10.06.2015

THE HINDU

Malnad farmers take to ginger cultivation

Poor returns from paddy and maize cultivation seem to be pushing farmers to grow ginger in the Malnad region.

While the total area under ginger cultivation was 2,000 acres in 2008, it has now increased to 16,000 acres.

Narendrappa, a farmer from Choradi village, has been cultivating ginger in his three-acre land for the last two years. He said the profit from paddy and maize was less than Rs. 25,000 an acre. With ginger, it was around Rs. 1 lakh with an average yield of 100 quintals and at a modest Rs. 2,000 per quintal, he said.

Earlier, farmers at Ripponpet, Choradi, Esur, and surrounding villages used to rent their land to farmers from Kerala for ginger cultivation. On realising that it was lucrative, they have started cultivating the crop on their own from the past three years.

But not all farmers have profited. Suresh, a marginal farmer from Kalukoppa village, incurred loss as the ginger crop in his two-acre land got infected by fungal wilt last year.

There are also serious environmental concerns about such large-scale ginger cultivation. The soil drenching method is used to control bacterial and fungal wilt and farmers use heavy dose of pesticide in some parts of Malnad region to control the disease. Owing to excessive use of chemical fertilizer and pesticides for ginger cultivation, the soil turns barren, as shown by scientific studies.

Nagarajappa Adivappar, scientist with Krishi Vignana Kendra of the University of Agricultural and Horticultural Sciences, Shivamogga, told *The Hindu* that soil fertility gets affected with sequential cultivation of ginger for more than two years. A few farmers indiscriminately use chemical inputs to enhance yield. They have to use chemical inputs judiciously and go for crop rotation, he said.

Experts warn of serious environmental concerns about large-scale ginger cultivation

These sheets save many a crop

In an effort to keep water usage optimum, farmers in districts including Kancheepuram and Villupuram are opting for plastic mulch sheets. Such sheets, when laid over drip irrigation lines, limit water evaporation and prevent the growth of weeds. De-weeding is quite expensive if farming is not family-based and weeds also use up the nutrients in the soil, explained sources in the Agriculture Department.

“Both short-term and long-term crops including vegetables and fruits can be grown using this method. For short-term crops, sheets of 30 to 50 micron thickness sheets can be used. For fruits like mangoes and sapotas, sheets of 100 micron thickness should be used as they need to last longer,” explained N. Ram Subramani, a farmer of Walajabad.

He has been growing fruits and vegetables using plastic mulch sheets obtained from Ahmedabad and Hosur. The sheets cost Rs. 14,000 per acre but cannot be re-used once removed. Every two feet, holes are made in the sheet and seeds inserted into the soil.

The advantage is that water usage is very minimal. The heat also helps the fast growth of fruits, said a farmer of Kancheepuram. K. Balakrishnan and K. Baskaran of Kancheepuram say they have been using the sheets

for the past 4 years now since they offer a huge savings on labour costs as well. “This method lets us do farming with minimal hands. We manage the farm on our own. Because of drip irrigation, we don’t need people for watering the plants. For every crop, we would have to spend Rs. 5,000 per acre for de-weeding and Rs. 600 per day for watering. With the same amount of water, we can grow crops on three more acres,” explained Mr. Balakrishnan.

Farmers are using plastic mulch sheets to save on water utilisation

Exotic weeds a threat to ecology in Nilgiris

For four years, the Forest Department has been removing the exotic weeds and invasive species proliferating in the forests of The Nilgiris biosphere, but lack of manpower and financial resources is pegging back the effort.

The invasive species such as lantana camera, eupatorium and parthenium hysterophorus affect vegetation in terms of native species and thereby bring down the food base of the herbivores.

Any setback to the herbivore population owing to non-availability of fodder will, in the long run, have a proportionate effect on the carnivore population as well, say forest officials.

The Mudumalai Tiger Reserve, spread over 321 sq km, has a high density of tiger and leopards. The North and South Divisions, covering 1,100 sq km, also have a good population of carnivores.

It has become a common sight to see flocks of sambar deer and spotted deer and even huge mammals like the Indian Gaur and elephants wading through largely grown exotic species, activists say.

According to a senior forest official in the MTR, the park management began removing the invasive species four years ago at the rate of 500 hectares every year and the site was maintained for three years to prevent resurfacing.

As such this requires enormous manpower and a huge financial allocation , he points out.

At this rate, environmentalists say, the clearing of invasive species will take a long time.

“Until then, the effect on native vegetation and the resultant impact on herbivores and carnivores will continue,” says V. Ramsundar, an official involved in the study of the impact of weeds and invasive species.

Use of machinery

Deployment of machines for removing weeds did not go down well with environmentalists and forest managers as earth movers also caused damage to native vegetation. Considering the sensitive ecology and presence of micro bio-diversity, forest managers are averse to the use of machinery.

They are also apprehensive of using chemicals for eradicating invasive species.

K. Kalidasan of Osai says that institutions such as the Tamil Nadu Agriculture University (TNAU) and the Institute of Forest Genetics and Tree Breeding (IGTB) could be roped in to study the commercial value of these weeds and species.

Based on the commercial value, agencies could be permitted to remove them in a controlled and regulated atmosphere.

Similarly, there could be research on the use of these weeds as bio-fuel so that the removal of weeds and their exploitation could be entrusted to agencies that could make money and contribute to the wellbeing of forest ecology, he adds.

On the use of herbicide and biological control, there is need to have them studied on model plots in smaller pockets before introducing them to ecologically sensitive forests rich in micro bio-diversity. “These options need to be tried as manual removal of weeds is not only time consuming but also expensive,” he points out.

450 get exposed to integrated farming

An estimated 450 farmers from different parts of the State were exposed to the advantages of integrated farming at the Tamil Nadu Agricultural University – Anbil Dharmalingam Agricultural College and Research Institute in Tiruchi.

The two-day workshop on 'attracting and retaining youth in agriculture', which commenced on Monday, was organised by the TNAU and M.S.Swaminathan Research Foundation.

The participants visited various fields to understand the importance of integrated farming.

One of their field visits was to a farm where high density planting was adopted in guava cultivation. P.Pandiyarajan, Dean, and A.Nithyadevi, Assistant Professor of Horticulture, explained the benefits of high density cultivation in guava. The plants, which were just one year old, have started yielding fruits, indicating to the benefits of integrated farming. Further, the number of plants in an acre was nearly double the normal number. Divided into batches, the farmers visited various fields on the campus.

Water tanks inaugurated

The Tiruchirapalli City Corporation Mayor A. Jaya on Tuesday declared open a water tank at Pudu Street in Karumandapam.

It has been set up at a cost of Rs.10 lakh under the drought relief programme. She has also inaugurated water tanks at four more places, including Kothamangalam, Pirattiyur and Aravanur. Commissioner M. Vijayalakshmi and other officials took part. — Special Correspondent

'Near normal monsoon for Coimbatore'

The Agro Climate Research Centre of Tamil Nadu Agricultural University has said that the South West Monsoon this year for Coimbatore will be "near normal". This means a departure of minus 11 to minus 20 per cent from the normal rainfall, Head of the Centre S. Panneerselvam told *The Hindu* .

At an average rainfall of 210 mm for the four months that constitute the South West Monsoon season, the predict shortfall could vary between 23

mm and 42 mm, he said and added that there was nothing much to worry about the “near normal” prediction.

The average rainfall for the district – tabulated based on the last 30 years’ rainfall data – Coimbatore ought to receive 43 mm in June, 69 mm in July, 30 mm in August and 68 in September.

Weather data managers classify monsoon into normal, near normal and deficit. Normal rainfall came with a variation of plus or minus 10 per cent of the normal and deficit meant drop of more than minus 20 per cent of normal rainfall.

Coimbatore enjoyed the near normal SW monsoon prediction along with Tirupur, Erode, Karur, Theni and Madurai. Districts that fell under the deficit category included Virudhunagar, Tirunelveli, Tuticorin, Ramanthapuram, Sivaganga and Nagapattinam. The other districts fell under the normal category, he said.

As for Coimbatore, South West Monsoon would also lead to a drop in temperature – both day and night – by one or two degree Centigrade. The day temperature could be around 32 – 33 and the night 22 – 23.

Officers in the Agriculture Department said that farmers were geared up for the South West Monsoon season. Farmers who cultivated paddy in the PAP ayacut were ready as paddy nurseries were ready. As against the normal 1,50,000 ha paddy cultivation, this year paddy could be cultivated on 1,30,000 ha. Likewise, millets would cover around 10,000 ha, pulses, 4,000 ha and oil seeds 3,000 ha. There was an increase in coconut area by 2,000 ha as increase in prices had propelled farmers to go in for coconut.

Rice fallow pulses boost farmers’ income

Paddy growers in Cumbum valley have successfully harvested rice fallow pulses, third crop in a year, thanks to summer rain in the last month.

They had raised green gram in lands where they harvested paddy, the second crop in the valley.

Summer rain had kept the paddy field wet after harvest, which was sufficient to raise the third crop. “To capitalise on the summer rain, we had recommended fallow pulses to farmers in Cumbum valley,” said agriculture officials. Department of Agriculture had distributed certified seeds to 146 farmers in Kuchanur block.

“I had sown green gram 10 days after harvesting paddy in my field. Wetness in the field helped grow pulses. After 75 or 80 days, the crop was ready for harvest. The total expenses were not much. On the whole, I had spent around Rs.2,000 to Rs.3,000 per acre. On an average, the yield per acre was 300 to 350 kg and it fetched an income of around Rs.18,000 to Rs.20,000 per acre, says S. Muthuvel, a small farmer having 1.5 acres of land in Chinnamnur.

The department promoted pulses cultivation under National Food Security Mission and seed village concept. Subsidies were given to farmers for seeds and other inputs. Maintaining the farm was their only job to get a better yield. Green gram was a promising post-wet-season crop, said Joint Director of Agriculture V. Venkatakrishnan.

Farmers had raised GG 912 variety of pulses in the valley.

The summer rain was a blessing to farmers even though it affected paddy harvest in many areas. Farmers had completed harvesting paddy in 45,000 acres and taken up green gram cultivation, the third crop in a year.

Pulses cultivation not only provided extra income but also helped farmers enrich soil nutrition. They need not raise legumes in summer before ploughing for raising paddy. After the pulses were harvested, these plants decompose and increase the nitrogen content in soil. When the farmers raise paddy, the nutrient-rich soil will enhance the paddy yield during the next season, Deputy Director of Agriculture Chinraj pointed out.

With little expenses, the farmers get around Rs.18,000 per acre. Rice fallow pulses is a source of additional income to them. Farmers need not take any extra care to raise the crop. No fertilizers were required and not

much water as also needed for irrigation, said Deputy Director of Agriculture S. Muthiah.

Mandya ZP to honour 47 with 'Best Farmer' awards

The Mandya Zilla Panchayat has decided to honour 47 progressive farmers with 'Best Farmer' awards for their achievements in the adoption of modern agricultural practices to improve crop yield.

Rohini Sindhuri, Chief Executive Officer of the panchayat, who heads the committee formed to select progressive farmers, has finalised the list of awardees in a meeting held at her office here on Tuesday, a communiqué from the Department of Information and Public Relations said.

Of the 47, K.H. Ramesh of Kommerahalli, K.T. Mohan of Kothahi, C.P. Krishna of Guluru, Nagaraja Murthy of Madehalli, S. Suresh of Karekura, Chikkakalegowda of Sunka Thonnuru, Chandregowda of Maduvina Kodi and J.C. Nataraju of Jagate Mallenahalli have been selected for 'Agriculture Technology Management Agency' (ATMA) awards at district level.

ATMA awardees at taluk levels are: M.C. Shivanna of Maragowdanahalli (Mandya taluk); B.K. Lakshmi of K. Honnalagere, S.M. Manjunath and S.V. Rudresh from Sadolalu (Maddur); Nagaraj (Malavalli), H.K. Ramadas of Hulikere, Fazith Pasha of M. Shettahalli and Manjunath of Kaparamana Koppalu (Srirangapatna); Jayaramu of Dinka, R. Narasimhegowda of Arakanakere, Kantharaju and Nigmamma from Gummanahalli (Pandavapura); Prakash of Bandihole, N. Satish and Sunandamma of Maduvina Kodi (K.R. Pet); and Chikkaiah of Kommina Koppalu and Latha of Ambalajeerahalli.

The committee has also selected 19 others for 'Best Farmer' awards at both the district and the taluk levels.

While the district-level awards carry a purse of Rs. 25,000 each, those who are selected for taluk-level awards will get a cash prize of Rs. 10,000 each.

The ZP will soon announce the date of awards distribution ceremony, sources at the zilla panchayat said.

Licence to be mandatory for vegetable vendors

The government has decided to crack down on the issue of high levels of pesticide residues in vegetables being brought from neighbouring States by strictly regulating the entry of vegetable consignments from across the border.

As a first step, the government has decided to ensure that all vegetable traders in the State and vehicles in which vegetables are transported into the State have the mandatory licence or registration for food business operators (FBOs), as specified in the Food Safety and Standards Act of India. The licence/registration would be cancelled if the vehicles are found to be carrying vegetables with high pesticide content during any of the random sampling process.

Health Minister V.S. Sivakumar, who convened a meeting of wholesale vegetable traders here on Tuesday, along with Food Safety Commissioner T.V. Anupama, appealed to the traders to cooperate with the regulatory measures being adopted by the government so that pesticide-free vegetables can be supplied in the State.

The traders expressed their helplessness about the pesticide content in vegetables and that they could not be held liable for selling vegetables as per the market requirement. They also pointed out that they were not directly sourcing vegetables from farmers in neighbouring States but that it was the middlemen or agents who sourced the produce for them as per requirement.

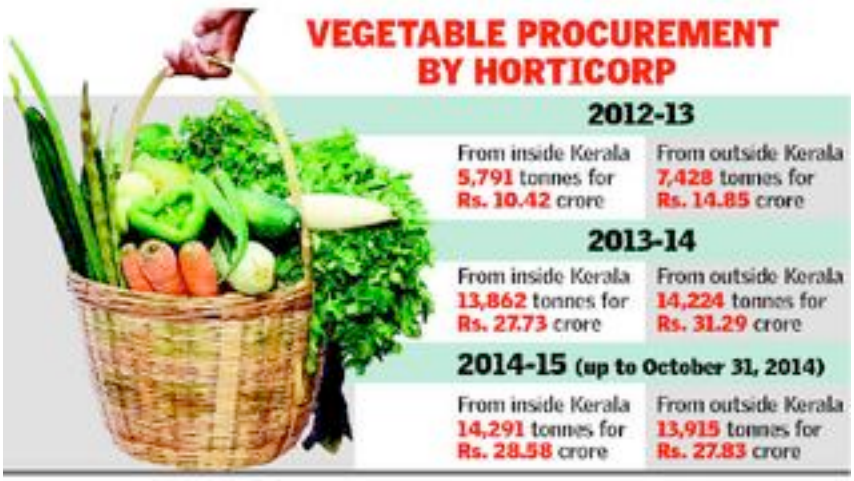
“But we think it is important that the traders become aware of the seriousness of the issue and that when they procure vegetables, they should convey it clearly to the other side that pesticide-ridden vegetables

will not be accepted any more. This is just a first step and we believe that if this message goes across clearly to the farmers that there will be no more demand for pesticide-ridden vegetables, the use of these chemicals by farmers will eventually come down," Mr. Sivakumar said.

The process of issuing licence/registration for vegetable traders and the vehicles is expected to be completed by July 15. Mr. Sivakumar said that vegetables samples collected from many shops with the 'organic vegetables' tag were also found to be pesticide-ridden. Food safety officials will be doing intensive checking and sampling in these shops on a regular basis to check pesticide levels in the vegetables. Meanwhile, the government will soon appoint 80 more food safety officers. As part of strengthening the drive against pesticide residues in vegetables and fruits, testing facilities are being augmented. Pesticide testing facilities will be added on at the government labs in Thiruvananthapuram and Ernakulam and the machines have already been installed, Mr. Sivakumar said.

The Chief Minister will be holding a high-level meeting on Wednesday, with other Ministers and Food Safety officials to discuss the issue of ensuring safe-to-consume vegetables in the State through regulatory measures.

Sellers hail safe vegetables move



Vegetable sellers have said that they welcomed the State government move to make vegetables being sold in Kerala safe to eat. However, they want the government to tackle the issue of poisonous vegetables at their origin.

The State government must get in touch with government agencies and farmers in neighbouring States like Tamil Nadu to tackle the issue of

heavy doses of pesticides in vegetables coming from these States, said K.K. Ashraf, Secretary, Ernakulam Market Stall Owners' Association. He said that even setting up testing facilities at entry points into the State where results would be available within a reasonable time would help. Vegetable dealers in Ernakulam market, numbering 59 has already registered online with the Food Safety Authority, he added.

District Secretary of Kerala Vyapari Vyavasayi Ekopana Samithy P. A. M. Ibrahim said that the governmental approach could be more practical in tackling the issue. He said that having all vegetable transporting vehicles registered with the Food Safety Authority would not be practical, he said. He added that even checks at the entry points may prove futile unless there were facilities to get test results in a short time.

More noodle, pasta brands to be tested soon

The Food Safety and Drug Administration Department will soon begin testing various other noodles, pasta and macaroni brands, a senior official said.

This comes in the wake of a directive from the Food Safety and Standards authority of India (FSSAI), which has asked for testing of several products of seven brands, including four variants of Nestle India's Maggi Nutri-licious Pazzta. This apart, nine variants of Maggi noodles, including the 'cuppa' varieties are to be tested.

"We have already initiated tests on some of the brands that tests have now been ordered on. We will begin testing the rest, including the Pazzta, once this first batch of testing is over," the official said.

While some test results from the samples in Chennai have already come in and showed excess levels of lead, results from the other samples are

expected in the next couple of days, he said, adding that the department was following a strict protocol of the testing procedure to ensure results were above board.

Other brands that are to be tested include three noodles of ITC Limited, Indo Nissin Food's Top Ramen, 10 varieties of GSK Consumer Healthcare's Foodles and CG Food India's Wai Wai noodles.

"Various test results on Maggi and some other similar products have raised serious health concerns. In view of the same, it would be advisable to draw regulatory samples for similar products for which product approvals have been granted by the FSSAI," the letter from the regulatory body to the commissioners of food safety said.

The letter also asks for the products to be tested for quality parameters such as moisture and total ash excluding salt, metal contaminants including lead, copper, arsenic and mercury as well as naturally occurring toxic substances such as aflatoxin and others. Action should be taken on food items found not conforming to applicable standards, it said.

On June 4, the Tamil Nadu government had banned the manufacture, stocking and sale of Maggi noodles and three other brands — Wai Wai Xpress Noodles, Reliance Select Instant Noodles, and Smith and Jones Chicken Masala Noodles for a period of three months as they were found to contain unacceptable levels of lead. On Friday, Nestle India said it was withdrawing Maggi noodles in the country.

Instant noodles and Maggi have been in the midst of a controversy since the product was found to contain high levels of lead, a toxic metal and monosodium glutamate (MSG) in a test done in Uttar Pradesh.

Since then, tests have been performed in several States across the country showing high levels of lead.

Directive from FSSAI that action should be taken on food items found not conforming to applicable standards

Siruvani water level dips to 10 feet

WILL MONSOON COME TO CITY'S RESCUE ?

SIRUVANI DATA

June 2014	Rainfall in Dam	Water level	Supply
1	Nil	13.74	61
2	Nil	13.51	61
3	Nil	13.25	59
4	Nil	12.86	59
5	Nil	12.46	59
6	Nil	12.13	62
7	Nil	11.71	62
8	Nil	11.31	62
9	1	10.89	73

Rainfall in mm, Water level in feet and supply in million litres a day

Reports on the South West Monsoon has got the water managers at the Coimbatore Corporation worried as delayed and poor monsoon could impact the city's water supply. For, the city is dependent on water from reservoir and rivers that get water from the monsoon showers.

Worst affected could be Siruvani water supply if the catchments go without rain in the coming days. In the past, there is nothing to cheer about as the entries in the rainfall register at the Corporation has been naught even as the water level in the Reservoir is gradually coming down at a little over 10 cm a day. The current water level is around 10 feet and will last only a few days if rain doesn't help. The water managers are concerned but not worried as they say they will be able to make good the fall in Siruvani water supply with water from the Pilloor Reservoir.

The Corporation draws around 125 million litres a day (mld) from its Pilloor drinking water supply scheme and has linked the Pilloor water supply network to the Siruvani network to continue supply water to the 28 wards that are fully dependent and the four wards that are partially dependent on the latter.

As for the added areas, the water managers say the 15 mld the Corporation is getting from the Tamil Nadu Water Supply and Drainage Board's Pilloor scheme will be able to meet the requirements of Thudiyalur, Vellakinar, Chinna Vedampatti, Saravanampatti and Kalapatti. Kavundampalayam and Vadavalli too should not be a worry as around three mld goes to the areas to augment the Bhavani water supply to those areas.

But Kurichi and Kuniamuthur could post a problem as the Corporation is not getting enough water from River Aliyar to meet the needs. As against 7.6 mld, the civic body is getting 5.50 to 6 mld a day. And, this means that Kuniamuthur residents are getting water only once in 10 – 11 days, they say.

Plus there are also issues with the distribution. For Singanallur, Ondipudur and areas nearby, the Corporation is able to supply water only once in seven to eight days. The water managers say they are keeping their fingers crossed and will look at drought management measures in another week, by mid-June.

As for ground water from bore wells is concerned, they say that the recent rain in May has helped.

CSG, fishermen join search operation

Police comb Pichavaram mangrove forest and coastal areas for several hours

ICG 119 Coast Guard Interceptor being rushed from Puducherry to search for the Dornier aircraft that went missing on Monday night.- Photo: T.Singaravelou

The Coastal Security Group of the Tamil Nadu Police has joined the search operations to trace CG 791 along the coasts of Nagapattinam and Cuddalore districts and Karaikal of the Union Territory of Puducherry.

Acting swiftly on an alert received before the crack of dawn on Tuesday, the CSG of Nagapattinam zone deployed its 12-tonne Fast Interceptor Boat (FIB) to carry out the search operations between Nagapattinam and towards its northern direction.

Simultaneously, CSG personnel kept the fishermen associations of the coastal places, including Thirumullaivasal, Poompuhar and Nagore,

informed about the missing aircraft and asked them to alert in case they noticed any strange object floating in the mid-sea.

Around 200 police personnel, who were ready for Operation Hamla, a mock drill to check the efficacy of security agencies in the event of an exigency from 5 am at Puducherry, were deployed immediately after the drill was called off.

The police personnel combed the vast area of Pichavaram mangrove forest and coastal areas for several hours on boats of the Forest Department.

A Coast Guard official said messages were communicated over radio and other modes to the fishermen.

Sources added the operation would continue with boats, ships and aircraft through the night from south of Chennai to Point Calimere.

Although the missing aircraft was not equipped with the advanced ADS-B (Automatic Dependent Surveillance – Broadcast) facility, the Tiruchi Air Traffic Control was able to monitor its movement for some time on Monday late night.

This was due to the radar data sent from the Chennai international airport to the Tiruchi airport where it is integrated into the air traffic automation system.

The same information was available with the radar controller in Chennai, the sources said.

The Tiruchi air traffic controller was able to monitor the aircraft 106 nautical miles north-east of Tiruchi air space on Monday night before it went missing, the sources said, adding that this proved to be a valuable piece of information to carry out the search operations.

Health Department launches campaign on egg consumption

Health Department officials organised an awareness programme on egg as part of a balanced diet among pregnant women at Narchandupatti near Pudukottai on Tuesday.

A day-long awareness programme on consumption of egg by pregnant women was organised under the auspices of the Health Department at the Primary Health Centre at Narchandhupatti near here on Tuesday.

Doctors and gynaecologists, who delivered special lectures, explained the relevance of nutrients in egg and advised the pregnant women from various villages in the vicinity to eat egg periodically.

Rani, Block Medical Officer, in her inaugural address, said that egg formed a vital nutrient for ante-natal care. She advised the mothers to consume fresh eggs.

V.C. Subash Gandhi, District Health Systems Project Officer, said that protein, fats, and minerals in the egg helped in the development of foetus cells. Rich in selenium, zinc, vitamins such as A, D and a few B-complex and Omega 3, egg could prove to be vital in ensuring a balanced diet .

During pregnancy, women required an additional calories of energy ranging between 200 and 300 grams and every egg could supply 70 calories. Egg supplied choline vital for brain growth and neural development and helps prevent birth defects. Women would be relieved of stress and cholesterol. Saturated fats, high density lipoprotein were other advantages.

Pre-monsoon inspection at Mettur dam

A survey is on to assess the level of sedimentation in the water spread area at the Stanley reservoir in Mettur and the Detailed Project Report is expected soon, S. Ashokan, Chief Engineer, Tiruchy Region, Water Resources Organisation, said here on Tuesday.

Addressing reporters after the inspection at the reservoir in Mettur, he said the Water and Power Consultancy Services Limited (WAPCOS), a Central government undertaking, is carrying out the survey. After getting approval for the project, work would begin.

With the south-west monsoon setting in Kerala, all precautionary measures were in place to meet copious inflow.

“The current water level is 74 feet and once it reaches 90 feet, as per the orders of the Chief Minister, water would be discharged for kuruvai cultivation,” he added.

The chief engineer said that a proposal under the Dam Rehabilitation and Improvement Project (DRIP) estimated at Rs. 9.47 crore had been sent.

“After getting the approval, work would begin,” he added.

A watch tower would be constructed to carry out 24-hour surveillance of the dam and the 16-vent surplus sluices.

The chief engineer inspected the right and left flanks and surplus sluices.

Tuticorin farmers want water released from Tamiraparani

Farmers of the Tamiraparani River Water Protection Federation in Tuticorin sought release of water from the Tamiraparani immediately for taking up cultivation of paddy in the kar season. Even after nine days since the start of the kar season, which began on June 1, the paddy farmers had been facing water scarcity, according to C. Nainar Kulasekaran, founder of the Federation.

Even during the advance kar season, which concluded by the end of May, water from the Tamiraparani was not released adequately. Though storage level was adequate in dams and irrigation tanks to facilitate cultivation on 21,113 acres, the State government permitted release of water only to benefit 8,124 acres of agricultural lands owing to wrong calculations of the PWD officials, he said here on Tuesday.

Due to this, cultivation was not taken up on 37, 983 acres. While the officials from Tirunelveli had sought the release of water from the Tamiraparani within June 15, the district administration from Tuticorin should also recommend for the water release. During a meeting chaired by Srivaikuntam Tahsildar on May 18, the PWD officials said that it was decided to release water to Marudhur dam to benefit 12, 762 acres through the dam’s west channel and 7,785 acres through its east channel on a priority basis from June 1. But, the farmers had been disappointed since water had not been released, so far.

Supplyco intensifies product testing

Fears of food contamination and dangerous pesticide residue levels in vegetables in the State have prompted Kerala State Civil Supplies Corporation Ltd. (Supplyco) to intensify testing of products being sold through its outlets for safety and quality.

Kerala State Horticultural Products Development Corporation (Horticorp), the apex agency engaged in procuring vegetables from Kerala farmers, said it would directly engage farmer groups in States such as Tamil Nadu and Karnataka for future procurements.

Minister for Civil Supplies Anoop Jacob told *The Hindu* on Tuesday that random samples were being collected from the five regions under Supplyco and tested at the Food Research and Development Laboratory at Konni.

The Minister said random tests had been done in the past, but now the practice was being intensified in the wake of the recall of Nestle's Maggi brand of noodles.

Supplyco has around 1,400 outlets across the State that sell nearly 3,500 different products.

Mr. Jacob said Chief Minister Oommen Chandy was scheduled to chair a meeting on Wednesday of officials from the departments of Health, Agriculture, and Civil Supplies on the issue of food safety.

The government's effort was to ensure that safe vegetables and other food items were available. Creation of awareness among farmers in the State about the dangers of pesticide overuse and coordination with departmental counterparts in the neighbouring States were some of the strategies being adopted, he said. A senior official of Horticorp said farmers in Kerala from whom the corporation procured produce operated under the supervision of officials of the Department of Agriculture. He said that the corporation bought items such as potatoes, onions, some winter vegetables, and green chilli from outside the State. The top vegetable dealer in Nagercoil had been instructed to make farmers aware of the situation. The dealers had been told that if residues at dangerous levels were found in vegetables sourced from them, they would be shunned in future, the official said.

The Corporation also planned to approach farmers' groups in Tamil Nadu and Karnataka to procure produce directly.

The Indian EXPRESS
JOURNALISM OF COURAGE

Missing Maggi? Try this homemade substitute

While Maggi is out of your reach now, maybe this is the time to explore some options. I am sharing a homemade 'tastemaker' recipe here.

It doesn't taste like Maggi either, but is tasty nonetheless, and my 4-year-old likes it. (Source: Sanghamitra Mazumdar)

Even as the sale of Maggi is banned almost in the entire country now, the debate over whether it is safe for consumption is on, and it doesn't look like the controversy will die down very soon. I don't know what has happened, or will happen, to with the packets of Maggi that different households had already stocked at home, but it is certain that new packets won't be available for a very long time.

So, are Indians missing their Maggi already? Well, while Maggi is out of your reach now, maybe this is the time to explore some options. I am sharing a homemade 'tastemaker' recipe here. I use seviyan for it to go with, but you can use other noodles too — whichever you think is safer for consumption. And if you are a "lazy mom/dad/student/bachelor", you can keep this 'tastemaker' in the fridge for a few days to toss up a real "two-minute noodles" dish at any time that suits you.

Tastemaker (Source: Sanghamitra Mazumdar)

The mixture, however, will be in the form of a paste, not powder. It doesn't taste like Maggi either, but is tasty nonetheless, and my 4-year-old likes it.

Ingredients
Onions: 2 (medium)
Tomatoes: 2 (medium)
Green chilli: 1-2
Garlic: 5-6 cloves
Ginger: ½ inch
Coriander leaves: 2 tablespoons
Cumin seed: 1 teaspoon
Turmeric: ½ teaspoon
Chilli powder: ½ teaspoon
Coriander power: ½ teaspoon
Asafoetida: A pinch
Vinegar: 1 tablespoon
Sugar: 1 tablespoon
Salt: To taste
Refined oil: 1 tablespoon

Preparation

Chop all the vegetables and set aside. Heat oil in a pan. Put cumin seeds and asafoetida. When the cumin sputters, fry the onions, chillies, ginger and garlic until golden brown. Add the tomatoes and all the dry spices. Once the tomato softens, add the salt, sugar, vinegar coriander leaves. Keep frying till the mixture is really dry and leaves the sides of the pan.

Cool it down and grind it. You can now use it with seviyan or other noodles.

(Source: Sanghamitra Mazumdar)

Note: In case you want to use the mixture later, you can consider adding a little oil to keep it fresh. Avoid water while cooking, it may dilute the taste. While this is devoid of any flavour enhancer, you can always enhance the taste of the dish by adding different sautéed vegetables or protein to the noodles.

THE TIMES OF INDIA

Tamil Nadu vegetables see red light in Kerala

The absence of specifics has prompted the agriculture department authorities to collect samples of vegetables from 15 districts for testing at Tamil Nadu Agricultural University.

Kerala government hasput curbs on traders procuring vegetables from Tamil Nadu after they found that pesticide levels in the vegetables were higher than permissible.

Kerala food safety department has written to Tamil Nadu's agriculture and food safety department stating that "pesticides were being used excessively in vegetables produced in Tamil Nadu and sent to Kerala". The vegetables were collected by Kerala government officials during a visit to Tamil Nadu two months ago. "We did receive the letter, but it did not specify the names of vegetables that were found having high pesticide content or the names of pesticides found above permissible limits," said TN food safety commissioner Kumar Jayanth.

The absence of specifics has prompted the agriculture department authorities to collect samples of vegetables from 15 districts for testing at Tamil Nadu Agricultural University.

"It would take around 15 days to get the lab results because we are going to test vegetables for all the pesticides and chemicals available in the market," said an agriculture officer in Coimbatore.

Meanwhile, officials of the Tamil Nadu agriculture department have swung into an overdrive to prevent excessive use of chemical pesticides by farmers. The officials are busy organising workshops for farmers in block and district levels. "We are addressing farmers in groups of 25 and 30 and requesting them to use only the amount of pesticides prescribed," said a horticulture department officer.

Horticulture officers admitted that farmers in the district often use pesticides five to 10 times more than the permissible level. "There are around 228 registered pesticides of which around 110 are used by farmers regularly," said a horticulture officer, adding, "There are clear guidelines on every pesticide pack on how much can be used. But farmers tend to use more for immediate elimination of pests."

"They also use residual pesticides like methyl perathione, furadan and monocrotophus which remain in the crop for 45 days after spraying. These are banned for use on vegetables and fruits," said a fertilizer quality-control officer.

However, farmers defend their decision to use pesticides because pest breakouts can kill their crops completely. "When farmers use only the level of pesticide prescribed, it fails to kill the pest immediately, giving it time to eat parts of the crop and multiply," Coimbatore secretary of Tamil Nadu Farmers' Association A K Andasamy said.

The issue started two months ago when a few officials from Kerala visited a few polyhouses and markets in Tamil Nadu and collected samples of vegetables and tested it in their own labs. "The Kerala government has been promoting organic farming for paddy and vegetables since 2010 by offering farmers incentives like organic certification and setting up organic markets," said K Radhakrishnan, a banana plantation owner in Kottayam.

Planting seeds of harvest

When one talks of agriculture, the common perception is that of a farmer toiling, tilling the land from dawn to dusk.Given its frugal returns, agriculture is seldom considered an opportunity , leave alone a way of life, by aspiring graduates. But the green fields, which feed us every day , throw up several career options which are not strictly limited to the barn and the barrow. In the agricultural universities of Tamil Nadu, there has been a surge in the demand for courses in the last two years.Around five new agricultural colleges are expected to be added to the Tamil Nadu Agricultural University (TNAU) this year for admissions. Engineering colleges under Anna University too are also starting a course on agricultural engineering.

The agriculture department is also witnessing a renewed interest in the field. A senior official in the department said, "We have a lot of young visitors at our office these days. I see that one in three has given up his job in the city and wants to take up agriculture. This is a reverse trend that we are seeing. Earlier, farmers would send their children to colleges hoping to make them working class people."

But while this will to toil is rare, experts say agricultural engineering has widespread application in the production of machinery and equipment. Said TNAU vice-chancellor K Ramasamy: "There is talk that Coimbatore may get an agricultural machinery development centre. After Bhopal in Madhya Pradesh, Coimbatore is expected to become a hub of agricultural machinery." This is expected to employ many , and may also open doors for entrepreneurship in the manufacture of agricultural machinery and development of farming equipment.

While there is immense promise, TNAU's intake has never been able to meet the demand. "We received over 40,000 applications last year for the single-window counselling of the 2,300 seats available for 13 undergraduate courses," Ramasamy said. This surge has now emboldened

five new colleges to apply for approval under TNAU. The colleges are awaiting government nod.

The availability of 2,300 seats under TNAU has been forcing aspirants to choose other engi neering courses. To fill this vacuum, colleges under Anna University too have introduced a new introduced a new course on agricultural engineering this year. Bannari Amman Institute of Technology in Sathyamangalam is starting agricultural engineering from this academic year. "The department will be managed by the mechanical engineering and biotechnology department's faculty.Students will have subjects related to agricultural machinery , plant sciences, manufacturing, plant biotechnology and few analytical subjects," said a faculty member.

According to educational consultant Moorthy Selvakumaran, agricultural engineering opens many other doors. With business models emerging, students can also pursue a course in agribusiness management.Besides, rural banks also throws up options, he said.

One can always gain a lot from nature

A degree in agriculture offers immense freedom. Like crops, opportunities only grow here. When I was young, zoology interested me very much, but I ended up getting a degree in agriculture from Tamil Nadu Agricultural University (TNAU) in Madurai. But soon, the love for animals took over and I chose to study insects. My previous degree complemented my endeavour and I did a master's degree in agricultural entomology from TNAU, Coimbatore.

After my PhD, I carried forward the knack of growing things. Nature has many bounties to offer and I chose to use insects and make them productive. The freedom allowed me to specialise in sericulture. Like agricultural engineering, sericulture has a massive scope in our country. India is the largest producer of silk after China, but the demand for silk keeps growing.In fact, we are still around seven tonnes short of the domestic demand for silk and have to import it from China. Sericulture can also lead to small and large-scale entrepreneurship ventures among students, even those in rural areas.

Like agriculture, sericulture covers various areas. A bachelor's degree will have basic courses in agriculture like agronomy, plant genetics and breeding and bio chemistry. The courses teach aspects of mulberry cultivation and production, also known as muricul ure, rearing and protection of silk worms. Students learn about four dominant types of silk

worms -Mulberry , Tasar, Oak and Eri -and how to handle them during the pre cocoon stage. They will also be taught to breed them, keep away diseases and work with and without pesticides.

Whether it is agriculture or sericulture, students have a great future because the government and the Central Silk Board recruit scientists and officers regularly. They can also start small scale ventures.Besides business, we face certain challenges with our quality of produce, so there is great scope in research to improve productivity and quality. After a master's degree, a student can go abroad for research. One can gain a lot from nature.

Home science students' creations on display

A two-day exhibition-cum-sale of creations by home science students began at Punjab Agricultural University on Wednesday. The exhibition was organized by department of family resource management; it showcased various artistic creations like 3D quilling, 3D landscape painting handmade paper bags, decorative boxes, Thai clay flowers, alcoholic ink creations, comb quilling, ornamental quilling, etc.

J Kishtwaria, dean, College of Home Science, said final-year students of BSc Home Science prepared these artifacts during their internship.

Maninder Sidhu, HoD Family Resource Management informed that a short course will also be organized from June 22-25 where participants can learn various techniques of making artistic creations. Matriculate students are eligible to attend the course.

Cabinet may look at higher MSP for paddy

The higher MSP for paddy comes at a time when there are doubts about the strength of the June-September southwest monsoon rains, sources said.

The Cabinet on Wednesday is likely to consider higher minimum support price (MSP) for paddy and a relief package for the beleaguered sugar industry to help tackle farm distress. The interest free loan to the sugar industry will enable the producers to pay the dues of farmers, which is estimated at about Rs 19,000 crore.

The higher MSP for paddy comes at a time when there are doubts about the strength of the June-September southwest monsoon rains, sources said.

The government is keen to portray its farmer friendly image and dispel criticism about its perceived pro-corporate stance.

Sources said that the agriculture ministry was asked to work out higher MSP for paddy after the weather office predicted patchy monsoon. The earlier stance of the government has been to raise the MSP marginally due to fear of stoking inflation. There were reports that commission for agricultural cost and prices (CACP), the entity which recommends the support price had proposed an increase of about Rs 50 per quintal.

TOI has learnt that the food ministry has proposed Rs 6,000 crore interest free loan for the sugar industry to tide over its difficult situation. Cane growers across the country, particularly in Uttar Pradesh and Bihar, have seen their dues swell as producers failed to pay their arrears due to the excess production and falling prices.

In April, the Cabinet had raised the import duty on sugar to 40% in a move to curb imports and had also removed the 12.36% excise duty on ethanol supplied for blending, for the 2015-16 season (October-September), to pass on price benefits to mills. However, the government has turned down the millers' proposal to buy 10% of the stock at market rate and create a buffer, which they had claimed would help recover.

THE HINDU BusinessLine

Deficient monsoon casts cloud over agro-chemicals sector

Since April 23, the day after the Indian Meteorological Department (IMD) first announced its long-range forecast for the South-West monsoon, stocks of agro-chemicals companies have been mixed.

As of Monday, BASF India, Insecticides (India) Ltd (IIL) and Bayer CropScience have fallen 11.2 per cent, 8.8 per cent and 2.5 per cent respectively over the period on the BSE. However, others such as Dhanuka Agritech, Rallis India and Excel Crop Care have gone up 0.72 per cent, 1.1 per cent and 14 per cent.

The sentiment has been affected badly, said industry sources, adding that different predictions on the quantum of rainfall are making it difficult to make any assessment for the this Kharif season.

Reduced production

"Companies have reduced planned production to just two months from three-four months earlier factoring in monsoon forecasts. No one is planning big sales, neither manufacturers nor distributors, and determining investments into specific products is being worked out," said Rajesh Aggarwal, Managing Director, IIL.

Experts said delayed onset — the monsoon hit Kerala only on June 5 — and poor pre-monsoon showers do not auger well for the industry. Sales generally pick up by May — when sowing is underway — and peak by July. "There is a lull in the market and there could be a production drop. This could cause a more than normal shortage in July, the biggest month for sales, and prices will rise. However, if there is a drought then demand will drop and prices should stay stable," Aggarwal told *BusinessLine* .

Depends on who's right

It will come down to whether the IMD's prediction of 88 per cent rainfall of the 50-year Long Period Average (LPA) of 89 cm is correct or private agency Skymet's prediction of an above-normal monsoon with rainfall expected to be 102 per cent of the LPA.

"There are mixed forecasts but if it's well distributed then impact should not be largely negative. If it goes far below IMD's prediction then industry could register single-digit growth, between 5 and 10 per cent," said RG Agarwal, Chairman, Dhanuka Agritech.

During years of normal monsoon, the industry grows at a compounded annual growth rate of 20 per cent. If demand contracts, already lowered prices could be slashed by up to 15 per cent, said industry sources.

"Skymet is expecting a good monsoon. If you look at the smallcap and midcap indices then yes, the sector was hit badly over the last year. But

the issue is not specific to the sector, it's a weak market overall. That's why it is too early to comment," said Alex Mathew, Head of Research, Geojit BNP Paribas Financials Ltd.

Tea output in 2014 at record 1.207 billion kg

It is now official. The Tea Board's final production data shows that in 2014, India continued its recent tradition of posting record tea production year after year.

Until now, we had recorded the country's production in calendar 2014 at 1.185 billion kg (bkg) – lower than 2013's level of 1.2 bkg. Now, the Board has revised its estimates between April and December 2014. Accordingly, the revised production of 1.207 bkg is now marginally higher than 2013.

Tea production crossed the 1 bkg mark for the first time in 2011 when production soared to 1.12 bkg. Production rose further to 1.2 bkg in 2013.

North Indian production in 2014 rose to 965.20 million kg (mkg) from 958.62 mkg (up one per cent). Assam continued to top India's production table at 610.97 mkg although it lost two per cent over 2013 production of 621.87 mkg. West Bengal came second in production table with 329.46 mkg – up five per cent. Here, Darjeeling, hailed as the champagne of teas, lost seven per cent to produce 8.51 mkg.

South Indian production marginally rose to 242.11 mkg from 241.79 mkg. Here, Tamil Nadu lost two per cent with production falling to 169.79 mkg. Kerala produced four per cent more to reach 65.58 mkg from 62.84 mkg.

Edible oils turn bearish as demand slackens

The edible oils market turned bearish on Tuesday on the back of slack physical demand. Malaysian palm oil bounced back from lower levels but closed lower. Domestic NCDEX soya oil futures closed higher, snapping initial losses. On the Bombay commodity exchange rapeseed, cottonseed oil and palmolein declined by Rs. 2, Rs. 2 and Rs. 3 each for 10 kg. Groundnut oil increased by Rs. 5 tracking the firm Saurashtra market where it jumped by Rs. 25. Soya and sunflower oil were unchanged. Local refineries have quoted imported oils Rs. 2-Rs3 lower.

In palmolein, traders kept away from fresh orders and concentrated on taking deliveries of old contracts. During the day hardly 300-350 tonnes of Palmolein were resold at Rs. 505–512. The indigenous edible oils market was quiet.

At the end of the day, Liberty was quoting palmolein Rs. 513 JNPT, Rs. 515 STC and Rs. 516 Shahpur for June. Super palmolein was Rs. 541 for June and soyabean refined oil Rs. 603 for June.

Ruchi was quoting palmolein Rs. 512 JNPT for June and Rs. 515 Patalganga for 20 June; Soyabean refined oil Rs. 601 for 12 June – July; sunflower refined oil was Rs. 701for June and Rs. 705 for July.

Allana was quoting palmolein Rs. 513 JNPT for 10-25 June and Rs. 516 Khapoli for 15-30 June; super palmolein Rs. 545 for 30 June; soyabean refined oil Rs. 601for July and sunflower oil Rs. 705 for June.

In Saurashtra – Rajkot, groundnut oil *Telia* tin jumped to Rs. 1,560 (Rs. 1,510) and loose (10 kgs) increased to Rs. 1,000 (Rs. 975).

On the Bombay Commodity Exchange spot rates (Rs. /10 kg) were: groundnut oil 950 (945), soya refined oil 600 (600), sunflower exp. ref. 645 (655), sunflower ref. 700 (700), rapeseed ref. oil 878 (880), rapeseed expeller ref. 848 (850) cottonseed ref. oil 608 (610) and Palmolein 508 (511).

Higher copra arrivals crush coconut oil

Declining coconut oil prices haven’t cheered up corporate and upcountry buyers as a majority of them are still staying away, anticipating further correction in prices.

Thalath Mahmood, Director, Cochin Oil Merchants Association (COMA), said corporate buyers are procuring only on a limited scale at a time when the market is flooded with copra. He said the onset of monsoon in Kerala might not impact arrivals, as there are several alternative methods now for drying using power and gas.

Steady going

The market, which registered a fall of Rs. 200 per quintal in the last few days, is steady this week without showing any price fluctuation. The price in Kerala is Rs. 12,000 per quintal against Rs. 12,200, while in Tamil Nadu it was Rs. 11,500 last week.

Increased copra availability dented prices to Rs. 8,200 per quintal in Kerala (Rs. 8,400); it was Rs. 8,000 in Tamil Nadu, as quoted last week.

However, Sunny Francis of KLF Nirmal Industries attributed the low demand for coconut oil to the starting of sowing activities in most parts of North India during June-July season.

Demand concern

According to him, the price decline is definitely a concern for the coconut oil industry, as it will move consumers away from the local market due to low demand. Hence, it will be ideal for the market to settle in the Rs. 10,000-11,000 range; otherwise farmers will neglect coconut farming due to low-price realisation for their produce.

Bharat Khona, former board member of COMA, said prices seem to have stabilised for the time being with local millers in Tamil Nadu venturing into the market. This was reflected in the loose oil market which went up to Rs. 1,750 for 15 kg from Rs. 1,700.

Maggi fiasco hits flour mills

The Maggi fiasco has left a section of flour millers, who were major suppliers to Nestle India, in a soup. It is estimated that about 70-80 flour mills across the country supplied about 1,800 tonnes of maida, the finely milled and refined wheat flour, per day to the company that operated about five noodle making units.

“The ban on Maggi has hit the flour millers dependent on Nestle India badly. While few have closed their operations, some others have scaled down their production,” said VK Bansal, Senior Vice-President, Roller Flour Millers’ Federation of India. Bansal, who ran a dedicated flour mill for the Nestle plant at Nanjangud, near Mysore in Karnataka, has closed the unit.

Nestle was forced to withdraw and recall all the nine variants of its Maggi instant noodles following the ban imposed by the Food Safety and Standards Authority of India (FSSAI) after detection of high levels of lead and presence of taste enhancer monosodium glutamate (MSG) from samples drawn across various States last week. FSSAI had said these products are “unsafe and hazardous” for human consumption and had asked Nestle to stop further production, processing, import, distribution and sale of the said product.

Nestle operated company-owned noodle manufacturing plants in Punjab, Goa, Uttarakhand, Karnataka and Himachal Pradesh besides engaging contract manufacturers in States such as West Bengal and Delhi. Maggi was among the fast moving brands in the country and Nestle had developed a string of ingredient supplier ecosystem over the past three decades in the areas around its factories.

Noodle and pasta makers accounted for a sizeable chunk of the maida produced in the country and Maggi was the largest buyer among these players.

Being optimistic

“It is a big set back to the flour millers, who were suppliers to Nestle and other pasta and noodle makers. They have been forced to scale down their operations following the ban on noodles,” said Veena Sharma, Secretary of the Roller Flour Millers Federation of India. Though a section of millers think that this could be a temporary phase, it may take some time to tide over the crisis. “The millers are keeping their fingers crossed,” Sharma said.

However, the impact of the Maggi ban has, so far, not influenced the prices of maida and other flour products. The annual turnover of the flour milling industry in India is estimated at over Rs. 12,000 crore.

Monsoon waits for 'Ashobaa' to blow out over Oman

The monsoon remained unmoved from Monday's alignment across the south peninsula as cyclone Ashobaa over north-west Arabian Sea headed towards the Oman coast.

The landfall is likely to happen between Sur and Muscat in Oman by Thursday night, an India Met Department update said on Tuesday.

Ashobaa will intensify another round into a severe cyclone before weakening as it approaches for landfall.

The severe cyclone could feature wind speeds between 95 and 105 km/hr and gusting to 120 km/hr on Wednesday.

Under its influence, pre-monsoon rains may lash south Gujarat until Wednesday afternoon. Isolated heavy falls are indicated for Karnataka and Konkan-Goa during this period.

Otherwise, the monsoon has been active over east India during the 24 hours ending Tuesday morning. Heavy rain has been reported from Arunachal Pradesh, Assam and Meghalaya.

Monsoon progress

It will take another two to three days for it to advance over the south to further parts of Konkan, Karnataka, remaining parts of Tamil Nadu, parts of Rayalaseema and coastal Andhra Pradesh.

Meanwhile, heat wave conditions prevailed over isolated places of east and west Uttar Pradesh; north Madhya Pradesh; Bihar; and Jharkhand.

North-west India and central India continued to witness nil, scanty or deficient rain during the 24 hours ending Tuesday morning.

Satellite imagery showed convective (rain-creating) clouds standing tall over north-eastern States, coastal Andhra Pradesh, Rayalaseema, Karnataka, Kerala, and Lakshadweep.

Bay scene

While no model has forecast any low-pressure area springing up in the Bay of Bengal, the US Climate Prediction Centre sees the Konkan-Mumbai coast remaining wet until June 21.

This is expected to happen with monsoon flows regaining vigour post-landfall of the cyclone, and look to hit the northern part of the west coast from June 14.

Eastern parts of central India, including Vidarbha, Chhattisgarh and east Madhya Pradesh, are also forecast to receive rain.

This would happen as a rain wave over north-eastern States moves north-west along the foothills and adjoining plains of Bihar, Jharkhand, east Uttar Pradesh and the hilly regions of west Uttar Pradesh.

Business Standard

ICAR developing new non-GM soybean genotypes high in oleic acid

Derived oils with high oleic acids are free from trans fatty acids that pose high risk of heart ailments

The Directorate of Soybean Research (DSR) of the Indian Council of Agricultural Research (ICAR) is developing new genotypes that could potentially yield high oleic acid and high oil content in the crop.

Scientists at the DSR are hopeful of achieving up to 55 per cent oleic acid content in the new genotype. The IC210 soy genotype, which the DSR developed a few years ago and licensed it has 42 per cent oleic acid. The IC210 genotype has an yield potential of more than three tonne per hectare and a maturity period of 95-98 days.

The widely sown regular varieties in the soybean cultivation belt in the country, JS9560, JS 335 and JS 9305, currently possess 19-25 per cent oleic acid and yield an output of around two tonne per hectare, with the crop maturing in 100-105 days.

Importantly, derived oils and fats in soybeans with high oleic acids need not be hydrogenated, a process which generates undesirable trans fatty acids, which healthcare experts says raises LDL ('bad') cholesterol and lowers HDL ('good') cholesterol and puts one at risk of coronary ailments. Further, oil derived from beans with high oleic acid is more stable compared to the regular soybean genotypes.

While the agri research bodies in the country had been predominantly developing such "specialty soybeans" following non-genetic (non-GM) methods, in the US, these are increasingly being achieved through genetical modification.

According to the DSR, high oleic acid soybeans up to 55-60 per cent oleic acid does not require partial hydrogenation, an industrial process employed during the processing of edible oils. Also, it could serve the interests of the FMCG industry in their efforts to produce packaged foods that are safe for dietary consumption.

Speaking to Business Standard, DSR scientist Vineet Kumar, said they were hopeful of coming up with the high oleic acid soybean genotype in the next 2-3 years up to 55 per cent and more. ICAR plans to license the seed production. Food majors like ITC Limited and Ruchi Soya have already secured non-exclusive rights for some of the ICAR's previous innovations in high oleic soybean (IC210) and kunitz trypsin inhibitor-free soybean research (NRC101, NRC102). The Kunitz trypsin factor in soybean is said to be inhibiting the trypsin secreted in the pancreas.

Soybean oil, which is one of the major source of omega-3 fatty acid among the available cooking oils, it is being imported to the tune of approximately 1.9 mt. In this context, high oil lines in high yielding background being developed at DSR would be pivotal. Last year, India had imported 10 million tonnes (mt) of edible oils to meet the total 20 mt domestic requirement.

According to the Soybean Processors Association of India, the estimated production of soybean in the kharif 2014-15 stood at 10.04 mt, up from 9.4 mt in the previous year, with Madhya Pradesh, Maharashtra and

Rajasthan being the major cultivators. Due to a sharp fall in international soymeal prices, and the Indian soymeal trading well above global prices, farmers have been the worst hit and the domestic processors had been operating at 50% utilisation.

However, the ICAR expects the country's growing health conscious middle-class would generate higher demand, and is directing its research to remove the undesirable and anti-nutritional factors from soybean to make them more acceptable.

The major deterrent in enhancing the utilisation of soybean for food purposes has been the presence of kunitz trypsin inhibitor (KTI) and off–flavour generating lipoxygenase. DSR scientists are currently "working towards removing both KTI and lipoxygenase in the same genotype".

Though both the discouraging elements could be freed by heating, it is proved to be highly cost-ineffective and also affects the soy protein's solubility characteristics.

As part of their efforts to include soybean in daily diet, DSR has developed vegetable soybean NRC 105, which Kumar said had similar characteristics of green pea and was also sweet. Similar genotypes, Karune and Swaranvasundhara, have been developed at All India Coordinated Research Project on Soybean Centre at Bangalore and Ranchi, respectively.