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Here comes the ‘Agribot’

P.S.V. Kisshann shows a picture of the prototype of ‘Agribot’ in Hyderabad on Friday. — Photo: Nagara Gopal

From the last 15 days, 26-year-old P. S. V. Kisshann has been sitting tight. Having filed a patent for an agricultural robot he designed and created, the founder of Innovators of India, a start-up, is banking on getting the patent for his innovation, which he believes will ease the work of farmers while tilling their lands.

A B. Tech (mechanical) graduate from the Gokaraju Rangaraju Institute of Engineering Technology (GRIET) here, Kisshann’s love for robotics gave him the idea to build the ‘Agribot’. “In Japan, people have robots to serve tea. I wanted to do something more helpful, and making work easier for farmers is one of the best ways to help society, given how important agriculture is to us,” he said.

The ‘Agribot’ can plough the field, water it and sow seeds for a fixed period of time, with the help of a timer. “These are the basic functions with which I created the machine. Recently I also added another feature that predicts weather as well,” said Kisshann, who is passionate about robotics, and got the idea to build the machine about four years ago.

Kisshann took inputs from a relative who is a farmer in Vijayawada and other farmers in the latter’s village to find out the problems they face in

their fields. “I realised that it takes them half a day to just plough the field. My ‘Agribot’ can do the same in just half an hour. Also, you can simply set a time in it to do a particular job,” he explained.

All-terrain wheels

The ‘Agribot’also faced hiccups before the final model was tested and its design sent to acquire patents. Initially, the first prototype of the machine was not able to move freely on some soils. Kisshann then added all-terrain wheels to take care of that problem. “Now it can move on any kind soil. We tested it on eight types before the final design was out,” he mentioned.

The 26-year old also plans to show his innovation to both the Telangana and Andhra Pradesh governments. Once patented, the price of the machine will be around Rs.1.2 lakh, said Kisshann. “I met A.P. Chief Minister N. Chandrababu Naidu earlier this year and discussed my ideas about it. Once I get the patent I will decide what to do,” said Kisshann.

To build the ‘Agribot’, all the parts were bought locally. Had the machine needed any humanoid features, then they would have had to be imported from Japan. Given his interest in robotics, Kisshann also started the ‘Club of Robotics’, his second start-up in 2009, to train students and conduct research in robotics.

With lemon prices doubling, Villiseri farmers are a happy lot

They ask for infrastructure facility to store lemons

S. Mathiyazhagan, Assistant Director of Agriculture, Quality control, inspecting a lemon grove at Villiseri Village in Kovilpatti taluk.

Now, lemon farmers are a happy lot following a healthy market trend. Villiseri village in Kovilpatti taluk is known for cultivation of lemon fruit and farmers are largely dependent on it. Though other crops are raised seasonally, lemon tends to be a promising crop for this village. Around 150 farmers are engaged in raising this crop on 500 acres at Villiseri, K. Balamurugan, a progressive farmer, who owns a lemon grove at this village, said on Friday.

Normally during this season, a kilogram of lemon would fetch Rs.20, but now its market price has doubled at Rs.40. Since lemon production in Andhra Pradesh and Bijapur in Karnataka was down considerably this year owing to lack of rainfall, lemons produced at Villiseri commanded a better market price much to the benefit of the farmers here. For many years, the Villiseri farmers created a market base in Kerala, where stakeholders were also relying largely on Andhra Pradesh and Karnataka.

He said PKM-I crop variety was cultivated on the red soil with the aid of well irrigation system. “Around 16 to 20 lemons weighed one kilogram,” he said. For irrigation, water from 120 wells at Villiseri was drawn. Only organic manure was applied. The lemon fruit could be grown in a period of 150 days.

Next to Puliayangudi, which is known as ‘lemon city’ in Tirunelveli district, lemon was being cultivated considerably at Villiseri among the southern districts of Tamil Nadu, Mr. Balamurugan told *The Hindu* .

The traditional cultivation of lemon has improved the prospects of many in Villiseri. A successful and consistent record in this crop cultivation benefitted the farmers who helped their children study professional courses. Around 250 engineers from this village are working in 18 different countries abroad, now.

Moreover, the villagers of Villiseri follow a tradition and principle that lands owned by them would not be allowed to be used for non-agricultural activities, another farmer A. Balakrishnan said. He said every piece of land was cultivable and no land has been left fallow here. But, he expressed concern over lack of infrastructure facility for storing lemons, which could be marketed when demand for the fruit was high. Assistant Director of Agriculture S. Mathiazhagan, (Quality Control), who inspected the lemon grove, instructed the farmers to apply fertilizers at regular intervals.

Young scientists showcase talent

The team from Government Higher Secondary School, Meenangadi, had eight minutes to make their presentation on roads and climate change. The team leader contended that tarred roads had a prominent role to play in the increase in atmospheric temperature as they absorbed more heat.

The team contrasted this with concrete roads and those with interlocking tiles. It also suggested that white paint combined with titanium dioxide would help offset this increase. A two-minute interaction with the judges followed.

The team from St. Joseph's Anglo-Indian Girls Higher Secondary School, Kozhikode, focused on changes in breeding aspects of the black-crowned night heron and the little cormorant, while the boys from Government Higher Secondary School, Munderi, focussed on the impact of climate change in agriculture in the Munderi wetlands in Kannur district.

These and 42 other presentations by students from schools across the State comprise the senior category (14-17 years) at the two-day 23rd National Children's Science Congress (Kerala) being held at Mar Ivanios Vidya Nagar by the Kerala State Council for Science, Technology and Environment. As many as 24 teams are taking part in the junior segment (10-14 years).

Suresh Das, executive vice president, Kerala State Council for Science, Technology, and Environment inaugurated the congress.

The theme of the congress was 'Understanding Weather and Climate.'

C.P. Aravindakshan, member, State organising committee of the NCSC, read out Chief Minister Oommen Chandy's message on the occasion.

The State government, Mr. Chandy said, was committed to doing all to promote the younger generation. The science congress aimed at developing a love for science and service among the students, the Chief Minister's message read.

RVG Menon, chairman, State academic committee of the NCSC, presided over the function. The projects are analysed for their 'smart' approach – they should be specific, measurable, appropriate, realistic and time-bound. Of the 289 projects presented at the district level across Kerala, 69 were selected for the State meet. Of these, 16 will be selected for the National Children's Science Congress to be held in Chandigarh from December 27 to 31.

Projects selected for the State and the national meets are eligible for grace marks in the class 10 and 12 examinations.

They are also eligible to participate in the State Science Congress to be held in January and the National Science Congress.

The projects selected for the National Children's Science Congress will be announced at 3 p.m. on Saturday.

Rs. 8 cr. financial assistance distributed to farmers

Union Bank of India general manager K. Chandrashekhar has called upon the farming community to overcome crisis in the farm sector due to prevailing drought by using latest technology and availing loans from banks.

The UBI general manager was participating in the Kisan Mela organised in Karimngar town on Friday. On this occasion, the bank distributed financial assistance of Rs. 8 crore to farmers, women SHGs, beneficiaries of Mudra, and other welfare schemes.

Speaking on the occasion, he said that the farmers of Karnataka were earning more than Rs. 1 lakh per month by taking up cultivation in poly-house. He urged the farmers to utilise the opportunity of using the poly-house provided by the Telangana State government for rich reaps. He also appreciated the farmers of Karimnagar, who had emerged as hybrid seed supplier for the entire country. Karimnagar Dairy chairman Ch Rajeshwara Rao explained the importance of taking up dairy units along with agriculture to earn more profits .

He revives farming in effluent-affected area

M.P. Marimuthu in his coconut farm at Morattupalayam in Tirupur district. —Photo: R. VIMAL KUMAR

M.P. Marimuthu (75), who was one among the many hundreds of farmers on the banks of River Noyyal affected by the indiscriminate effluent discharge of Tirupur dyeing units, has defied all odds to revive farming on his 24-acre plot after a 20-year gap.

The plot situated at Morattupalayam hamlet, which was once a prosperous tract for cotton and vegetables, has been lying barren after the soil health was irreparably damaged due to the intensity of the pollution that stunted the crop growth.

It should be noted that this situation prompted the farmers along the Noyyal banks to approach Madras High Court seeking compensation and criminal prosecution against the dyeing units in the mid-1990s. The court ordered closure of all dyeing and bleaching units in Tirupur in 2011, and also the compensation. Unlike many farmers who lost hope of reviving agriculture on the highly polluted soil and joined textile units for employment after their livelihood got affected, Mr. Marimuthu decided to make an attempt for reclamation of the land to raise coconut using novel technique.

With the rich experience got from the farm and also the technical inputs from Agriculture Department officials, he planted coconuts which have now grown to a considerable size.

“I first applied gypsum all over and subsequently grown green manure crops before it was ploughed in-situ to improve soil health. Then, dug pits and filled it with nutrient-rich soil brought from elsewhere. Six-inch

diameter pipes were then inserted and saplings planted inside it. Drip irrigation is used to water it," he explained the 'secret' to *The Hindu* .

K. Arasappan, Assistant Director of Agriculture, pointed out that the success of Mr. Marimuthu has started resonating as some more farmers in the region had started the initial steps for raising crops using same methodology.

Mr. Marimuthu himself plans to expand cultivation area.

Infosys Foundation donates Rs. 56 cr. to promote research

International Institute for Information Technology and Indian Institute of Science in the city are among the eight leading academic institutions selected by Infosys Foundation to set up faculty chairs.

The philanthropic arm of India's second largest software exporter has 11 faculty chairs in eight leading academic institutes across India to promote research. These chairs also provide advanced training and support student and faculty exchange programmes in India and abroad.

The foundation has donated grants to the tune of Rs. 56 crore for the chairs. Each selected institute received grants ranging from Rs. 2 crore to Rs. 33 crore for setting up chairs, referred to as Infosys Chairs.

"We believe that scientific advancement is imperative for the progress of the nation. Through Infosys Chairs, we seek to encourage scientists and researchers to collaborate with international academicians and enrich the student community with current concepts and the latest technologies," said Sudha Murty, chairperson of the Infosys Foundation.

The funds will be used for research in areas such as obstetrics and gynaecology, agriculture, economics, mathematics, technology, biology, rural development, and cancer.

A part of the fund will also be utilised for research to identify and discover new drugs, and to develop policies to boost growth in agriculture, value chains and food security.

The other six beneficiaries of the foundation's grants are Institute of Bioinformatics and Applied Biotechnology, Chennai Mathematical Institute, Indian Council for Research on International Economic Relations, Presidency University, All-India Institute of Medical Science and the Indian Institute of Management, Ahmadabad.

Last year, Infosys Foundation, instituted a corpus of Rs. 30 crore for Chennai Mathematical Institute to enhance faculty compensation and support fellowship requirements.

Each selected institute receives grants ranging from Rs. 2 crore to

Rs. 33 crore for setting up Infosys Chairs.

State will procure discoloured paddy: Minister

Agiriculture Minister P. Pulla Rao examining the damaged paddy at Bhimadole area in West Godavari district on Friday.

The State government will come to the aid of paddy farmers in East and West Godavari districts and procure discoloured paddy, Minister for Agriculture Prathipati Pulla Rao said here on Friday.

The Minister along with local MLAs undertook a whirlwind tour of Dendaluru, Unguturu, Tadepalligude, Tanuku and other mandals where unseasonal rains have taken a heavy toll on the paddy crop. Paddy farmers in Godavari districts have been demanding that the State bail them out of the precarious situation.

“I along with local MLAs have seen the extent in which paddy has been damaged due to unseasonal rains. Preliminary estimates point out that paddy in about one lakh hectares in West Godavari and 50,000 hectares in East Godavari has been damaged. On Saturday, I am going to Anantpur district where ground nut crop has been extensively damaged. We will take a decision on buying the damaged crop by paying MSP to farmers soon,’’ said Mr. Pulla Rao.

Presently, the MSP to paddy is Rs.1,450 per quintal but procuring such a vast volume of discoloured paddy could prove impose a financial burden on the State. He said the State would first procure the discoloured paddy and then seek the Centre's assistance..

"Take latest technologies to more farmers"

The Indo-Israel Centres of Excellence have started functioning in four States to impart the latest technologies to farmers to improve agricultural production, according to Dov Segev Steinberg, acting Consul General in the Consulate General of Israel in Bengaluru.

Inspecting a Centre for Excellence at Reddiyarchatram here on Friday, he said the centres in Haryana, Punjab, Rajasthan and Gujarat had begun functioning. While two centres were being set up in Tamil Nadu, the exercise was on for other centres sanctioned for Bihar, UP, Karnataka and West Bengal. Spread over 13.3 acre, the Reddiyarchatram centre, meant for horticulture crops, was expected to become operational in two months. Seedlings of hybrid varieties of tomato, chili, brinjal, ladies finger and ash guard were being distributed to farmers in this region through this centre.

The Consulate was concentrating on technology transfer and strengthening cooperation in four southern States where potential was very high. Augmenting production was very important to ensure food security to growing population in the country.

Israel was willing to transfer its latest technologies to improve agri production, he said.

While interacting with horticulture officials, the Consul advised them to attend seminars organised by Israel Embassy in New Delhi regularly to take the latest technologies to more farmers.

Adoption of Israel technologies by famers in the State was very high and TN stood first in the country in horticulture production, said S. Raja Mohammad, Deputy Director of Horticulture. The centre's project manager, J. Perumalsamy, said that 20 lakh seedlings of various crop were distributed to farmers in two months.

Deputy Director Horticulture N. Ramanathan said five shade nets and two poly houses were established and training centre was ready. One poly house was under construction and would be over in two months. Assistant Director of Horticulture J. Srinivasan briefed about the scheme.

Monsoon rain resumes in Tiruchi

It keeps the hopes of farmers alive in the non-delta areas of the district

Heavy rain lashed several parts of Tiruchi district on Friday as the North East monsoon resumed after a gap of a few days.

After a sharp spell of rain in the afternoon, many parts of Tiruchi city received intermittent downpour later in the evening. The overcast sky and rain made for chilly weather.

The resumption of monsoon rain keeps the hopes of farmers alive in the non-delta areas of the district which had received scanty rainfall so far. Farmers in the non delta areas have been hesitant to go in for samba paddy cultivation so far. While the Agriculture Department expects samba paddy to be raised on about 25,000 hectares in the non-delta areas alone, so far only 11,000 hectares have been covered.

Statistics available at website of the Regional Meteorological Centre, Chennai, indicate that the district had received 285.6 mm of rainfall between October 1 and November 18 against the normal of 268.6 mm for the period. For the week ending on November 18, the district has received 30.9 mm of rainfall against the normal of 30.5 mm.

However, farmers say that the rain has not been heavy enough. “Though the rain seems to be widespread, it has not been adequate especially in dry belts such as Manapparai, Marungapuri and Thathaiyengarpet. The current spell of rain has come as a boon to farmers who had raised crops such as cotton, maize and pulses in rainfed areas. We hope the monsoon will sustain,” said C.Masilamani of the Tamil Nadu Vivasayigal Sangam, affiliated to the Communist Party of India (Marxist).

Some parts of the district received moderate to heavy rainfall on Thursday, with Nandhiyar head registering the maximum of 70.40 mm during the 24-hour period ending at 8.30 a.m. on Friday. However, Manapparai received just 12.20 mm, Thathaiyengarpet 7.50 mm and Marungapuri 3.40.

The chief amounts of rainfall received in other parts of the district during the same period were (in mm): Vathalai Anicut 44; Samayapuram 34; Navalur Kottapattu 23.80; Kallakudi 23.10; Kovilpatti 21.20; Devimangalam 19.60; Pullampadi 13.20, Ponnaniyar Dam 10.20 and Thenparanadu 8.

Officials to enumerate crop damage in Krishna

Excise and B.C. Welfare Minister K. Ravindra on Friday said the Agriculture Department officials would enumerate paddy crop damaged due to recent rains recorded in the last 72 hours in Krishna district. Mr. Ravindra earlier inspected paddy fields destroyed due to strong winds and rains, leaving farmers in a state of distress ahead of the harvesting operations.

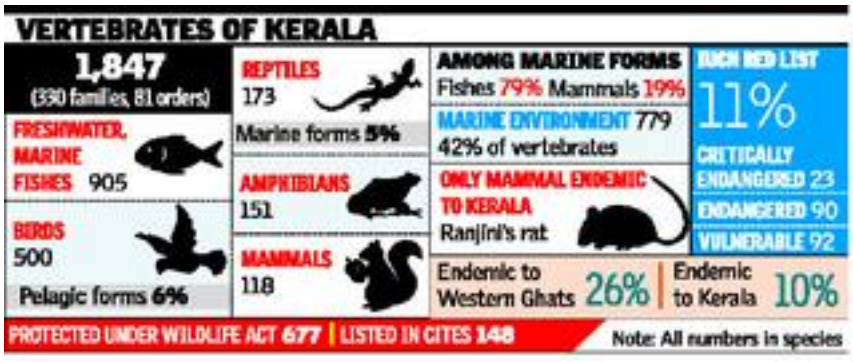
The Minister also interacted with farmers in Machilipatnam rural areas and discussed the possibility of harvesting the crop from paddy plants that had dropped along with grain. "Paddy crop in nearly 600 acres is damaged in Machilipatnam rural pockets.

The Agriculture officials will be sent to enumerate the damage in order to release compensation to eligible farmers," said Mr. Ravindra. The Minister has promised to help the affected farmers by extending necessary support by the State government.

"The crop damage report to be submitted by the Agriculture Department will be sent to the State government," he said. Ironically, a few paddy varieties have survived the strong winds while some got damaged across the district. Farmers also fear that the paddy grain will become seed if rains continue.

Meanwhile, a few spells of rain recorded across Krishna district has become a hurdle to farmers to take up harvesting. Machilipatnam and Avanigadda recorded 2 cm rainfall and Vuyyuru 1 cm. Machilipatnam Municipal authorities have taken up measures to divert rain water stagnated in low-lying areas in the district headquarters, Machilipatnam, to the canals.

High vertebrate diversity recorded in State



As many as 1,847 species of vertebrates representing a diversity of fishes, birds, reptiles, amphibians, and mammals have survived multiple threats

including habitat destruction, invasive alien species, pollution, and climate change to coexist with humanity in Kerala and play a vital role in the State's ecosystems.

An updated checklist of the vertebrates of Kerala, published in the latest issue of the *Journal of Threatened Taxa* , lists 905 species of freshwater and marine fishes, 500 species of birds, 173 species of reptiles, 151 species of amphibians, and 118 species of mammals.

The checklist was the culmination of one year of work by a group of taxonomists from Kerala Agricultural University, University of Kerala, Zoological Survey of India, Kerala Forest Research Institute, and the Kerala University of Fisheries and Ocean Studies.

According to the paper, 779 species (42 per cent) of vertebrates in Kerala occur in the marine environment. Fishes form 79 per cent of marine forms, followed by mammals including dolphins, whales, porpoises and sea cows (19%). Among birds, pelagic forms or seabirds account for only six per cent of the total bird species in the State. Among reptiles, the marine forms including sea turtles, leatherback turtle, and sea snakes account for less than five per cent.

As many as 205 species (11%) are listed as threatened in the IUCN Red List of Threatened Species, of which 23 are critically endangered, 90 are endangered, and 92 vulnerable. According to the authors, 98 vertebrate species of Kerala have been included in Schedule 1 of the Indian Wildlife (Protection) Act, making them eligible for maximum protection. As many as 598 species including the house crow fall in other Schedules of the Act. Only eight per cent of the vertebrates are listed in the Convention on International Trade in Endangered Species of flora and fauna (CITES).

Stress on regenerative agricultural practices

Xiao Dong of China University of Mining and Technology makes a presentation on pollution at a conference on ' Ecological approaches towards diet for a green planet' held in Madurai on Friday.

Practitioners of organic farming, researchers and scientists, who congregated in Madurai on Friday for a two-day national conference on ‘Ecological approaches towards diet for a green plant,’ emphasised the need for adopting regenerative agricultural practices to sustain ecology and life of human beings.

In his inaugural address, Jostein Hertwig of Sweden, Head, Baltic Ecological Recycling Agriculture and Society Secretariat, narrated how collective efforts of 12 countries rejuvenated the Baltic Sea, which was spoilt by pollution. K. Perumal, Head, Building Ecological Regenerative Agriculture and Societies India, introduced the theme of the conference.

In his address, N. Markandan, former Vice-Chancellor, Gandhigram Rural Institute, insisted that development of industry and agriculture should go hand in hand. There was a need for political will to prevent the destruction of eco system and value, work and knowledge-oriented education should replace research-oriented education. C. Jayakaran, Director, Annai Lea Community College and School of Bio-Dynamic Farming, focussed on how to bring the younger generation into farming. He pointed out that availability of food could be enhanced by encouraging vegetarianism.

P. Gomathinayagam of Puliyangudi, a pioneer in organic farming, exhorted farmers to focus on marketing. Agriculture, he said, was not only about productivity but much more. Farmers should be able to market their own produce and women played a major role in this regard, he said. V. Antonysamy, another progressive farmer from Puliyangudi, narrated how his life turned around after adopting organic farming methods. He said that organic farming would make a person healthy and debt-free. S. R. Sundararaman, a successful organic farmer from Sathyamangalam, explained how soil fertility and health could be improved by organic practices. Soil enrichment and rejuvenation was possible only in organic farming.

Xiao Dong of the China University of Mining and Technology made a presentation on how, in the last 10 years, soil and water in China had been degraded due to pollution, a cost people had to pay for development. The rapid degradation was caused by excessive use of chemical fertilizers, he said.

Announce MSP for paddy by November 29: KRRS

The Karnataka Rajya Raitha Sangha and Hasiru Sene has urged the State government to announce a minimum support price (MSP) of Rs. 2,090 a quintal for paddy by November 29 and initiate steps to open procurement centres too.

Addressing a press conference here on Friday, Chamaras Malipatil, president of the State unit of KRRS, said that the Karnataka High Court had on October 29 ordered the Secretary, Food, Civil Supplies and Consumer Affairs, to take a decision on the recommendation of the Karnataka Agricultural Prices Commission on the minimum support price of paddy for 2014-15 within a month from the date of communication of the order.

“The commission, in its affidavit before the court, had said that the input cost for a quintal of paddy was around Rs. 1,800. We are demanding that the State government announce a minimum support price of Rs. 2,090, including an incentive of Rs. 290 a quintal for the benefit of the paddy cultivators,” he said. Mr. Malipatil said that it was necessary to ensure that the price of paddy did not dip in the market.

Government also urged to open procurement centres

Sustained rain could be bad news for crops

In most of the delta, directly sown paddy and transplanted crop are largely in initial stage

Samba paddy crop is being raised on more than 8 lakh acres in delta districts.

The despondency of October has now given way to hopes of a peaceful and satisfying harvest among samba paddy farmers in delta districts of Thanjavur, Tiruvarur and Nagapattinam. The recent spell of rains due to the depression in the Bay of Bengal has raised the expectations of a "very decent harvest."

The plummeting water level in the Mettur dam, deficient rainfall, refusal of Karnataka to comply to release water and the insensitivity of the Central government to seriously look into the water demands of the delta were bothering the farmers who had raised samba paddy on more than eight lakh acres in the three districts.

With kuruvai coverage pruned to just about one lakh acres over the years, farmers were depending on samba paddy for their livelihood. Now with yet another spell of rain coming down on the delta districts, the health of the standing samba paddy crop has assumed importance.

In most of the delta, the directly sown paddy and the transplanted crop are largely in the initial stage. While in some areas of Thanjavur district, crops might be in the active tillering stage, in vast areas of the delta there was little flooding of the fields. In most of the areas water drained off quickly much to the relief of the farmers. "While there is no imminent danger to the standing samba paddy, sustained rain during the second and third week of December and subsequent water logging in the fields would put a huge question mark on productivity," points out Mannargudi S. Ranganathan, general secretary of the Tamil Nadu Cauvey Delta Farmers Welfare Association.

"Trouble will be there if there is sustained rains and water logging during the flowering stage because it could lead to withering of root and pest attack, among other problems," he adds.

In Nagapattinam district, fields in some blocks such as Sirkali, Mayiladuthurai and Nagapattinam suffered. Damage was also reported from Kottur, Muthupettai and Thiruthuraipoondi in Tiruvarur district where the late *kuruvai* and *thaladi* crop had to bear the brunt on over 500 hectares. In many areas the rain has washed away the pest attack that usually follows a downpour.

Farmers do not mind some more rain in the delta, as the Tamil month of *Karthigai* brings in showers, but all that must be over by the crucial mid-December when crops enter the flowering stage. After that irrigation when required could ensure a good decent harvest, the farmers said.

Planting of bamboo intensified on Pachamalai

Herbal park being raised as part of the eco tourism project

A Forest Department official tending to the herbal plants at Pachamalai showing the herbal plants being cultivated at Pachamalai in Tiruchi district.

Taking advantage of the bountiful northeast monsoon, the Forest Department has intensified steps for planting saplings of bamboo on Pachamalai hills in the district.

Although it is not cultivated in a single cluster, it is being planted wherever space is available.

The Forest Department has identified places at various places on the hills.

About 45,000 saplings of bamboo had been planted on the hills.

The Forest Department had identified 150 hectares where the sapling can be raised with adequate spacing.

“The saplings are being planted on the reserve forest area. Each and every village panchayat of Thenpuranadu, Vannadu, and Kombainadu on the hills accounts for a large extent of reserve forest area and we have planted the saplings of bamboo there,” an official source told *The Hindu* on Friday.

Maintenance

The crop will be maintained periodically, particularly from the tenth month of planting of saplings.

The bamboo plants should be protected from weeds and the efforts would be taken to clear the weeds.

The bountiful rainfall consequent to the setting in of the northeast monsoon was ideal for the growth of the bamboo.

The Forest Department has planted herbal species as part of development of herbal park on Pachamalai under the Eco-Tourism project, currently implemented in the hills.

Herbal park

"Pachamalai is noted for various herbal species of which we have identified about 100 species.

They included 'Akasa Garudan kizhangu, kavil thumbai, Gopuramthangi, karu oomathai, siru kurunijan, nochi, nannari, athimathuram, Vishu kiranthi so on, and so forth," say the Forest officials.

Those visiting the Pachamalai would be exposed to the availability of various species of herbal plants on the hills, he said.

Haryana to pay compensation to farmers in 20 days: Minister

Haryana Agriculture Minister O.P. Dhankar on Thursday said the process of paying compensation to farmers who had suffered crop loss during the recent kharif season would start in 20 days.

The work of special ' *girdawari'* (assessment) for the damage caused by whitefly and other pests to cotton, guar, bajra and other kharif crops was almost complete and the work of disbursing compensation would start in next 20 days.

Centres of excellence

He said centres of excellence for fruits and vegetables had been established to encourage farmers to take up horticulture and cultivation of other cash crops instead of traditional crops.

"An agricultural insurance scheme of Rs. 500 crore is being prepared with the support of the Central government for this purpose. This scheme would be announced soon," the Minister said.

Starting a ‘goat bank’ made all the difference

P. Ramesh was on Friday honoured for his innovations by the University of Agricultural Sciences-Bengaluru with the ‘Best District-level Farmer Award’.

We’ve heard of banks, piggybanks and blood banks … but a goat bank? Here is a farmer who has launched one to promote integrated farming among fellow farmers to up their income.

P. Ramesh, the promoter of the goat bank concept, is a small farmer, who has three-and-a -half acres of land in Rangasamudra village in T. Narsipur taluk of Mysuru district. He believes farmers must cultivate multiple crops and take up various components, including animal husbandry, to rein in profits.

“I formed a group of 23 young marginal farmers and gave them one young female goat for free. In return, they have to give me a kid, when the goat gives birth. The goats usually breed once in six months, and every time they give birth to three kids. It is mutually beneficial as each of these 23 farmers have now got about 20 goats,” he says.

He says the concept of a goat bank has helped farmers get an assured additional income as each goat sells for around Rs. 4,000 once it is six months old.

It was his own life's bitter experience that made him focus on integrated farming. Mr. Ramesh, who has done M.Ed. and even worked as the principal of a private school, said: "I neither got enough remuneration nor was my job confirmed. The only option was to take up agriculture on my small ancestral farm. But, as the farm size was too small, I focussed on integrated farming," he says.

He now grows sugarcane, banana and paddy, besides taking up agro forestry on the farm's border. He also grows coconut, is involved in animal husbandry and poultry, among other things.

But, his hallmark is that he does all these things in an organic way. Not only that, he is also experimenting with direct marketing of the organic produce grown by him to 20 families in Mysuru. "Direct marketing helps in getting remunerative prices. I am against the concept of unnecessarily over-pricing organic produce unless the situation demands it. So, my customers are happy," he says.

Mr. Ramesh was honoured for his innovations by the University of Agricultural Sciences-Bengaluru at the Krishi Mela on Friday, with the 'Best District-level Farmer Award'. He is also trying to conserve and promote the Bandur sheep, a famous breed of Old Mysuru region.

Farmers want conversion of short-term crop loans

Farmers of Kanyakumari district on Friday demanded the conversion of long-term crop loans into medium-term loans as they had suffered losses during the Kannipoo cultivation (first crop).

The demand for conversion was raised by farmers at the monthly grievance meeting held at the Collectorate here.

Presiding over the meeting, District Revenue Officer A. Udhayakumar said that it was a policy decision to be taken by the government.

The district administration would convey the sentiments of farmers to the government for consideration.

A farmer from Parakkai village complained that they were denied paddy transplanting machine by the Primary Agriculture Cooperative Society.

Due to this, they were forced to source the machine from a far flung society for paddy transplantation in over 30 acres at a higher cost.

Another farmer lamented that the PWD authorities had been silent about encroachment of a large portion of AVM Channel near Mandaicaud Bagavathi Amman Temple.

He said a private educational institution had encroached the canal and built three bridges over it.

An official replied that 183 houses had been built on the encroached land and it was difficult to evict the encroachers.

As soon as the meeting began, farmers demanded inspection of flood ravaged agriculture fields by officials, based on which a report should be sent to the government for getting proper relief. They demanded an early survey of crop loss.

Joint Director of Agriculture Department Elango and Personal Assistant to Collector (Agriculture) Nazeer Mohemed were among those who participated in the meeting.

Set up a bird sanctuary at home

They sing for you, they keep down insect pests, and theyare fun to watch. By Vrinda Kumble

When planning your new garden or changing the existing one, consider planting for the birds as well as yourself. They sing for you, they keep down insect pests, and they are fun to watch.

Despite the concrete tsunami that is engulfing our cities, an amazing number of birds still survive, not only in the big parks but in nearly every little patch of green. They are not rare or endangered yet. But for that very reason each of us can help prevent their becoming so. Whether you have a large space or just an apartment balcony, you can, with a little thought and care, create a lovely garden that will also be a sanctuary for

these birds, many of which like to nest surprisingly close to human habitation.

My husband and I little knew we had the beginnings of such a sanctuary when we planted a sky vine (Thunbergia grandiflora) to shade the hot concrete paving around our government quarters in Delhi. The vine soon covered the wire net trellis and we were not the only ones who loved its shade and streamers of sky-blue flowers; the bulbuls loved them too, nesting year after year in the densest part of the creeper, singing sweetly all day and affording us many hours of effortless bird-watching pleasure. As our garden grew, so did the bird population, so we began consciously choosing flowers and shrubs to attract them. Here is some of what we learned.

Bulbuls will nest in dense-growing vines like the sky vine. They like the black berries of Lantana, and will often nest in a lantana hedge. Because it grows wild everywhere, it's considered a nuisance, but actually, the bright orange or pink flowers are really very pretty.

There are also dwarf and trailing varieties in a range of colours, bred especially for gardens. They are drought-resistant and grow even in poor soil. However, the ornamental garden varieties often don't produce berries, so grow at least one or two of the wild kind. Asparagus species (A. racemosus, A. plumosus,) trained up a trellis, make a cool and pretty screen on a balcony. The delicate, fern-like leaves are good for flower arrangements and bulbuls love the bright red berries.

Easy to grow

Sunbirds are tiny birds with curved beaks with which they suck honey from flowers. An easy-to-grow shrub that attracts sunbirds is Hamelia patens, also called firebush or scarlet bush, which has coppery-tinged leaves and bunches of tubular orange flowers filled with honey. You can see it planted widely along the road medians in Bengaluru. The parasol flower (Holmskioldia sanguinea), whose long, drooping branches are strung with orange-red flowers (it can easily be mistaken for a bougainvillea), is another favourite with sunbirds.

Both these shrubs are available in nurseries, will grow in ordinary garden soil, and don't need much water. Plant them in the ground if you can, or else in large tubs, in full sun.

Other good choices that will attract sunbirds and that can be grown either in large tubs or in the ground are lime, lemon, mandarin orange, or any

citrus plant. The birds get the honey; you get the fragrance of the flowers and the fruit.

Sunbirds like to hang their teardrop-shaped nests from any creeper close to the house. Grow a jasmine or a Rangoon creeper or a Bignonia up your wall or close by. Perhaps one day you will see the drab olive female sunbird work for about ten days to shape and camouflage her nest while the gorgeous blue-black male watches from a branch nearby and critically inspects his wife's work now and then! In fact, with a dense-growing creeper, such as sky vine, you might get both bulbuls and sunbirds nesting in it, as we did for several years.

Tailor birds are so called because they actually stitch together two leaves or one broad leaf folded over to make a cone-shaped nest, which is then lined with cotton and other soft material. If you have room for a tree, you could plant a poplar or a phalsa or a mulberry. But any broad-leaved plant such as a Canna, Philodendron, or Dieffenbachia also tempts tailor birds to nest close to the house. Hoopoes, mynahs, babblers will all come to peck for food in the lawn. To attract these birds, grow even a small square of grass or any other ground cover. Keep the soil moist. Lovely green parakeets will flock shrieking and screeching to a fruit tree such as a guava.

A cherry tree (Barbados or Singapore cherry) will draw cuckoos announcing the rain and barbets, whose throaty ku-kurr-kurr brings with it (to me) the smell of dry leaves and dust — and final exams! All birds need a water source in the garden.

An ordinary earthen bowl will do. Change the water twice or thrice a week or you may get mosquitoes. Happy bird gardening!

100 acres of mangroves notified as reserve forest

A massive effort of the district administration to do a comprehensive survey of the mangrove areas of the Kannur district in a bid to get the large extent of the areas under the ecologically rich vegetation area has borne fruit as the government has notified 100 acres of mangrove forest as reserve forest.

"It was for the first time in the State that a comprehensive survey of mangroves was completed and an extent of 100 acres has been notified as reserve forest," District Collector P. Bala Kiran said at a press conference here on Friday. While efforts are now under way to completely conserve the mangrove areas in government lands, the district administration has

already begun initiatives to secure the mangrove areas in private possession, he said.

Lion's share of mangrove

Kannur district is estimated to have the lion's share of the total 1670 ha of mangrove forest in the State, though there has not been any official-level accurate verification through a comprehensive survey with the objective of demarcating and notifying the area, the Collector said adding that the 'Mission Mangrove Kannur' started in June kicked off the initiative to survey and then submitted the survey report to the government for final notification under section 19 of the Kerala Forest Act, 1960. The mission teams, formed under the Forest and Revenue officials, completed the work in 14 months, he said.

The survey identified 1,873 acres of mangroves. The complete survey and conservation document will be released by Forest Minister Thiruvanchoor Radhakrishnan at a function at Vellikkeel here on November 24 to formally inaugurate the 'Mission Mangrove Kannur'.

He will also declare 100 acres of mangrove forest as reserve forest.

Mr. Kiran said that the efforts to notify the remaining 1,772 acres of mangroves, including those in private holdings have begun. The plan is to acquire them by paying price to the owners.

There is also a proposal for naming a mangrove area after its owner if he or she chooses to donate the land, he said.

Chief Conservator of Forest (Kannur Circle) Jayaprasad, who is part of the mission team, said that the co-ordinated efforts of team members led to the successful completion of the survey.

Sub Collector Navjot Khosa, who conducted hearings as part of the survey mission, said that the mangrove mission is a model project for the entire State.

Kannur district is estimated to have the lion's share of the total 1,670 ha of mangrove forest in the State.

Poultry sector needs waste management system: Governor

Governor P. Sathasivam releasing a compendium and book on history of veterinary medicine, Saleehothreeyam, at the annual conference of the

Indian Poultry Science Association at the College of Avian Sciences and Management, Thiruvazhamkunnu, on Thursday.

Lack of effective waste management system has become a serious concern for the State, Governor P. Sathasivam has said.

Addressing the 32nd Annual Conference of Indian Poultry Science Association and National Symposium on "Clean and Green Poultry Production" held at College of Avian Sciences and Management, Thiruvazhamkunnu, on Thursday, he said poultry scientists needed to address this issue in a practical manner.

"India ranks third in egg production and fourth in broiler production. It is the fastest-growing industry which can create umpteen job opportunities in the country. Poultry products are the cheapest animal protein sources to address protein malnutrition thus facilitating nutritional security in the country," the Governor said.

The three-day national symposium is being organised by the Centre for Advanced Studies in Poultry Science and the Faculty of Poultry Science of Kerala Veterinary and Animal Sciences University (KVASU).

The Governor released the compendium and book on the history of veterinary medicine, Saleehothreeyam, written by Vice Chancellor B. Ashok and 45 others.

The Governor gave away the national awards for outstanding poultry scientists, including A.K.K. Unni from Kerala.

In his keynote address R. Prabakaran, former Vice Chancellor of Tamil Nadu Veterinary and Animal Sciences University, and President, Indian

Poultry Science Association, noted that Indian poultry sector contributes 0.5 per cent to national GDP.

“Annual growth in this sector is 8 to 12 per cent. By 2020 Chicken consumption will overtake mutton, pork and beef consumption in India,” he said. He lauded the activities of the KVASU in establishing a separate faculty for poultry sciences.

“This is the only institution in India facilitating education, research and entrepreneurship in the poultry sector. Intensification of poultry production leads to generation of huge amount of wastes. We have to reduce their impact on environment by adapting cost-effective technologies for handling and utilising the waste,” Dr. Prabakaran added.

M.B. Rajesh, MP, presided over the function. N. Samsudheen, MLA, offered felicitations. During the introductory speech, Dr. Ashok explained the research priorities of the university in the poultry and entrepreneurship sectors in the State.

Around 250 delegates from across the State are participating in the symposium.

New tomatoes arrive, but fit to be thrown at bad movies

Rotten tomatoes being sold at Rythu Bazaar in Vijayawada on Friday.

Prices of tomatoes have gradually started dipping, but the rotten tomatoes that have flooded market left consumers fuming on Friday.

Having no option, consumers sifted through the lot to buy the best available at the Ryhtu Bazaar counters in the city.

“The dip in price is a relief for us but the quality is abysmal,” said a customer T. Krishna Rao from Satyanarayanapuram.

According to Ryhty Bazaar officials, prices of tomatoes rose from Rs.30 a kg on November 11 to Rs. 47 by November 16 and started dipping from the next day. On Friday, rotten tomatoes were available for Rs.35 per kg at the rythu bazaars.

Officials said these are tomato arrivals from the suburbs of Vijayawada.

Stock arrivals from G. Konduru, Mylavaram and Avanigadda in Krishna district have increased in the last few days. “We got a lorry load from Madanapalle market yard to Vijayawada when the prices shot up. But we have now requested officials not to send more stocks,” Marketing Department assistant director J. Ravi Kumar said.

Over 100 quintals of stock came to the Kedareswaripet Rythu Bazaar on Friday as against 30 quintals the previous day. Another official said the Marketing Department is keeping a watch on new arrivals.

Should the price rise again, an indent would be placed to get more stock from the Madanapalle market yard.

Prices of onions continued to hover around Rs.22 a kg in the retail market compared to Rs.80 a kg three months ago, according to officials.

The Indian EXPRESS
JOURNALISM OF COURAGE

Farmers pool in 9,000 acres to develop smart city near Mumbai

Residents of 11 villages join hands to create modern township in Khalapur taluka of Raigad district; land titles to remain in the names of owners

The pooled land in Khalapur taluka will be converted into a non-agriculture zone, after which a special purpose vehicle will be promoted to build a smart city. (Express Phot by Deepak Joshi)

Farmers in the outskirts of Mumbai have pooled in 9,000 acres of land to build a smart city.

Thousands of farmer families in 11 villages in Raigad's Khalapur taluka have pitched in with their ancestral farmland. The pooled land will be converted into a non-agriculture zone, after which a special purpose vehicle (SPV) will be promoted to build a smart city with the right mix of commercial, residential and environmental features.

The model envisages farmers owning shares in the SPV in proportion to the value of their land. Besides getting plush homes, they will earn dividends on shares they hold and income from contractual work for the SPV and the commercial units that are expected to invest in the township. Villagers said they had jointly opposed plans for urbanisation of their tilled land for long, until they saw the writing on the wall when the Maharashtra government notified the land in the influence zone of the proposed new Navi Mumbai International Airport in 2013. The City and Industrial Development Corporation of Maharashtra (CIDCO), a state-owned firm, has already drawn up plans to promote a mega city in the influence area.

A similar initiative was witnessed for Amaravati, the new capital of Andhra Pradesh. To build Amaravati, farmers in the region between Vijayawada and Guntur pooled over 30,000 acres of land, which will be developed as a modern city by the AP Capital Region Development Authority.

"We decided to act before outsiders swallow up our ancestral land," said Navinchandra Ghatwal, a local political heavyweight. Ghatwal too owns a 40-acre farm land in Khalapur village.

First, leaders from the villages got together to formulate a strategy. "It struck us that we need not oppose development but can build our own city, by pooling our lands," he said. "All of us wanted a say in development, and felt we should reap long-term benefits for our land," said Anant Patil, a former sarpanch of Nigdoli.

Their plans were bolstered when investors owning large land holdings in the region lent a hand. "The idea is to aggregate land for accelerated and

planned development. All of us will gain from it," said Vibhu Kapoor, director, Revive Realty, which owns over 200 acres in the region.

Town planner Anil Sule, who was instrumental in establishing the initial development in Navi Mumbai in the 1960s, helped draft a plan for the smart city, which has now been submitted to CIDCO. Confirming this, V Venugopal, Additional Chief Planner, CIDCO, said, "It is encouraging that people are coming forward for development." CIDCO MD Sanjay Bhatia told The Indian Express, "This is the kind of development we plan to promote. Our town planners and economists are working on the modalities."

The most important feature of the model is that the land pattas or titles will remain in the villagers' names, safeguarding their ownership of the land. Villagers are eyeing long-term benefits too. Sule said, "Each landowning family will be an equity shareholder in the company. Landowners will also be allotted bonds in proportion to their holdings." Sixty per cent of the revenue raised by the SPV from sale of land and another 30 per cent through sale of constructed area will be used for repayment towards the bonds.

Global warming may eat up USD 200 billion crops globally by 2050: Study

The study also warned around 750 million people in South Asia could face extreme water shortage, or 1.8 billion people could face chronic water shortage by 2050, due to population growth.

On a high emission pathway, flooding in the Ganges basin could be six times more frequent, becoming an '1 in 5 year' event over the course of the century, the report said. (Source: Reuters)

A whopping USD 200 billion worth of wheat, rice and maize crops could be lost by 2050 globally if the issues arising from global warming are not

addressed on a war-footing, an independent study on the impact of climate change on crop yields has warned.

“By 2050, about USD 200 billion worth of crops in wheat, rice and maize will be lost in 2010 dollar terms,” Arunabha Ghosh, chief executive, Council on Energy, Environment and Water, said on Monday.

The independent multi-country risk assessment on climate change study was commissioned by the British foreign and commonwealth office.

The Council on Energy, Environment and Water is an independent, not-for-profit policy research institution addressing pressing global challenges through an integrated and internationally-focused approach.

The study also warned around 750 million people in South Asia could face extreme water shortage, or 1.8 billion people could face chronic water shortage by 2050, due to population growth.

A decline in crop yields mainly considers shortening of the growing season caused by higher average temperatures, the report added.

The study looked at three major crops in three growing areas — wheat in Punjab, rice in Jiangsu, China, and maize in Illinois in the US.

“A 4-degree Celsius increase in global temperatures above the late 20th century levels, combined with increasing food demand, would pose larger risks to food security globally and regionally,” he warned.

With a 1-meter rise of global sea level, the probability of a ‘100-year flood event could become 1,000 times more likely in Kolkata, the report said.

On a high emission pathway, flooding in the Ganges basin could be six times more frequent, becoming an ‘1 in 5 year’ event over the course of the century, the report said.

Ghosh said another recent study by the agency had warned that due to average temperature rise and consequent ‘urban heat stress’, over the course of the century a majority of heat related deaths will happen in Delhi, Kolkata, Bangalore, Ahmedabad and Mumbai.

The study looked at various aspects of risks arising due to climate change.

On a high emission pathway, the incidence of extreme drought affecting cropland could increase by about 50 per cent in South Asia, the report stated.

Another direct and systematic risk of increasing climate change in India and the world was the rise in sea levels.

Climate-related stress could also add to the already steady growth of migration from rural areas to cities, Ghosh added.

He claimed that this is the first-of-its-kind multi-country assessment applying the principles of risk assessment, using financing and national security to better understand and communicate the risks of climate change.

If the world warms by 4 degrees Celsius, in North India there is a 30 per cent probability that temperatures will be so high that moderate/heavy outdoor work cannot be carried out in the hottest month.

The assessment considers three key areas — the future pathway of global emissions, the direct risks arising from the climate's response to those emissions, and the risks arising from the interaction of climate change with complex human systems, he added.

Speaking at the report launch, S Ramadorai, chairman, National Skill Development Agency and National Skill Development Corporation, said, "Today, we face high human, economic and ecological vulnerabilities due to climate change. It is critical for us to understand that the risks of climate change are non-linear: while average conditions may change gradually, the risks can increase rapidly.

"On a high carbon emissions pathway, the probability of crossing thresholds beyond which the inconvenient may become intolerable will increase over time," Ramadorai warned.

hindustantimes

Dieting not helping? Blame it on the food you're dieting on

A healthy food for one person may lead another to gain weight, according to a study out Thursday that suggests a one-size-fits-all approach to dieting is fundamentally wrong.

For instance, one woman in the study repeatedly experienced a spike in blood sugar after eating tomatoes, which would generally be considered a low-fat, nutritious food.

The findings are based a study of 800 people in Israel, and are published in the journal Cell Press.

“The first very big surprise and striking finding that we had was the very vast variability we saw in people’s response to identical meals,” said researcher Eran Segal of the Weizmann Institute of Science in Israel.

Participants wore blood sugar monitors that took measurements every five minutes for an entire week.

They also provided stool samples so that their gut microbiome could be analyzed, and kept a careful log of everything they consumed.

None of the participants had diabetes, but some were obese and had a condition known as pre-diabetes.

Researchers were stunned to see the difference in people’s metabolic responses to the exact same foods.

For instance, some people’s blood sugar rose higher after eating sushi than it did after eating ice cream.

And for one middle-aged woman, the act of eating tomatoes -- which she thought were part of a healthy diet -- actually caused her blood sugar to rise significantly.

“There are profound differences between individuals -- in some cases, individuals have opposite responses to one another -- and this is really a big hole in the literature,” said Segal.

Researchers were stunned to see the difference in people's metabolic responses to the exact same foods.

What we eat

High blood sugar is dangerous because it can lead to diabetes, obesity, heart problems and other complications, including eye, kidney and nerve disease.

Many diets aim to keep blood sugar low by incorporating fruits, vegetables and complex carbohydrates like brown rice and whole grains, while avoiding refined sugars and goods made with white flour.

But those recommendations don't work for everyone, and often, overweight people are blamed for eating too much or not sticking to a healthy lifestyle.

Co-author Eran Elinav said the study "really enlightened us on how inaccurate we all were about one of the most basic concepts of our existence, which is what we eat and how we integrate nutrition into our daily life."

Instead of urging people to eat low-fat diets, a more personalized approach -- one that puts an individual at the center of the plan, rather than the diet -- could be useful to help people control high blood sugar and improve their health, he said.

The researchers also used their findings to forge an algorithm that could predict how different people would react to certain foods, based on a host of personal characteristics and their gut microbes.

Segal said he and colleagues are now working on a system that could bring better nutritional analysis to the individual consumer.

The process would involve mailing stool samples for analysis of the bacteria in the digestive system, because researchers found that specific microbes correlated with blood sugar levels after eating.

Community of microbes

The microbiome is the community of trillions of bacteria living inside the human body, wielding a powerful but poorly understood effect on human health.

Last month, a group of 48 scientists from 50 US institutions called for more ambitious research into these tiny microorganisms, as part of a 10-year effort known as the Unified Microbiome Initiative Consortium that would uncover the role of individual microbes -- which include fungi, bacteria, viruses, algae and more -- and how they communicate with each other, their hosts, and their environment.

According to Minisha Sood, director of inpatient diabetes at Lenox Hill Hospital in New York City, the Israeli study "highlights the importance of individualized nutrition -- dietary advice should vary from person to person and should be tailored to meet the needs of a given individual based on their reactions to different foods.

"What remains to be deciphered is exactly how to tailor personalized nutrition therapy," added Sood, who was not involved in the study.

"Should it be based, at least in part, on an individual's microbiome or gut flora?"

Rebecca Blake, senior director of Clinical Nutrition at Mount Sinai Beth Israel, said the role of the gut microflora contributing to obesity and metabolism "is certainly an evolving discipline within the field of nutrition science."

"However, we need to consider whether this is the chicken or the egg -- does our diet affect our gut microbiota and our obesity, or is the microbiota somehow causal when it comes to weight status?" added Blake, who not involved in the study either.

"We still need a lot more research to figure out the nature of these connections."

THE HINDU BusinessLine

Higher temperatures, delayed kharif harvest slow down rabi planting

Planting of wheat and rapeseed-mustard, the two key winter or rabi crops, is yet to gain momentum due to a delay in harvest of kharif rice and relatively higher temperatures in key producing states of Uttar Pradesh, Haryana, Rajasthan and Madhya Pradesh.

As on November 20, wheat has been planted in a total area of 78.83 lakh hectares, about 26 per cent lower than the corresponding 107.35 lakh ha last year.

The normal area till November 20 for wheat is about 300 lakh ha. According to data from the Agriculture Ministry, in Uttar Pradesh the acreages were lower by 13.47 lakh ha, while in Haryana it was lower by 5.98 lakh ha, Rajasthan by 3.37 lakh ha, Punjab by 2.41 lakh ha and Madhya Pradesh by 1.72 lakh ha. “Temperature levels were high, so far, across key growing States of North India. Also, there was a delay in harvest of basmati rice that resulted in slower pace of wheat plantings,” said Indu Sharma, Director of Karnal-based Indian Institute of Wheat and Barley Research.

Poor water storage

Besides, the poor water storage levels in several areas also contributed to the sluggish plantings. According to the Central Water Commission, the latest water levels in 91 major reservoirs across the country stood at 84.147 billion cubic metres, accounting for 53 per cent of the total live storage capacity. Current storage levels were down 23 per cent, over the corresponding last year, and 26 per cent lower than the 10-year average of 113.272 billion cubic metre.

“As temperature levels decline in the days ahead, we expect wheat acreages to pick up,” Sharma added. With the start of sugarcane crushing in States like Uttar Pradesh, more acreages are likely to come under wheat, where farmers normally plant the cereal after harvesting the cane.

A Sluggish Trend*

	This year	Last year
Wheat	78.83	107.35
Pulses	74.06	77.42
Coarse cereals	38.48	30.87
Oilseeds	50.56	60.51
Rice	0.24	0.80
Total	242.16	276.94

*Rabi acreage in lakh ha as on Nov 20

Source: Agriculture Ministry

Similarly, with oilseeds, acreages under rapeseed-mustard has been lower at 42.51 lakh ha, as against 54.07 lakh ha last year. Oilseed area in Rajasthan, a key producer of rapeseed-mustard, has reported less area of 4.06 lakh ha, while in Madhya Pradesh, acreages were lower by 3.13 lakh ha. Interesingly, acreages under sunflower and linseed have increased.

Till now, sunflower acreages stood at 2.11 lakh ha (1.83 lakh ha last year), while linseed acreage was up at 2.84 lakh ha (1.61 lakh ha).

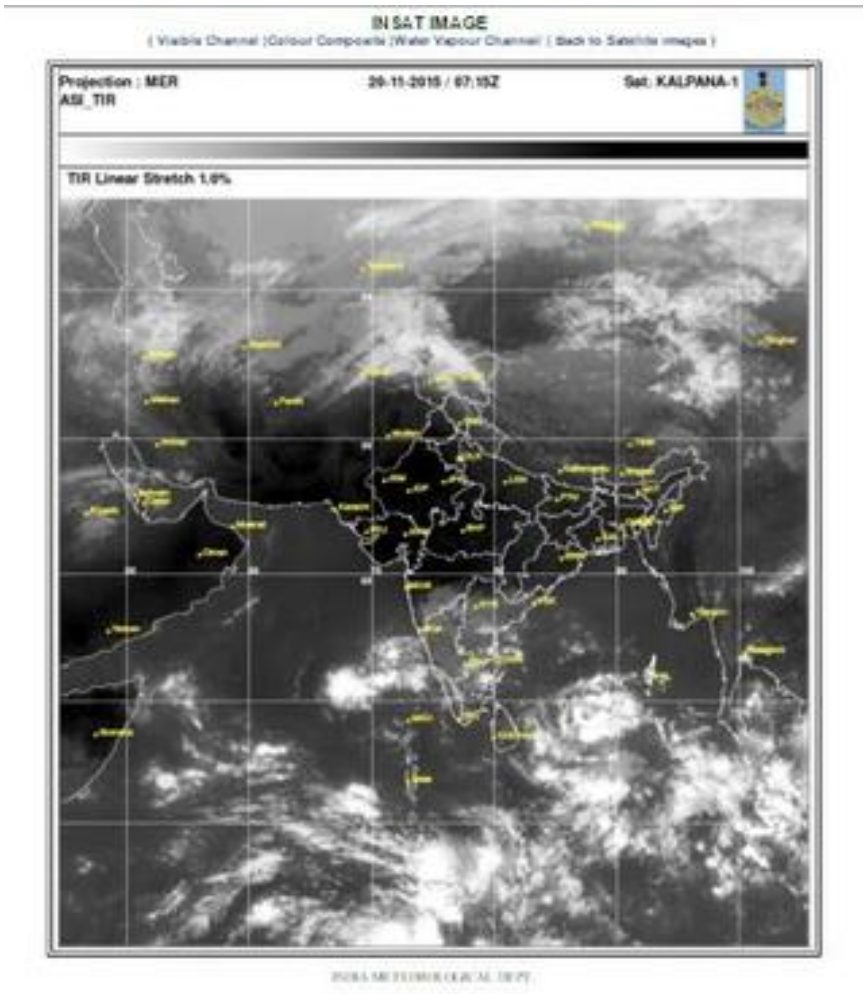
Among pulses, the acreage under gram or chana was higher at 52.43 lakh ha against last year’s 50.22 lakh ha, with Karnataka, Maharashtra and Andhra Pradesh reporting higher acreages.

However, in Madhya Pradesh, the major producer of rabi pulses, acreage was lower by 7.50 lakh ha and in Rajasthan by 3.37 lakh ha. The acreage under coarse cereals also registered an increase, driven mainly by higher acreage under jowar at 31.48 lakh ha (23.29 lakh ha). Even rabi maize has seen an increase in acreage at 4.28 lakh ha (3.56 lakh ha).

Moderate to heavy showers in TN, Puducherry

Parts of Tamil Nadu, Puducherry and coastal Andhra Pradesh have received moderate to heavy showers during the 24 hours ended this morning (Friday).

Main centres which received overnight rain (in cm) includes Coonoor-13; Puducherry-7; Kavali-6: Tirupathi-5; Narsapur, Tiruttani and Chennai-4 each, and Ongole-3 cm.



The rain-driving low-pressure area in Arabian Sea over Lakshadweep and neighbourhood persists. It is expected into a well-marked 'low' over the next 24 hours.

In light of this, India Met Department has forecast heavy rain at isolated places over Tamil Nadu and Puducherry over the next three to four days.

Fresh clouds

Meanwhile, latest satellite pictures show a fresh bank of cloud approaching Sri Lanka and adjoining Tamil Nadu coasts in an 'arrow-head' formation.

These clouds would get pulled in faster to the coast as the 'low' in the Arabian Sea intensifies over the next 24 hours as expected.

Puducherry remains cloudy this afternoon, while scattered clouds filled the skies in Chennai. Thundershowers have been forecast for both places towards the evening.

Parts of central as well as south Tamil Nadu too features scattered clouds, while strong thunderstorms rule the roost over Lakshadweep.

TN sugar mills hope ethanol output cap will be raised

The Centre's decision to provide production subsidy of ₹4.5 per quintal of cane to sugarcane farmers may relieve the plight of sugar mills in some States, but will have a negligible impact on those in Tamil Nadu.

This is the outcome of an onerous condition to qualify for the subsidy. Mills which have a distillery unit attached to them – effectively most sugar mills in Tamil Nadu – will have to achieve 80 per cent of the ethanol production target mandated by the Centre.

EBP target

Achieving the EBP (Ethanol Blending Programme) target may not be easy for mills in the State, given that limits placed by the Tamil Nadu Government on the production of ethanol are far too low to meet the target of the EBP.

Sugar mills in the State are currently permitted to sell no more than 50 lakh litres of ethanol, which is barely eight days' production. They have a cumulative distillery capacity of 6.25 lakh litres per day. The annual target under the EBP is way higher at about 20 crore litres.

Sugar mills in Tamil Nadu have been clamouring for a relaxation of the ethanol production cap. But the State government – which earns

considerable revenues from the sale of liquor – seems to be keeping a tight cap on ethanol production to ensure that there is enough alcohol available, in the form of rectified spirit and extra-neutral alcohol, to cater to the demand from Indian-made Foreign Liquor (IMFL) manufacturers.

Tax regime

At the same time, Tamil Nadu's taxation regime has rendered its sugar mills uncompetitive – a double whammy.

The imposition of a 14.5 per cent value-added tax on alcohol has resulted in higher imports of cheaper alcohol from sugar mills in Karnataka.

The result; Tamil Nadu's sugar mills are sitting on unsold inventory of alcohol. The average monthly alcohol inventory stood at 2.75 crore litres.

Will the State government now address the imbalance in demand and supply of alcohol and accordingly revise the ethanol permission for sugar mills? The industry has been seeking permission to produce more ethanol for a while now.

"Now, with the new subsidy scheme announced by the Centre, we are hopeful that the State government will announce measures that will enable sugar mills in the State to benefit from the subsidy scheme," says Palani G Periasamy, President, South India Sugar Mills Association.

Prices see upward trend in Kochi tea auctions

Prices at Kochi Tea auctions continued to witness an upward trend, with good liquoring teas in the dust category dearer by ₹3 to ₹5.

With improved arrivals, the quantity on offer in CTC was 11,07,000 kg. Leading blenders were active on good liquoring varieties, while loose tea traders operated with better strength after a short span.

However there was a subdued demand from upcountry buyers in sale No. 47.

Orthodox varieties also witnessed good demand and the quantity on offer was 18,500 kg. Well-made primary grades remained steady, auctioneers Forbes, Ewart & Figgis said.

In Cochin CTC dust quotation, good varieties fetched prices at ₹91-146, mediums quoted at ₹75-109, while plain grades stood at ₹58-72.

Strong demand perked up prices of the orthodox leaf, with 94 per cent of the total 189,500 kg on offer getting sold. The market for Nilgiri Brokens, Fannings was firm to dearer, while whole leaf witnessed attractive prices.

The market for CTC leaf was also dearer by ₹3 to ₹5, with exporters and upcountry buyers bulk of the quantity sold. The quantity on offer was 82,500 kg.

In dust grades, both Mayura SFD and Surianalle SFD quoted the best prices of ₹148 each while in leaf varieties, Chamraj FOP-sup Green tea fetched the best prices of ₹323.

Tea prices continue to witness uptrend in Kochi sale

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WTO group on agriculture struggles to evolve consensus on Nairobi package

With less than a month to go for the 10{+t}{+h} WTO ministerial meet in Nairobi, a substantial package acceptable to all members looks increasingly elusive. The informal session on agriculture negotiations this week failed to narrow the differences between members.

“Three new proposals were submitted. Two were on export competition (pushed by several developed nations) and one was on special safeguard measures for poor farmers made by the G-33 group that includes India. But there was no convergence of views on these,” an official involved in the negotiations told *BusinessLine*.

The Chairperson of the agriculture negotiations, Ambassador Vangalis Vitalis of New Zealand, in his note, said that while the prospects of a breakthrough appeared bleak at the moment, he would intensify efforts over the next few weeks to get results.

“I ask you all to be ready to meet at extremely short notice and at unsocial hours. We need a high level of engagement from everyone if there are to be worthwhile results at Nairobi,” he said.

Australia’s objections

Stressing the need for an agreement on export competition that seeks to discipline export subsidies further, Australia said in its paper that the sugar subsidies given by India and export credits given by the US were distorting world trade and needed to be checked.

The European Union, which introduced a joint proposal of a group of countries, including New Zealand and Brazil, proposed that developed countries fully eliminate export subsidies by the end of 2018, and developing countries by the end of 2021.

India and other members of the G-33 group of developing countries with defensive interest in agriculture reiterated their position that a Nairobi pact will not be complete without an agreement on special safeguard measure (SSM) and a permanent solution for treatment of food procurement subsidies.

Indonesia, on behalf of G33, presented a new proposal on special safeguard mechanism, which would allow developing countries to temporarily raise import tariffs on agriculture products in case of import surges.

“The new proposal introduces a few changes – on the products subject to tariff increase, the extent and duration of such increase, and flexibilities for poor countries – to reflect concerns raised by members. But it was still unacceptable to the developed members,” the official said.

Trade ministers from 162 member countries of the World Trade Organisations are meeting in Nairobi on December 15-18 in an attempt to strike a deal on some issues that are part of the Doha Round of talks launched in 2001.

While countries, such as the US, want to discontinue the Doha Round at Nairobi, several others, including India, do not want the Round to end without delivering on its development agenda.

Business Standard

Potato prices double over a month but expected to cool

There has been a surge in potato prices in recent weeks, though observers say this is temporary, till the next season's crop arrives. The reason for now is reduced supply and a delay in harvesting of the new-season crop. Data compiled by the Nashik-based National Horticultural Research and Development Foundation showed wholesale potato prices have almost doubled at the Agra mandi, Uttar Pradesh, one of the country's largest producing centres, to Rs 11 a kg on Friday from Rs 5.70 a kg in early October.

Total arrivals in the Agra mandi were 1,200 tonnes on Friday as compared to 1,420 tonnes on October 1. The average cost of potato cultivation is estimated at Rs 5 a kg. Considering cost of storage, transportation and loss in quantity, the break-even price should be Rs 7-8 a kg. Any price below this level is a loss to farmers, said an observer.

Meanwhile, unseasonal rainfall in October had benefited the sowing of potatoes, due to the required soil moisture. While harvesting of the early rabi crop has begun in a small way, sowing is still on in major growing areas, including West Bengal and UP.

"Therefore, the spurt in potato prices is a temporary phenomenon. If farmers do not get a little higher than their cost of production, they would stop sowing next time," said Ajit Shah, president, Horticulture Exporters Association.

Normally, supply of the older season crop starts waning towards the end of November. This year, 25-30 per cent of the stock is still left. Data from the National Horticulture Board showed India's total potato output at 42.17 million tonnes in marketing season 2014-15 as compared to 41.55 mt last year, despite a marginal decline in the sowing area at 1.99 million hectares versus 1.97 mn ha in 2013-14. According to the Shimla-based Central Potato Research Institute, the crop has been normal so far this season. A clear picture will emerge by the first half of December, said a senior official there.

DECCAN Chronicle

Half of Amazon tree species in danger: study

About half of the 15,000 tree species in the Amazon -- the world's most diverse forest -- are threatened by deforestation, an international study said on Friday. The report lays bare the destruction of a vibrant and

sprawling ecosystem often referred to as the lungs of the earth because trees absorb carbon dioxide and release oxygen.

"At least 36 percent and up to 57 percent of all Amazonian tree species are likely to qualify as globally threatened," said the study in the journal Science Advances, which used criteria from the respected International Union for Conservation of Nature (IUCN). Under a business-as-usual scenario, about 40 percent of the original Amazon forest would be destroyed by 2050, the researchers found.

But with stricter conservation measures, they said, that number could be halved. The good news is that significant populations of endangered trees survive in protected areas of the Amazon, the researchers said. Still, they added, only constant vigilance over valuable trees like the Brazil nut -- 63 percent of which could otherwise be lost by 2050 -- will help preserve the Amazon's status as a major carbon sink, a potent natural asset in helping slow global climate change.

The cacao tree could decline by 50 percent within 35 years under a business-as-usual scenario, and the acai palm could decline 72 percent, the study found. Already, the prized mahogany tree is considered commercially extinct, no longer a part of the Amazon's forest economy. The report was based on forest surveys across the Amazon as well as maps of current and projected deforestation. Researchers from 21 countries contributed. "It's a battle we're going to see play out in our lifetimes," said lead author Hans ter Steege of Naturalis Biodiversity Center in the Netherlands.

"Either we stand up and protect these critical parks and indigenous reserves, or deforestation will erode them until we see large-scale extinctions." The largest part of the Amazon is in Brazil, which last year cut carbon emissions slightly through reduced deforestation, said a

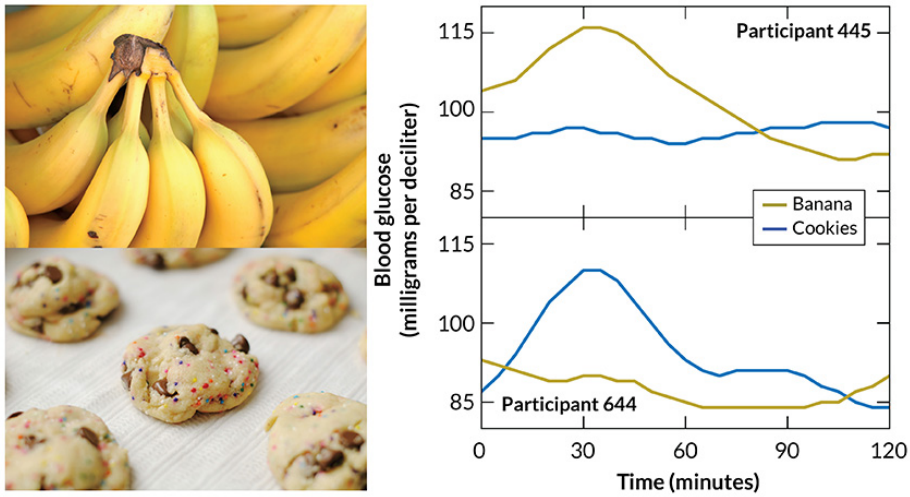
separate report by the NGO Climate Observatory.Still, Brazil's emissions were at the second-highest level in six years. In Colombia, meanwhile, the government Friday reported that deforestation is also on the rise -- up 16 percent in 2014 compared to the previous year -- particularly in the Amazon region.

The main causes are illegal mining, the felling of trees for farmland or the growing of coca leaves and fires due to drought, said the Institute of Hydrology, Meteorology and Environmental Studies. About 45 percent of the 2014 deforestation took place in Colombia's Amazon region, the institute said.

ScienceNews

A good diet for you may be bad for me

Eating the same foods can lead to different blood sugar spikes in different people



A cookie can give one person a sugar rush while barely affecting another person, a new study finds, indicating that a food's glycemic index is in the eater.

People's blood sugar rises or falls differently even when they eat the exact same fruit, bread, deserts, pizza and many other foods, researchers in Israel report November 19 in *Cell*. That suggests that diets should be tailored to individuals' personal characteristics.

The researchers made the discovery after fitting 800 people with blood glucose monitors for a week. The people ate standard breakfasts supplied by the researchers. Although the volunteers all ate the same food, their blood glucose levels after eating those foods varied dramatically. Traits and behaviors such as body mass index, sleep, exercise, blood pressure, cholesterol levels and the kinds of microbes living in people's intestines are associated with blood glucose responses to food, the researchers conclude.

Those findings indicate that blood sugar spikes after eating depend "not only on what you eat, but how your system processes that food," says Clay Marsh, an epigenetics researcher at West Virginia University in Morgantown.

Such individual differences have been noticed in previous studies, says study coauthor Eran Elinav, an immunologist at the Weizmann Institute of Science in Rehovot, Israel. While previous studies dismissed the differences as flukes, "we're actually quantifying it," Elinav says. For instance, eating bread produced a post-meal blood sugar level rise of 44 milligrams per deciliter on average. But some people's blood sugar rose as little as 15 mg/dl, while others had a spike as high as 79 mg/dl after eating the same amount of bread.

A team led by Elinav and Weizmann computational biologist Eran Segal created a computer algorithm that used 137 personal measurements to predict how much a person's blood sugar would rise or fall after eating a certain food. When tested on a new group of 100 people, the algorithm correctly predicted the response about 70 percent of the time.

A third group of 26 participants were then given personalized meals. The computer algorithm analyzed each person and then picked diets for 12 of them. A nutritionist chose a "good" and "bad" diet for the remaining participants. Good diets were ones that that minimized blood sugar spikes after eating. Bad diets sent blood sugar skyrocketing. The diets contained the same amount of calories.

It turned out that foods on the "good" diet for one person were sometimes on another participant's "bad" list, Segal says. For instance, one woman's

blood sugar spiked when she ate tomatoes. But tomatoes were on other people's healthy list.

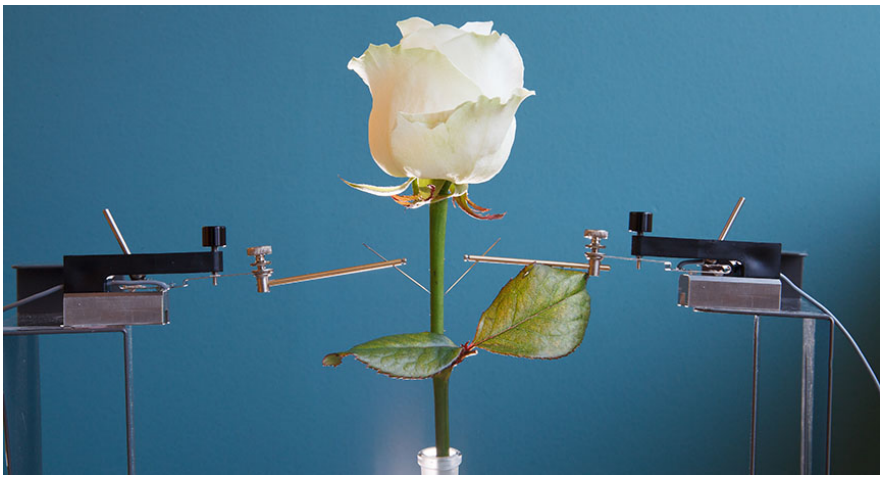
"What our data suggest is that relying on population averages is not only inaccurate, but may even be dangerous in some cases," Elinav says.

For 10 of the 12 people, the computer algorithm correctly predicted responses to the good and bad foods. Nutritionists were equally good at predicting how a person would fare on a given diet, the team found. But the computerized approach could reach more people, the researchers say.

Mixes of microbes living in people's guts, known as the gut microbiome, also changed with the good and bad diets. Bacteria help break down food and have been implicated in causing obesity and diabetes. This study can't distinguish whether the microbiome is causing differences in blood sugar responses or being influenced by how a person responds to certain foods, says Peter Turnbaugh, a microbiome researcher at the University of California, San Francisco.

While Turnbaugh agrees that personalized diets would be better than blanket recommendations for improving health, he sees some caveats. "The frustrating thing about all this is that we can learn how to optimize the diet for a given person, but ultimately, you have to stick to that diet."

Roses rigged with electrical circuitry



Garden-variety roses just got an electrical upgrade.

Playing off the thirst of plant vascular systems, a team of Swedish researchers cut garden roses (*Rosa floribunda*) and set them in water containing specially designed organic molecules that can conduct and process electricity. The molecules linked up to form "wires" in the xylem, which pumps water and nutrients up from plant roots. When zapped with a charge, the wires conducted electricity without damaging the plant, the researchers write November 20 in *Science Advances*. Similar bioelectrical molecules induced roses leaves to light up and change color.

This isn't the first time researchers have injected plants with electrical materials, but it is the first time they've used the plants' own vascular system to form a circuit. The technology could provide a means of manipulating plant biology for scientific research, to harvest energy or as an alternative to genetic engineering.