.

Tamil Nadu Agricultural University Vice-Chancellor K. Ramasamy said that the Government had sanctioned four new agriculture colleges, which would increase the number of agriculture/horticulture graduates passing out and working for improving production.

He sought need-based regional centres of excellence to take up further research.

Agriculture Director M. Rajendran, Coimbatore Mayor P. Rajkumar and others participated in the function.

Trap crops in insect pest management

Trap crops are the plant stands that are grown to attract insects or other organisms to protect target crops from pest attack. Protection may be achieved either by preventing the pests from reaching the crop or by concentrating them in certain part of the field where they can economically be destroyed.

The principle of trap cropping rests on the fact that virtually all pests show a distinct preference to certain crop stage. Manipulation of stand in time and space so that attractive host plants are offered at critical time in pests and the crop phenology leads to the concentration of the pests at the desired site, the crop.

Farmers are being motivated to utilize trap cropping because of the difficulties in cropping with the pest situations in other ways. Some times the cost of chemical pesticides and the number of treatments required is so high that more economical ways have to be developed, additionally, the pests have often evolved resistance to commonly used pesticides, which requires some alternative control strategies.

Further, motivations to use trap cropping are economical and environmental benefits are often associated with this strategy. Besides, its potential role in improving the environmental soundness, trap cropping techniques may have special preference of conventional agriculture to sustainable farming in developing countries.

Additionally, the increasing sector of organic farming also could exploit this strategy of pest control. Yet another function of trap crop is their use of attracting natural enemies of pest insects to the fields and concentrating them there to enhance naturally occurring biological control`.

The essential features of the trap cropping are that the trap crop must be attractive to the pest then the main crop, it should occupy small area as far as possible and it should be established an early or later or along with the main crop.

The important trap crops commonly used in pest management included, bhendi/okra in cotton to trap bollworms at the ratio of 1:10 and marigold at the boarder of the field. Sesamum is commonly being used as trap crop to attract Diamondback moth in both cabbage and cauliflower. Two rows of sesamum for every 25 rows of cabbage or cauliflower can be planted to trap the pest. In groundnut, castor or sunflower can be used to attract leaf eating caterpillar on the boarder of the field. In tomato marigold or cucumber is commonly used as trap crop for every 15 rows of the main crop to attract tomato fruit borer. In case of field beans, chrysanthamum acts as a trap crop against leaf minor. Marigold is a potential trap crop in potato and rice against nematodes and snails, respectively. To trap corn stalk borer in maize sorghum has been exploited as trap crop. Bihar hairy caterpillar in cowpea can be trapped by planting Gingelly.

Trap cropping has indicated a great benefit interms of economic returns on an average of 10-30 per cent increase in net profits mainly resulting from reduced insecticide use and pest attack. Trap cropping is a useful strategy in the management of several pests in various cropping systems. It offers significant economic and environmental benefits and it can successfully integrated with cultural, biological and chemical control methods.

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Success saga in inland farming



Saseendran, a progressive farmer at Thekkumthara in Kerala's Wayanad district in his hatchery unit. photo: Special arrangement

Farmers in the country usually follow the agricultural practices only after successful practices and inventions set by scientists of government and public sector research institutes and Universities. K. Saseendran, a progressive farmer at Thekkumthara in Kerala's Wayanad district has distinguished himself by setting a

model in conserving the endemic and endangered fish varieties of the district to be emulated even by the government institutes.

Saseendran set up the first, and only, hatchery in the district in 2011 to provide fingerlings of edible and ornamental fish to other farmers. He now sells fingerlings of various species of edible and ornamental fishes. Ornamental fisheries has become a lucrative venture for farmers in the recent times. While the Fisheries department and research institutes keep away from efforts to conserve the endemic and endangered fish wealth of the State, Saseendran, a national award winner in inland fisheries in 2013, has taken the bold initiative to breed and propagate the rare fish varieties. He also bagged the state award for the best inland fish farmer in 2011.

“When I first set up the hatchery, some tribal fishermen brought my notice the dangerous extinction of various species of fish endemic to Wayanad, especially of the River – varieties. They claimed there were nearly 62 species till a decade ago, but the number has now shrunk alarmingly due to the unethical application of pesticides on banana and ginger crops, the two major cash crops in Wayanad”, he says.

At first he was able to collect the breeding stock of only one of the species, locally called Cherumeen (*Channa marulius*), two years ago. Chrumeen grows up to 7 kg a year. He could produce nearly 2,000 fingerlings in a year from the original stock, and started selling to the farmers. This year he also could collect a breeding stock of 200 fingerlings of Varaal (*Channa striatus*), another endangered species of fish. Inspired from the success of Mr. Saseendran, the Fisheries department in Wayanad is now planing to set up an aqua park of endemic and endangered fish varieties of the district, at Pookode Lake at a cost of Rs.20 lakh.

A major issue to faced by the fish farmers of the district is the high cost of fish-feed, which takes up nearly 60 percent of the production cost in fish farming, according to B.K. Sudheerkishan, Assistant Director, Kerala Fisheries Department told The Hindu. Saseendran has successfully developed a low- cost feed made from locally available materials (rice, wheat, millet and Kassava etc) to help reduce the production cost in fish farming.

The Aquaculture Development Authority of India has selected four farmers for a trial plot to cultivate Genetically Improved Farm Tilapia (GIFT)project and Mr. Sasidharan is one among them, Mr. Sudheerkishan, says. His hard work, enthusiasm to learn the new technologies, and the interest to share his experience to novices to enter in to aqua culture make him differ from other farmers, Mr. Sudheerkishan added. Mr Sasidharan also runs a free farm school titled 'Shyam farm school' near his house to impart his knowledge on aqua culture to other

farmers, especially novices to the sector. Saseendran entered in to the venture of inland fish farming when the Kerala state Fisheries Department had launched the People's Fish Culture Programme in 2002. In that year he started fish farming by depositing nearly 150 fingerlings of Cyprinus carp (locally called Chembally), Labeo rohita (rohu), and the common grass carp (Pul meen) in a small pond made on one and a half cent of land.

However he failed in his first stint, primarily due to lack of technical know-how. But he did not give up. The very next year he deposited nearly 200 fingerlings of the same varieties of fish, this time with the help and direction provided by the fisheries department officials. He could harvest nearly 3 quintals of fish — that was his first taste of success. Gradually he started to expand, and now he rears seven species of edible and 14 species of ornamental fishes in 16 ponds spread over his five – acres of land.

“I harvested nearly four tons of edible fishes and sold hundreds of ornamental fishes last year. Marketing is not an issue, as the demand for the fresh water fish is very huge in the hill district of Wayanad”, affirms Saseendran. This year he has purchased one hectare of marshy land near his house, and has constructed a huge pond covering an area of two acres in it, at a cost of Rs.14 lakh.

He feels confident that he can get back the investment within two years. Farmers in Wayanad are taking to inland fish farming for better income, inspired by the increasing number of success stories in the sector. When the Department started 'Matsya Samrudhi' project in 2009 there were only 400 farmers to pick up the venture. But now there are around 4000 farmers ready to try their luck in fish farming. The farming area also has gone up, from 20 to 190 hectares,” Mr. Sudheerkishan said.

Cabinet nod for National Agriculture Market

The Cabinet on Wednesday gave its nod for the setting up of a National Agriculture Market which would require a single licence for market operations, single point of levy of market fee and electronic auction as a mode of price discovery. The single licence will be valid for all farm markets across each State.

The meeting chaired by Prime Minister Narendra Modi also approved a central programme for creating sources of assured irrigation for the agriculture sector by converging several ongoing inter-Ministerial schemes.

How to eat healthy and save the planet

Dieticians find that what's good for the Earth is usually good for the body as well

Dieticians and the food industry are awaiting the U.S. Department of Agriculture's highly anticipated new dietary guidelines by the end of this year with one key question in mind: will they include environmental considerations? The USDA updates its guidelines on what's healthy for Americans to eat and what's not every five years. This year, for the first time, the USDA's advisory panel recommended that those guidelines should also include sustainability. The government agency is being asked to factor in whether or not a food is good for the planet when deciding whether it's healthy.

“It's hard for people to get jazzed up about changing eating habits for a result they'll see 10 years from now,” says Kate Geagan, a registered dietician and author of the book *Go Green, Get Lean*. “But framing it as a more immediate payoff or benefit — in terms of weight loss, health, energy, really focusing on the health benefit overlap of these issues, that's where I think health professionals can really add value to the conversation.” Interested in a diet that's as good for the planet as it is for you? Geagan suggests following these simple guidelines.— © Guardian Newspapers Limited, 2015

EAT MORE OF THIS

Beans, the magical fruit: Packed with protein, fibre and folic acid, beans are available everywhere, are low-fat and filling, and have a relatively small carbon footprint.

Sardines: These little fish are sustainable. They are rich in Omega-3 fatty acids and vitamin D. Not everyone is a sardine fan, but you can sneak them in via tomato sauces and salad dressings.

Organic fruits and vegetables: Many conventionally-grown fruits and vegetables are covered in pesticide residue. Conventional strawberries, for example, are still grown with 1,3-Dichloropropene, which is believed to cause cancer. **Protein-packed vegetables, legumes, nuts and seeds:** Plant protein options that are easy to incorporate into your diet include: lentils, chia seeds (throw them into smoothies, muffins, salad dressings), peanuts, and tofu (opt for organic tofu to ensure that it's made from sustainably sourced soy).

Pasture-raised eggs: Recent research has found that pasture-raised eggs contain more vitamin A and more Omega-3 fatty acids than eggs produced any other way. They also tend to pack more flavour, and enough protein to keep you satiated

through the morning. Eggs are also one of the most climate-friendly sources of animal protein.

Small amounts of high-quality grass-fed beef and dairy: Research has shown that grass-fed beef has measurably more antioxidants and fewer inflammatory fatty acids than grain—fed beef. As for milk from grass—fed cows, it’s higher in alpha—linolenic acid, an Omega—3 fat that reduces inflammation and has been tied to a lower risk of heart disease, stroke and Type 2 diabetes. In both cases, grass feeding dramatically reduces a cow’s environmental impact.

EAT LESS OF THIS

Packaged, highly processed foods: In addition to added sugars and salts, foods packaged in plastic may be adding a serving of harmful chemicals to your midday snack. Disposable plastic packaging also never degrades and has a fairly poor recycling rate, making it bad for the planet.

Bottled water: More water is great for you, but Geagan calls bottled water the “hammer of healthy food”. Citing its sourcing from drought—stricken California and its use of single—use disposable plastic packaging, she argues that bottled water delivers far more negative environmental impacts than health benefits.

Fresh-flown fish: While fresh, locally caught fish can be a great choice, fresh-flown fish is often the least sustainable choice, particularly when it comes to tuna and salmon.

Conventionally raised poultry, pork, beef, or dairy products: Concentrated animal feeding operations have significantly higher carbon and water footprints than their pasture—based counterparts. They also necessitate the need for antibiotics, and negatively impact surrounding land and water. The antibiotics in these food products is a suspected contributor to antibiotic resistance, and CAFO—raised animals also provide fewer nutrients than their pasture—raised counterparts.

Mechanised planters to be supplied free of cost

Efforts have been made for supplying free mechanised planters for transplanting bed nurseries under the ‘kuruvai’ package scheme currently on in the district.

The mechanical transplanter will be made available through the Agricultural Engineering, Co-operative Department, and private agencies, said N. Subbaiyan, District Collector, said.

He said the interested farmers should submit their applications to the Primary Agricultural Cooperative Credit Societies. Details can be had by dialling Regional Joint Registrar of Cooperative Societies, the release added.

Sowing in Telangana higher this year

Despite sluggishness in rainfall in the last week or so, the crop sowings in Telangana were higher than last two years by this time of south west monsoon.

The sowings were taken up over 19.09 lakh hectares with Mahabubnagar accounting for the highest of 7.31 lakh hectares. The State recorded an excess rainfall of 70 per cent over normal since monsoon spread over Telangana on June 13. Agriculture officials expect the operations to pick up in the next few days when rains are expected to pick up. They said the monsoon was active over Telangana in the second and third week of June, but rain occurred only at isolated places in the last week.

Gender-friendly starters for tillers

The Kerala Agricultural University (KAU) has developed a gender-friendly self-starter mechanism for power tillers to ease the operation of the multipurpose farm machine.

The mechanism developed by the R&D wing of Food Security Army (FSA) at the Agricultural Research Station (ARS), Mannuthy, helps in avoiding the cumbersome cranking procedure traditionally used to start tillers.

Power tiller has an important role in the mechanisation of agriculture as it is used for tilling wet land and upland for cultivation of crops, attaching cage wheel or tyre wheel and also trailer at times.

The new starting system enables smooth key in starting of tillers just like a car. It works on a 12 V, 70 AH battery and charging system, and is connected to the control panel, which also includes ignition switch, indicator switch, headlight switch and ammeter.

“Though the majority of the trained labour force is women, they are unable to operate it due to difficulty in operating the cranking system,” said P. Rajendran, KAU Vice Chancellor, after launching the new system.

“This is an important landmark in our efforts to develop gender-friendly farm machinery. Next in line is a remote operated tiller. These machines are bound to revive farming .We also intend to transfer the technology to major tiller

manufacturers such as KAMCO so that it can become a standard part of their products,” the Vice Chancellor explained.

ARS Head U. Jaikumaran said gender friendly machines would create more jobs for women.

The new starting assembly is developed at a moderate cost of Rs.20,000, but the cost can be brought down if multiple units are developed on a commercial basis. The farm machinery service will be offered as custom hiring service, he said.

The mechanism helps in avoiding the cumbersome cranking procedure traditionally used to start tillers.

Project to sell dried fish

Kerala State Coastal Area Development Corporation Limited (KSCADC), a State government private limited company, is set to launch a project for processing and marketing dried fish.

The new product called ‘Drish,’ is prepared hygienically by using solar dryers and packed in conformity with food safety standards, a senior official of the organisation told *The Hindu* .

The project aims at optimum use of fish by making value-added products through innovative post-harvest management, bringing additional income for fisher folk.

It would also help provide employment to self-help groups spread over 200 marine villages in the State.

Agencies such as Society for Assistance to Fisherwomen are involved in the project.

The Corporation also intends to attract new entrepreneurs to fishing sector. KSCADC intends to increase the income of families engaged in fishing and associated activities through a host of measures.

A scheme to provide nutritive fish varieties under the brand name ‘Fish maid’ has been test marketed successfully, according to officials.

The corporation is planning to open 100 ‘fish maid kiosks’ across the State.

‘Fish maid’ brand of products have been developed in coordination with Central Institute of Fisheries Technology (CIFT) under National Agriculture Innovative

Project (NAIP). The technology developed by the institute has been transferred to selected women self-help groups.

Value-added products

The corporation aims at converting about 30 per cent of harvested fish into value added products.

The services of fisher women will be utilised for selling the products at the fish maid outlets. Improvised and hygienic fish processing practices are adopted for making fish maid products. Locally available natural preservatives are utilised in the production process.

Ryots told to take up organic farming

Agriculture Minister Pocharam Srinivas Reddy on Tuesday said going organic was the way forward for farmers in the State, considering the increasing concerns over rising input costs and declining productivity.

At a meeting of agricultural officials from across the 10 districts of Telangana, organised by the Prof. Jayashankar Telangana Agricultural University here, he wanted officials to motivate farmers on the need to grow organic food.

Win-win situation

He said when the movement to go organic picked up, it would mean a win-win situation for farmers and consumers.

“While farmers will get a much higher price for their produce, consumers would benefit from significantly lesser healthcare costs due to consumption of healthy, chemical-free food,” the Minister categorically stated.

The Government of Telangana and Chief Minister K. Chandrasekhar Rao were all for such a movement, he said, pointing out that organic products - be it foodgrain, vegetables or fruits that were free of fertilisers and pesticides would sell like ‘hot cakes’.

Farmers' suicides

Since Independence, a whopping 20 lakh farmers died, amounting to the population of an average district, due to three main reasons, apart from a failure of policy and implementation. The reasons included steeply rising input costs, increased burden of loans from banks and private money-lenders, compounded by natural calamities and unfavourable seasonal conditions.

“We need to address these issues in a comprehensive manner,” Mr. Reddy said, terming the meeting as the beginning.

The Centre’s ‘Paramparagath Krishi Vikas Yojana’ aimed at promoting organic farming in groups of 50 farmers was a good augury of things to come, he said.

He explained that 295 such clusters were coming up in nine districts of Telangana, over a total expanse of 14,750 acres. This would be 50:50 funded by the Centre and State.

Administration decides to appeal to RBI on farm loan repayment



Deputy Commissioner Shikha during a district-level meeting of bankers and Agriculture Department officials in Mysuru on Wednesday.— PHOTO: M.A. SRIRAM

The district administration has decided to plead with the Reserve Bank of India through the Lead Bank (SBM) and the Syndicate Bank (which is part of State Level Bankers committee) to extend the loan repayment period for farmers by two months.

This is to facilitate the farmers to repay the loan amount leisurely without being pressurised.

The administration has also decided to urge private money lenders not to insist on farmers repaying loans and not to charge exorbitant interest for the loan.

It also instructed the private money lenders not to collect house documents or land documents as collateral security for the loan amount and warned them that harassing farmers to repay the loan amount amounted to abetment of suicide.

Chairing a special meeting of banks, the Agriculture Department and other line departments, to discuss steps to prevent incidents of farmers' suicide in the district here on Wednesday, Shikha, Deputy Commissioner of Mysuru, said that workshops would be conducted at the taluk-level to enlighten farmers about various schemes of the government.

An effort would be made at the workshop to instil confidence among farmers to ensure that they would not resort to suicides.

Farmers would be motivated to avail loans only from nationalised or co-operative banks and not from private money lenders.

Earlier the Joint Director of Agriculture M. Mahanteshappa said that harvesting of summer paddy crop and pulses in the district would be carried out in the last week of this month or first week of August.

Farmers would earn a certain income soon after the harvesting, he said adding that if farmers were given two months to repay loans, they could pay the installments and regularise their loan accounts.

Ms. Shikha instructed the JD to convene a meeting with dealers of fertilizers, seeds and other agriculture needs and asked them not to insist on payment right now.

She also directed the JD to ask the dealers not to charge exorbitant rates of interest for seeds or fertilizers. It is the social obligation of the dealers to co-operate with the farmers when they are in distress, she said.

The JD noted that over 7,019 farmers were given crop insurance of Rs. 64 lakh in the district.

The DC instructed the JD to take up a drive to enlighten farmers about the benefits of insuring their crops and ensure that all farmers would hereafter insure their crops compulsorily. Superintendent of Police, Mysuru, Abhinav Khare explained the Karnataka Prohibition of Charging Exorbitant Interest Act, 2004.

He said that the Police Department had surveillance over pawn brokers and private financiers and if they indulged in charging exorbitant interest on loans to their customers particularly farmers, stringent action would be taken against them.

Perumatty says goodbye to industrialisation

Declares itself as State's first agrarian grama panchayat



Perumatty grama panchayat in the district, which won worldwide attention by daring to take on the Coca-Cola company for its excessive groundwater exploitation at Plachimada, is now all set to liberate itself from what it calls corporate exploitation in the garb of industrialisation.

Perumatty, which invited the soft drink major to start its unit and later forced to cancel its licence following public protest, is now declaring itself as the first agrarian grama panchayat of the State by saying goodbye to all kinds of industrial ventures.

A resolution adopted by the panchayat last Saturday asserted that it would no more allow industrial groups to buy land in its jurisdiction.

Talking to *The Hindu*, panchayat president K. Suresh said the local body would remain vigil against contamination of its water resources apart from protecting its farm lands.

“No farmer or individual would be permitted to keep the land in his or her possession uncultivated.

“The panchayat would take over uncultivated land and hand it over on lease to interested farmers.

The lease amount collected would be given to the landowners,” he said.

He said the panchayat would not allow construction of buildings for industrial purposes.

No real estate-based constructions would be permitted in the panchayat area. Bank loans would be provided at nominal interest to women self-help group members to ensure active involvement of women in agricultural activities.

In view of the threats being posed by brick kilns to the local environment, the panchayat has decided not to issue licence to any more brick kilns.

Brick kilns

The existing brick kilns would be closed down and the bricks they already prepared would be handed over to the district unit of Nirmithi Kendra.

To ensure total mechanisation of agricultural activities, youths aged above 18 would be given free training.

The panchayat would also start a sales outlet for agricultural products from its farmers.

No land to be given for industries

To promote agriculture in big way

Saving the sharks before it is too late

The share of sharks in total fish landings has declined by more than 64 per cent from 1985 to 2013 — Photo:Special Arrangement
Sharks, the giants of oceans, are at risk in Indian waters prompting the marine scientists to draw up an action plan to save them.

The Central Marine Fisheries Research Institute (CMFRI), Kochi, has drawn up an action plan — Guidance on National Plan of Action (NPOA) for Sharks in India — in line with the International Plan of Action for conservation and management of sharks, developed by the Food and Agriculture Organisation.

Assessing the fish landing trends, scientists at the CMFRI pointed out that the “the share of sharks in total fish landings has declined by more than 64 per cent from

1985 to 2013.” The “annual shark landings have hovered within the range of 50-70 thousand tonnes,” pointed out the plan.

It is a fact that there has been considerable decline in the shark landings in the country and the species are found in fewer numbers in the coastal waters, said P.U. Zacharia, a scientist of the Institute and one of the authors of the plan.

The authors of the report pointed out that the biological features like “slow growth, large size and longevity, slow turnover of generations, late maturation and production of few (but well-developed) off-springs,” as spelling doom for the sharks.

It is estimated that 160 species of sharks are known to occur in India’s commercial fishing zone. Requiem sharks, Hammer-heads, Threshers, Mackerel sharks, Bamboo sharks and Hound sharks are the major contributors to the commercial fishery. The “low biological productivity makes them vulnerable to fishing, with limited chance for recovery,” the Action plan pointed out.

A. Gopalakrishnan, CMFRI Director, pointed out that sustainable shark fishing was practised in India by artisanal fishermen before the introduction of mechanised fishing, which led to sharks being landed as by-catch.

Later, in the 1990s, targeted shark fishing began when the demand for sharks increased in international markets.

Although there was increase in shark catches initially there has been a consistent decline in the last one decade which has raised serious concern on this resource,” he pointed out.

As a conservation measure 10 shark species have been included in the Schedule I of the Indian Wildlife (Protection) Act. While the trade of shark fins and plate is regulated, a ban has been imposed on shark finning and export/import of shark fins in the country. Yet, strategies to avoid protected or trade-regulated species from capture in directed as well as multispecies fisheries do not exist, pointed our Dr. Gopalakrishnan.

The NPOA Plan calls for strengthening of database on fishery, abundance and biology of sharks, utilisation, market channels and trade, undertaking coordinated, need-specific research and development programmes, improve coordination and consultation between management, research and stakeholder groups and review of existing conservation and management measures and implement improved strategies.

Low dose radiation may cause increase in leukaemia



The Hindu

Scare mongers may use the study and the lay public will not realize that the rise in risk to patients is only minuscule. Photo: K.R. Deepak

Exposure to ionizing radiation at high doses causes cancer. But there is uncertainty at low doses typically received by radiation workers and patients undergoing diagnostic radiation procedures. To reduce this uncertainty, any study must include a very large number of exposed individuals over a long period of time. Such a landmark study of 3,08,297 radiation workers employed in France, the UK and U.S., published online in *The Lancet Haematology*, (June 21, 2015) provided strong evidence of positive association between protracted low-dose radiation exposure and leukaemia.

In the WHO International Agency for Research on Cancer (IARC) coordinated study, they used the radiation dose due to external exposure to individual workers who wore dose measuring devices during their service. The study followed them up to 60 years after exposure. The average annual dose was 1.1 mGy.

The *Nature* on June 30, 2015 stated that the study has now provided the strongest support yet for the idea that long-term exposure to low-dose radiation increases the risk of leukaemia, although the rise is only minuscule.

“The finding will not change existing guidelines on exposure limits for workers in the nuclear and medical industries, because those policies already assume that each additional exposure to low-dose radiation brings with it a slight increase in risk of cancer,” *Nature* added

“The health risk of low-dose radiation is really very tiny, but the public is very concerned,” Bill Morgan told the journal. He heads a systems-biology programmed in low-dose radiation at the Pacific Northwest National Laboratory in Richland, Washington, and chairs the committee on radiation effects at the International Commission on Radiological Protection (ICRP) in Ottawa, Canada.

“It is a solid, unusually large study of individuals exposed to very low doses of ionizing radiation,” *Nature* quoted epidemiologist Jørgen Olsen, director of the Danish Cancer Society Research Center in Copenhagen.

The study drew flak for some of its limitations.

In his comments published on line in *Nature*, Dr Mohan Doss Associate Professor, Fox Chase Cancer Center , U.S., pointed out that the authors did not take into consideration the increase in medical radiation dose (e.g. from CT scans) that occurred during 1944-2005, the period of the study. The annual per capita medical dose increased from 0.25 mSv in the 1960s, 0.5 mSv in 1980, and 3 mSv in 2006.

“They have ignored medical radiation dose, which would be larger than the occupational dose (or be of similar magnitude). Therefore, their conclusion should be dismissed,” he argued.

In an accompanying comment, this writer conceded that Dr Mohan Doss raised a valid point.

“When the absolute magnitudes of doses to individuals are very small, variations in dose components can distort the picture. Medical radiation dose is a variable component over the past decades. To a lesser degree, contribution from natural radiation doses also matters. The variations of this component over time may not be significant. But differences from country to country and those in the same country are considerable,” this writer added

According to United Nations Scientific Committee on the Effects of Atomic Radiation, overall, natural background variation is shown to vary by a factor of 13.

Ideally, the researchers must compute radiation dose for each individual worker. Obviously this is virtually impossible. Conclusions drawn from epidemiological studies involving tiny doses suffer from this inescapable limitation.

The present study questions the existence of a threshold dose. As the absolute risk is very small, it is unnecessary to search for a threshold.

Scare mongers may use the study. A specialist may appreciate the nuances; the lay public will not realize that the rise in risk is only minuscule. For instance, Dr Jørgen Olsen, estimated that each accumulation of 10 mSv of exposure raises a worker's risk of leukaemia by 0.002 per cent.

Thus far, scientists are not able to clearly draw the dose response relation in the low dose region of a few mSv to a few tens of mSv. In any case, this limitation is not serious in view of the low risk. With the available knowledge, the stakeholders which include scientists on either side of the aisle will have to take decisions based on acceptable risk as is the case in any activity.

Excess vitamin A disrupts immune system



The Hindu

Too much Vitamin A shuts down the body's trained immunity, opening door to infections to which we would otherwise be immune, says a new study.

According to the study, excess Vitamin A makes the body 'forget' past infections.

The findings suggest that although Vitamin A supplementation can have profound health benefits when someone is deficient, supplementation of the vitamin above and beyond normal levels may have negative health consequences.

Two different types of Vitamin A are found in the diet. While animal products such as meat, fish, poultry and dairy foods have preformed Vitamin A, plant-based foods such as fruits and vegetables contain the other type — Pro-Vitamin A.

“This study helps to explain the mechanisms of anti-inflammatory effects of vitamin A and by doing so opens the door to identifying novel ways to modulate the immune response and restore its function in situations in which it is dysregulated,” said one of the researchers Mihai Netea from the Radboud University Medical Center in Nijmegen, The Netherlands.

To make this discovery, Netea and colleagues stimulated immune cells, isolated from volunteers, with Vitamin A and saw that the cells produced fewer cytokines, key proteins that help ward off microbes, upon stimulation with various mitogens and antigens.

Furthermore, the cells were also stimulated with various microbial structures, which resulted in long-term activation or training of the cells.

When the same experiments were performed in the presence of vitamin A, the microbial structures were no longer able to activate the immune cells.

The study was published in the Journal of Leukocyte Biology.

Give priority for biodiversity studies, exhorts expert



A procession taken out as part of the centenary celebrations of the Zoological Survey of India organised by its regional centre in Kozhikode on Wednesday.–
Photo: K. RAGESH

Says scientists should influence authorities in decisions on urban development

Scientists should constructively intervene in key urban development decisions as they can better understand the repercussions, conservation biologist and former director of the Kerala Forest Research Institute (KFRI) P.S. Easa has said.

He was delivering the keynote address at the inauguration of the year-long centenary celebrations of the Zoological Survey of India (ZSI) at its Western Ghat Regional Centre in the city on Wednesday.

Talking on the ‘conservational challenges’ faced by ZSI scientists, Dr. Easa, also a member on the National Wildlife Board, said scientists should also be able to point out why a particular endemic species should be protected from development activities.

Only an expert on urban wildlife would be able to understand the devastating repercussions of certain modifications to urban landscape that may lead to the loss of nesting sites of birds and loss of natural areas. Backed by their expertise and convictions, scientists should be able to influence the authorities in crucial decisions on urban development, he said.

Reminding the authorities that it was high time that they included biodiversity studies in their priority area, Dr. Easa said many important commissions, including the Kasturirangan and Gadgil commissions, suffered from lack of scientific information on biodiversity while preparing their reports.

“It is sad that a situation has arisen in the country where even conservation policies are being drafted based on the whims and fancies of politicians,” he said.

The centenary celebrations began with a centenary run flagged-off by District Collector N. Prasanth at the regional centre in the morning.

Students, ZSI staff, and public representatives participated in the run, which was followed by a public function arranged as a curtain raiser for the celebrations. Mayor A.K. Premajam inaugurated the programme. Ms. Premajam called for popularising the ZSI regional centre by undertaking various programmes and activities to reach out to the public.

“It is important that society should come to know about the existence of such an important institution,” she said.

Additional Principal Chief Conservator of Forests P.K. Keshavan, Regional Science Centre project coordinator V.S. Ramachandran, and centre officer in-charge P.M. Sureshan spoke.

Underground farmer



Food down under Gamberini says that this idea could work for arid regions near the sea. They are experimenting with growing lettuce as well. Photo: AFP

In the homeland of pesto, a group of diving enthusiasts have come up with a way of growing basil beneath the sea that could revolutionise crop production in arid coastal areas around the world.

The pungent green herb has long been synonymous with the steep, terraced cliff-sides of Liguria, the northern Italian region known for its spectacular Riviera coastline and for producing one of the world's best-loved pasta sauces.

Those two standout features of the region could now become even more intimately associated thanks to the pioneering efforts of Sergio Gamberini.

A diving nut and specialist in under-water communications, Gamberini has begun growing basil in large plastic spheres anchored to the sea bed 100 metres off shore and eight metres below the surface in an experiment he has dubbed "Nemo's garden".

How is it done?

Having started with a simple plastic ball into which he placed a tub with herb seeds planted in compost, he is now in his fourth season of production from an under-water garden comprised of three "biospheres" which he is allowed to keep in the water for three months a year.

"I chose a typical activity of farmers, and I said 'why not bring it under water?'" he said. "I realised that there was an opportunity to create a new site to grow vegetables."

Evaporation ensures humidity between 80 and 90 percent inside the spheres, the condensation provides the necessary moisture and, even well below the waves, there is enough light in this sunny corner of Europe to ensure the plants themselves regenerate their oxygen supply via photosynthesis.

Having proved the system works, Gamberini's challenge now is to prove that it can produce herbs and vegetables in a cost-efficient way.

"I don't know if it will be the future because we have to prove that it can be self-supportable," he said. "If a pound of lettuce (grown underwater) costs too much, it won't have a future."

What are the advantages?

The primary advantage of underwater growing is the stability of thermal conditions.

"The sea maintains the temperature without a great difference between day and night," said Gianni Fontanesi, who is in charge of running the project.

The plants are thriving in an environment where they are protected from the insects and parasites that would normally be giving a basil grower headaches at this time of year. The results so far have been encouraging, with the spheres producing more densely-leafed plants than is usual. An experiment with lettuce is already underway and mushrooms, tomatoes, tomatoes and green beans will all be given a go this summer.

"In the longer term, this could be a solution for arid regions next to the sea," said Gamberini, who admits there is still much work to be done to work out how to apply his principles on a larger scale.

But he is not the only one to have faith in his idea: under-water basil was one of the 20 food-related innovations chosen to represent Italy at the ongoing World Expo in Milan which has "Feeding the Planet, Energy for Life" as its theme.AFP

Nemo's unusual garden

A group of people in Italy are growing basil, which is a herb, under water. It is most famously used as an ingredient in pesto pasta.

Sergio Gamberini who is a specialist in under-water communications grows basil in large plastic spheres anchored to the sea bed 100 metres off shore and eight metres below the surface.

Darjeeling tea gardens bear the brunt

The tea gardens around Darjeeling seem to have bore the brunt of the climatic disaster that struck the hilly regions of West Bengal on Tuesday night. The landslips and mudslides triggered by the torrential downpour have washed away labour dwelling, cut off internal roads and uprooted tea bushes.

Early reports suggest that most of the deaths are feared to have taken place in and around the tea-growing areas of Mirik. Entire villages have been washed away according to officials of the Darjeeling Tea Association.

"Although the sky was overcast, such a cloud burst was unexpected at this time of year as these regions get heavy rainfall only from July. The rain started at around eight at night and continued for nearly five hours accompanied by frequent

lightning — it was fearsome,” said J.D. Rai the superintendent of a tea estate which makes one of the finest brands of Darjeeling tea.

“Nearly 100 houses have been washed away and three people were killed within our estates,” he said.

In the Tingling subdivision, an entire village along with the dwelling of tea workers were caught in the mudslides and the land slips that came with the downpour. Unconfirmed estimates put the toll at 24 in the tea-growing areas.

Crop loss

The 87 gardens that are certified producers of Darjeeling tea have witnessed a shrinkage in their output due to a variety of factors include the age of the tea bushes. The life of a tea bush is 50 years and 30 per cent of the Indian tea bushes have exceeded their life, making them non responsive to improved farm practices. The shift to organic cultivation has also reduced output. India now produces only around nine million kg of its best known agro export.

Several tea bushes were uprooted and an estimated 150 hectares of tea-land has been damaged in Tuesday’s disaster during a production time which yields some of the finest ‘second flush’ teas. “There has been a huge impact,” the DTA official said on the impact of the rains.

Two of West Bengal’s hydel plants located in the upper reaches of the State have escaped nature’s wrath. Power department officials said that the 44 MW Jaldhaka Hydel Power Generation plant and the 51 MW Rammam Stage II were unaffected.

Helpline for farmers set up

The district administration has set up a farmers’ helpline at the Joint Director of Agriculture office to enable the farmers to information on the agriculture sector. Farmers can also file complaints against pawn brokers at 0821-2442239.

Shikha, Deputy Commissioner of Mysuru, directed the JD, Agriculture, to handle the help desk with the help of a senior official of the department who is well versed with agriculture schemes, government schemes and programmes and other related issues.

All information about agriculture and schemes of the government should be at his fingertips, the DC said and told the JD to give training to few of his staff about handling the helpline and attending to the calls of the farmers.

An official from the Periyapatna said that only two suicides were reported since last 15 years in Periyapatna and he appealed to the district administration to impress upon the government not to ban the tobacco lest many farmers may resort to suicide.

He said that tobacco farmers would get loans without any hassle unlike other farmers and the tobacco farmers did not know how to cultivate other crops too. He said that no other crop other than tobacco can be grown in Periyapatna and few other places which are rainfed.

Rs. 1,861 cr. advanced to farmers last year

K.N. Shivalingaiah, Chief Manager, State Bank of Mysore, has said that over Rs. 7,561 crore were advanced to farmers by banks in Mysuru and that Rs. 1,861 crore were advanced in the last year alone.

Participating at a special meeting convened by the district administration here to chalk out steps to prevent farmers' suicides, Mr. Shivalingaiah said that giving more time to repay loans to farmers is the sole discretion of the RBI and he noted that if there was drought, the RBI would automatically give a direction to all banks to give certain additional time for farmers to repay loans.

But since Mysuru district is not declared as a drought-hit district and there is normal rainfall in the district, RBI had not issued any circular so far, he said and added that an appeal can be made to RBI to extend the loan repayment period of farmers so that they would not be in stress to repay the loan amount.

Shikha, Deputy Commissioner, directed the Lead Bank and as well as the Syndicate Bank, which is a member of the State Level Bank Committee, to write to the RBI seeking additional time for farmers to repay loans in the wake of incidents of farmers committing suicides in many places including Mysuru district.

Except banana, sugarcane and turmeric, for all other crops, one year time will be given for repayment.

Uddanam: research centre needed to promote coconut crop

10 lakh trees grown in 50,000 acres

Uddanam region which is considered to be another Konaseema of Srikakulam district needed a research centre to guide the coconut farmers. The proposal which has been under the discussion of the political circles for the last 10 years has not yet been materialised. As many as 10 lakh coconut trees are being grown in 50,000 acres in 11 mandals such as Kanchili, Kaviti, Mandasa, Itchapuram and others. Many farmers are unable to get more yield with the lack of proper knowledge over the use of pesticides and fertilizers.

The production has reportedly dropped drastically after the devastation of Hud Hud cyclone. Over 2 lakh trees got damaged and the production fell from other trees.

The output which used to be around 5,000 coconuts per acre has gone down to 3,500 with the changes in weather condition.

The farmers are unable to get remunerative price despite the high price of coconuts in the market with the drop in production. A piece of coconut is sold at Rs. 30 in the market for the last three months.

The locals strongly urged the State government to establish an exclusive research centre in Uddanam so that they would scientific guidance from experts and scientists.

A few scientists from Ambajipeta of Konaseema come here occasionally to study

the crop pattern here. “Kerala government gives utmost priority to research and support the coconut farmers. That is why coconut cultivation has become very lucrative there. We hope that the State government would come out with such initiatives to promote coconut farming in Uddanam region,” said A. Krishnam Naidu, a farmer of Mandasa.

Promotion of by-products is also required for the Uddanam region. According to experts, coconut is highly nutritious and rich in fibre, vitamins, and minerals. It is classified as a ‘functional food’ because it provides many health benefits beyond its nutritional content. Coconut oil is of special interest because it possesses healing properties far beyond that of any other dietary oil and is extensively used in traditional medicines.

Coir which is a natural fibre extracted from the husk of coconut is useful for the production of floor mats, doormats, brushes. Many small-scale industries can be promoted with the proper use of coir which is now sold to traders at throwaway prices.

As many as 10 lakh coconut trees are being grown in 50,000 acres in 11 mandals such as Kanchili, Kaviti, Mandasa, Itchapuram and others

Are you monsoon-ready?

Much-awaited monsoon is here or just round the corner in some places. With rains come pleasant weather as well as a plenty of woes – road blocks, germs and mosquitoes to list a few. So, how to stay fit during the rains? Here are some tips.



When the heaven opens up It’s okay to get drenched. But be aware of how to avoid falling ill. Photo: Akhilesh Kumar

The torturous heat finally comes to an end with the first showers hitting the ground. We rejoice as the grand monsoons arrive: Splashing in puddles, sailing

paper boats, a cup of hot chocolate indoors... Sigh! We certainly share some fond memories with this special Indian season. But wait! Not all is rosy. Rains also bring some memories which truly make us **cringe** : the never-ending traffic and road blocks, soaking shoes and socks, colds and flu... and mosquitoes! So amidst all this, how do you ensure regular attendance at school during the monsoon season?

Worry not, for here are some tips to ensure you stay monsoon-ready as well as monsoon-fit.

1. **Stocking up on the rain gear:** It is best to have all the rain-proof equipment ready before it begins to pour in full **gusto** . Get a good quality raincoat, umbrella and boots. Do not get distracted by what character your monsoon gear flaunts, but ensure that it is good enough to keep you dry.

2. **Protecting school things:** Your school notebooks as well as textbooks can get soaked in the rains. Put them into a plastic bag before putting them in your bag, this will protect them from spoiling.

3. **Drenching first-aid :** We love to get drenched and to play outdoors in the rains. While this is okay at times, doing it frequently could make you fall ill. Ensure that you dry yourself and change your clothes as soon as possible, if you get drenched in the rains.

4. **Eating right :** Monsoons are a time when food and water can get contaminated easily, making us prone to falling sick. So it is important that you stick to home-made food, and steer clear of anything bought from outside, especially street food. This means saying no to paani-puris and chaat from the street vendor until the rains are over.

5. **Being germ-free:** Germs travel quickly in the rains because of the water all around. Hence, sanitising, or keeping oneself clean and disinfected becomes a priority. You can do this by bathing in warm water with disinfectants added to it. Mosquitoes too can be a great nuisance during this season. Hence, be armed with a mosquito-repellent to keep yourself safe.

6. **Building immunity :** Immunity is the body's power to keep diseases away. As germs and diseases are on the rise during monsoons, it is important that you eat foods rich in nutrients, especially Vitamin C, such as oranges, papayas and tomatoes. Also, keep away from junk foods and opt for home-cooked stuff. This shall not only ensure nutritious food, but also the prevention of stomach-related problems which are common in the rains.

7. **Getting adequate activity and sleep:** Playing outside might not be a possibility during the rains. For such times, it is best that you engage in indoor games or activities with your friends. This will ensure that you safely enjoy the monsoon season.

So just, sit back, relax, and enjoy the monsoons as everything around you takes on a beautiful green hue.

From ‘per acre’ to ‘per drop’

The CACP report has recommended metering of electricity and water used in irrigation alongside fixing of quantitative ceilings on a per-hectare basis.



Commission for Agricultural Costs and Prices (CACP), in its Kharif Crops report has shown that the average Punjab farmer uses as much as 5,337 litres of water from irrigation to produce one kg of rice.

Prime Minister [Narendra Modi](#), on Sunday, said India needs a “second” Green Revolution. But unlike the “first” one that was centred in North-West India — basically Punjab, Haryana and western Uttar Pradesh — the cradle of the next Green Revolution will have to be Eastern India, covering east UP, Bihar, Jharkhand, Odisha, West Bengal and Assam.

The main reason for this — although Modi did not specifically allude to it — is water availability.

The Commission for Agricultural Costs and Prices (CACP), in its latest Price Policy for Kharif Crops report for 2015-16, has shown that the average Punjab farmer uses as much as 5,337 litres of water from irrigation to produce one kg of rice. As opposed to this, the irrigation requirement is just 2,605 litres for every kg of rice in West Bengal. Paddy farmers in Assam, Bihar and Odisha — besides Karnataka and Andhra Pradesh — are also more water-efficient relative to their

Punjab and Haryana counterparts (see chart).

Much of this has to do with policies that encourage inefficiency in domestic resource use. Paddy yields in Punjab, at 5.8 tonnes per hectare, may be higher than the 4.1 tonnes for West Bengal or the all-India average of 3.6 tonnes. But the most efficient state in terms of land productivity isn't necessarily the most efficient with regard to use of the other important factor of production: water.

Punjab receives hardly 40 per cent of the monsoon rainfall that West Bengal, Bihar or Odisha get and just over a quarter of Assam's seasonal average. Yet its farmers grow paddy. And they do mainly by drawing groundwater, that too during the summer months when evaporation rates are high as well.

	Irrigation requirement*
West Bengal	2,605
Karnataka	2,797
Assam	2,783
Andhra Pradesh	3,145
Bihar	3,178
Tamil Nadu	3,345
All-India	3,875
Chhattisgarh	4,197
Odisha	4,219
Haryana	4,232
Uttar Pradesh	4,564
Punjab	5,337

**Litres of water per kg of rice.*

“Rice as a crop is clearly not suited for Punjab. The state, in fact, used to traditionally grow makka (maize) and sarson (mustard), which it no longer does. Today, given the increasing scarcity of water and depleting of aquifers, the focus has to be more crop not just per acre of land, but also per drop of water,” says Ashok Vishandas, chairman, CACP. That would mean promoting rice cultivation more in states (read, eastern India) where water is relatively abundant.

The CACP report has recommended metering of electricity and water used in irrigation alongside fixing of quantitative ceilings on a per-hectare basis. Farmers who use less water/electricity than the prescribed ceilings may be rewarded through cash incentives equivalent to the unused units valued at the appropriate market rates. This would encourage farmers to go in for drip irrigation, direct-seeded rice production and other such practices, leading to improved water use efficiency in agriculture.

‘Mulching’ to reduce water and chemical consumption

Mulching basically involves application of a protective layer of material to the field soil surface just after sowing any crop.



Amarjit Singh employing mulching in his sugarcane-urad intercropped field.

After sowing turmeric around late-May/early-June, Avtar Singh covers his entire field with a 3-4 inch-thick layer of paddy straw. “I do it so that my crop and the soil get proper shade from direct sunlight,” says this farmer from Mullanpur in Mohali district of Punjab, while referring to a practice known as ‘mulching’.

But wouldn’t having such a thick cover hinder germination? “On the contrary, germination is advanced by 10 days when compared to the non-mulched field, while giving me at least 10 per cent more yield,” claims Avtar.

Amarjit Singh of Gharuan village in the same district also does mulching in his sugarcane-garlic intercropped field, using 4-5 tonnes of paddy straw to cover one acre with the help of 5-6 labourers in a day. “Mulching requires extra labour, but it does wonders by improving soil health and saving water. And it needs to be done only once, at the time of sowing,” he notes.

Mulching basically involves application of a protective layer of material to the field soil surface just after sowing any crop. The material could be organic and biodegradable (paddy straw, sugarcane bark, dry grass, trees leaves and even newspaper) or inorganic and non biodegradable such as polythene sheets.

According to GS Butter, Head of Agronomy at Punjab Agricultural University (PAU) in Ludhiana, mulching is very effective for pest management and disease control.

“Weed seedlings cannot survive under the mulch, which also means not having to use chemical weedicides. Besides, mulching reduces evaporation from the soil bed. This not only brings down the frequency of irrigation, but also protects the soil from erosion,” he explains. Surjit Singh, a retired PAU scientist, points out

that biodegradable mulches like dry paddy straw contain 50-70 per cent nutrients that slowly decompose in the soil, enhancing its fertility even without using fertilisers. “Mulching creates an ideal environment for earthworms and other beneficial organisms to grow on the soil. We have been recommended mulching for turmeric, potatoes, sugarcane, melons and all types of vegetables,” he adds.

Sadly though, only a few hundred out of Punjab’s 12 lakh-odd farmers practice mulching. A state with the country’s highest average fertilizer and pesticide usage, apart from 75 per cent of its area under the ‘dark zone’ signifying severe groundwater scarcity, ought to be paying more attention to such environment-friendly practices.

Punjab, moreover, produces an estimated 38 million tonnes of straw annually, over half of which is from paddy. While wheat straw is used as cattle feed, there is no such use for paddy straw. About 80 per cent of the latter — some 16 million tonnes — is simply burnt in the fields after harvesting to clear the land for the next sowing. This abundant straw can potentially be used by every farmer for mulching, thereby addressing a major source of air pollution in the state.

“Unfortunately, farmers here want everything the easy way. Rather than putting some extra labour in utilising paddy straw for mulching, they prefer burning it,” observes Surjit Singh. Amarjit Singh from Char Ke village in Jalandhar says that crops normally require irrigation every second day during the summer months. But with mulching, the watering requirement is only after 7-10 days, depending on the crop. “There are hardly any weeds and pests in my fields and nor is there need really for using chemical fertilisers,” says this farmer, who uses sugarcane bark for mulching in his four-acre field where he grows sugarcane inter-cropped with ‘ma-ki-dal’ (i.e. urad or black gram). At the Punjab government’s Centre of Excellence for Vegetables in Kartarpur near Jalandhar, set up under an Indo-Israel project, scientists are showcasing vegetable cultivation using polythene sheets for mulching. “We use 30 micron sheets to cover the entire fields. Even the open space between the bed rows is covered in order to control weeds. The vegetable seedlings are transplanted in the soil through holes in the sheet that are a few inches apart to maintain plant-to-plant distance,” says Daljeet Singh, who heads the Centre. The sheets, he informs, would cost Rs 12,000-13,000 per acre and can be used in two or more seasons. The polythene mulch enhances crop yields by keeping the soil warm in winters and providing much-needed moisture to the plant in the summer. “We are growing the best-quality tomatoes, brinjal, capsicum, chilly, cucumber, bitter gourd and round gourd under plastic mulch at this centre,” he adds.

Sources of vitamin D for vegetarians

Weak muscles and poor bone density are some of the symptoms of vitamin D deficiency. But there are chances that lack of this vitamin can cause asthma in children, cognitive impairment at an older age, intolerance to glucose and multiple sclerosis.

Quite serious illnesses, but they can be prevented. However, the rules differ for vegetarians. What are the healthy vegetarian sources of vitamin D? Let's find out.

Recommended daily allowance for vitamin D

For those between 1 - 70 years, the daily allowance is 15 micrograms, that is, 600 International Unit (IU).

For those older than 70 years, it is recommended to have 800 IU daily that equals to 20 microgram.

Soy products:

Soy products like tofu and soy chunks are a healthy source of vitamin D. These products are easily available at a supermarket. Tofu may be a new ingredient for some, but Indians have been using soy chunks for a long time.

Fortified cereals:

Oatmeals and breakfast cereals are fortified with different vitamins. Check the label to ensure that you are getting the right amount of vitamin D in your body.

Mushrooms:

You can eat mushrooms as starters or prepare a side dish for dinner; mushrooms are a favourite with the kids. This goes for non vegetarians too. If your child makes a fuss about eating, then try some delicious mushroom preparations.

Sunlight:

Science textbooks highlight this fact - sunlight is the biggest source of Vitamin D. But remember to bask in the sun for 10 -15 minutes before 8am and at dusk. Beyond that you are asking for trouble, you don't want skin ailments to plague your skin.

Fruits:

Most fruits lack vitamin D with the exception of oranges. A glass of orange juice is rich in calcium and vitamin D.

Fortified margarine:

Word of caution: Use margarine like a miser, large portions of margarine can be unhealthy. Before purchase, check if the margarine is fortified with vitamin D.

Alternative milk:

Opt for alternative milk like soy, rice and coconut. Most mothers use coconut and rice milk with food, but what about soy? Dairy products like yogurt are now made from soy milk.

Best vegetarian sources of protein

Perhaps one of the most neglected meal components - Protein is the reason behind muscle regeneration, performance, and upkeep.

Without it, you will find it impossible to get fitter. Animal protein helps maintain a well-balanced diet for most non-vegetarians. But what about the vegetarians? Does one really need to switch meal preferences to gain the maximum protein punch? Not at all. Today we bring you the best vegetarian sources of protein that will help you gain muscle tone and maintain good nutrition. Read on...

Whole grains: Although a fine line between carbs, cereal and protein - whole grains like quinoa and barley are excellent sources of protein. At approximately 18gms of protein per cup of cooked quinoa, this wonder grain is one of the best vegetarian sources of protein. Unfortunately, quinoa isn't easily available in India, since it's a South American crop. However, some premium stores do stock it. Failing that, barley or jowar and other whole grains are also sufficient vegetarian sources of protein.

Soy: A wonderfully versatile ingredient, soy in all its shapes and forms is a great protein source for vegetarians. Drink soy milk, stir in tofu with your salads, or simply munch on soy nuts. You'll find that soy products can be roped in with just about any meal or snack - from vegetarian biryanis to light noon-time salads...Even mid-evening beverages. One cup of tofu contains approx. 18-20gms of protein. Most packaged tofu and soy milk is fortified with even more nutrients that would serve a vegetarian well.

Nuts and seeds: These are protein sources that even non-vegetarians can't ignore. Nuts like almonds, peanuts, walnuts and seeds like flax, sesame, sunflower, pumpkin are protein and energy powerhouses. However, nuts are also high in fat, so munch on the side of caution. You can even make your own homemade nut

butters by simply grinding the nuts of your choice with a dash of olive oil and some more flavourers.

Sprouts: Although technically, sprouts come under the beans, legumes and lentils category in vegetarian protein sources, they deserve a special mention. You can sprout already healthy ingredients like alfalfa, mung beans, chickpeas, peas, and soybeans. These sprouts are highly nutritious and rich in protein. Eat them raw with salads, or mix them in with a spicy, hearty dish - either way, your day's protein requirements can be sufficiently met with these wonder sprouts. Do remember that for people with acidity, sprouts aren't the best protein sources.

Beans and lentils: Chalk one up for Indian cuisines, because our diets are already rich in these hearty vegetarian protein sources. Whether it's the ever-loved Rajma Chawal or the various East coast beans and lentil curries with kokam and tamarind, beans and lentils are an intrinsic part of our food culture. And rightly so. One cup of beans (kidney, black, red) contains approximately 15gms of protein. These do not, however, perform as optimally as dairy and soy sources of protein. Therefore, vegetarians must still take care to include all the other protein sources mentioned here.

Dairy: Dairy has received some bad press recently (Re: Lactose intolerance being more common than we think). However, if you do not have any digestion problems or adverse reactions to natural whey protein and simple plain yogurt, we say give it a try. Whey protein is simply the leftover residue from the cheese-making, paneer-making process. Resort to artificial (closest to natural state) whey protein only if you aren't getting enough protein in your daily diet. Yogurt is easier to digest than milk, and is a great protein source for vegetarians.

Drink cranberry juice to keep heart disease, diabetes at bay

A new study has revealed that cranberry juice may help protect against heart disease and diabetes risk factors.

As per the study, drinking low-calorie cranberry juice cocktail may help lower the risk of chronic diseases that rank among the leading causes of death worldwide, including heart disease, diabetes and stroke.

The finding shows that cranberries provide a rich source of protective compounds, called polyphenols, which support our body's natural defenses and help us achieve a balanced lifestyle to improve health.

Red grapes and wine help to beat depression



Red grapes and wine help to beat depression (Getty Images)

A new study has found that red grapes and wine can help ease depression.

University of South Carolina School of Medicine's study found that resveratrol, a natural anti-inflammatory agent found in the skin of red grapes, can prevent inflammation as well as depression-related behaviors in rodents exposed to a social stress.

Susan K. Wood said that the research is very relevant to today's society because it investigates potential treatments for people with an increased susceptibility to [depression](#) and related disorders that arise due to social stress.

Wood added they hope their findings will encourage scientists who are running clinical trials to test the effectiveness of natural anti-inflammatory agents on depression, which is currently an understudied area.

Resveratrol appears to knock down inflammation throughout the body, said researcher Julie Finnell, adding that they found that administering resveratrol blocks the inflammation normally seen in animals undergoing the bullying [stress](#) and brings it to control levels.

In addition to being naturally present in the skin of red grapes and in red wine, resveratrol is also sold as supplement. Studies have shown that the natural agent might be responsible for red wine's ability to prevent blood vessel damage and reduce LDL cholesterol, and experiments using high doses of resveratrol in animals have suggested it might help protect from obesity and diabetes.

THE HINDU BusinessLine

Scorching, a worry for coconut growers in coastal Karnataka

Crop scientists blame it on salt spray carried by sea breeze, but say no cause for concern



Scorched leaves of coconut plants in Kasaragod of Kerala

Mangaluru, July 1:

Coconut and other plants along coastal Karnataka and Kerala are now showing signs of scorching.

However, allaying fears of a major loss in crops such as coconut, the Kasaragod-based Central Plantation Crops Research Institute (CPCRI) has said an excess of salt from the sea breeze are deposited on the leaves and damaging them.

However, coconut growers along the seashore fear production loss of around 30 per cent.

KB Hebbar, Head (Plant Physiology, Biochemistry and Post Harvest Technology) at CPCRI, said that this phenomenon was due to high concentration of salt (salt spray) deposit on plants along the coast.

There were heavy winds and a little rain accompanying it during the second and third weeks of June this year compared to the corresponding period of 2014.

P Chowdappa, Director of CPCRI, told *BusinessLine* that the rainfall was around 1000 mm during June 2014 along the west coast.

However, this year the coast witnessed only 660 mm of rainfall.

The wind-speed was three times more compared to the previous year. Hebbar said

that storms with high wind and low rainfall are likely to cause high salt accumulation on plants growing in proximity to the sea.

Due to the lack of sufficient amount of rainfall, leaves do not have an opportunity to shed the salt leading to browning, burning and necrosis (death of cell or tissue).

He said that necrosis was more in plants growing near the seashore. Plants such as coconut, citrus, guava, mango, pineapple, cashew, sapota, areca nut are moderately tolerant to this. The plants in which necrosis is seen in whole foliage may die within a few days.

Those plants with a few green leaves may recover slowly, he said. Chowdappa said the situation is not alarming in the case of coconut plants.

Manohar Shetty, Secretary of the Dakshina Kannada unit of Karnataka Rajya Raitha Sangha, said that the scorching of coconut plants is seen along the coastline from Mangaluru to Udupi. There could be a yield loss of around 30 per cent in those plants because of this. However, he said scorching was not seen in the interior of these districts.

‘Over 2,000 FCI depots to go online by March next’

New Delhi, July 1:

The Centre announced the establishment of an online system here on Wednesday to automate operations across 2,000 Food Corporation of India (FCI) depots in a bid to curtail foodgrain losses during storage.

FCI is the country’s nodal agency for procurement and distribution of foodgrains through the public distribution system and has been taken to task for numerous for spoilage and losses. “The government has taken an important initiative to implement online system across all food storage depots of FCI in the country. All the depots will have all their operation online by March, 2016,” said Union Food Minister Ram Vilas Paswan after releasing a logo for the initiative.

The system is likely to be instituted by next March and FCI has invited tenders from private agencies to participate in the project, he added. The project envisages real-time monitoring of operations and timely reporting of data, besides the facilitation of automation in processes and efficiency in foodgrain distribution.

Currently, most of FCI’s operations are conducted manually. A pilot project is underway in a few depots in Andhra Pradesh and the software has already been developed.

Corporates stay away from coconut oil trade



Kochi, July 1:

Coconut oil prices continued to decline with the prices registering a fall of nearly Rs. 700 a quintal over a period of one week.

According to Cochin Oil Merchants Association (COMA), the market has started falling and the trend is likely to continue till the prices reaches at a level of Rs. 10,000.

The drop in the last two days alone was nearly Rs. 200, Thalath Mahmood, Director, COMA, said. Prices in Kerala are at Rs. 11,200 a quintal and in Tamil Nadu it came down to Rs. 10,500.

Copra prices also witnessed the downward trend with prices quoting at Rs. 7,600 a quintal in Kerala and Rs. 7,500 in Tamil Nadu.

The drop in prices, however, have not enthused corporates or upcountry buyers as they are still staying away from the market anticipating further correction in prices, he said.

Meanwhile the onset of Monsoon has affected copra arrivals from Lakshadweep to Kerala, as it hampered the cargo movement in traditional Dhows due to rough seas.

Traders now have to depend on the availability of ships to unload the cargo either at Kochi or at Mangaluru, he added.

Rice exports to Nigeria may take a hit on currency woes



Year	Nigeria		Total	
	Quantity (lakh tonnes)	Value (₹ Crore)	Quantity (lakh tonnes)	Value (₹ Crore)
2014-15	3.3	796	82.74	20428
2013-14	1.92	467	71.33	17749
2012-13	8.13	1847	66.87	14448

Source: DGCIIS

Bengaluru, July 1:

Non-basmati rice exporters fear that the currency crisis in Nigeria could pull down shipments of the grain by up to a tenth this year. Nigeria, one of the big importers of Indian non-basmati rice in Africa, recently stopped dollar sales to importers of rice and other commodities in the country, to protect its dwindling forex reserves and boost domestic cereal production.

“There are confusing signals from Nigeria and shipments have slowed down. In fact, the Nigerian move on forex sale to exporters will affect rice shipments of all origin. We expect it could impact our overall shipments by about 10 per cent this year,” said BV Krishna Rao, Managing Director of Pattabhi Agro Foods, a large exporter.

Nigeria is one of the largest buyers of par-boiled rice and it is estimated that Indian exporters account for close to half of the 2.5 million tonnes that it imports. The bulk of the Indian rice sold to Nigeria is through global traders such as Platinum Corp and Louis Dreyfus. Some shipments are routed to Nigeria through countries such as Benin.

A fall in the local currency, niara against the dollar, along with the sharp decline in crude oil prices and the change in Government have impacted rice imports. However, payments have not been hit as Indian exporters route their shipments through global traders.

The new government in Nigeria is yet to approve rice imports. “It is [only] a matter of time before they open up. The stocks are down and they’ll have to import. Ultimately the demand will come up,” an official at a trading house said. Back home, the drop in demand from countries such as Nigeria has not impacted paddy prices as the Government has procured more crop this year.