

28.09.2015

## THE HINDU

### **For farmers, by farmers**

*The participant farmers mulled the idea of forming a company for themselves, primarily to address farm issues, instead of looking to the government for help*



A view of the retail outlet of Farmers' Producer Company at Nachalur village in Karur district that sells fertilizers and pesticides.— PHOTO: A. MURALITHARAN

or farmers, by farmers. This is the slogan that drives Nachalur Farmers' Producer Company (NFPCL) in Nachalur village of Kulithalai taluk in Karur district of Tamil Nadu. With 650 farmers from 40 villages as members, this public limited company is a pioneer in ensuring the right farm input at the right time, at the right price.

“It all began at a master farmers' training programme organised by the National Bank for Agriculture and Rural Development (NABARD) in 2011,” recalls G. Karikalan, Managing Director, who left a 15-year career in the IT industry to plunge into farming. The participant farmers mulled the idea of forming a company for themselves, primarily to address farm issues, instead of looking to the government for help. The only model available at that time was the Punjab Organic Farmers' Producer Company.

After consultation with experts and auditors, the NFPCL was incorporated under the Companies Act in June 2012, with an investment of Rs.25, 000 each from 50 farmers. Later, it was split as shares with a face value of Rs.5,000 each. It started business in August and registered a turnover of Rs.37 lakh in 2012-13. The turnover for 2014-15 was Rs.1.42 crore.

Today, the company runs a seed, fertilizer and pesticide outlet; operates a seed processing unit and provides weather updates, technical solutions to farmers' problems and farm machinery at reasonable rent, besides offering labour service for planting under System of Rice Intensification. It has a tie-up with m-KRISHI, a rural service delivery platform of Tata Consultancy Services, to offer information on weather, fertilizers, pesticides and soil and water conservation over mobile phone.

The company gets assistance and support from NABARD, the Tamil Nadu Agricultural University and Krishi Vigyan Kendra, Karur, run by the Saraswathi Foundation for Rural Development and Training. The NFPCL has tied up with five leading fertilizer companies and four pesticide companies to sell quality inputs. It also has experts on-call to address issues raised by farmers.

The seed processing unit, with a capacity to process two tonnes per hour, provides quality Bapatla 5204 paddy seeds to farmers in villages located in a radius of 20 km around Nachalur.

Besides paddy seeds, the unit also processes black gram and maize seeds. It plans to construct a modern rice mill to eliminate middlemen in rice trade. The company's warehouse stocks adequate chemical and organic fertilizers round-the-year. It stands as guarantor for loans taken by farmers.

“The objective of starting the company was to ensure that farmers should not feel cheated. It has considerably reduced unnecessary use of fertilizers and helped farmers to escape from tie-up sale of traders. Its impact is visible in Kulithalai taluk,” says Mr. Karikalan. C. Sivakumar, a farmer, says that the

company, unlike traders, does not revise prices even when the demand is at its peak.

Since the Nachalur company's formation in 2012, similar ventures have sprung up, some on a larger scale, all over Tamil Nadu. The NFPCL is now involved in the process of starting a state-level producer company, Consortium of Farmer Producers' Companies – Tamil Nadu. "We hope to get it incorporated soon," says Mr. Karikalan.

More details can be had from G. Karikalan, Managing Director, Nachalur Farmers' Producer Company, 37/4 Valluvar Nagar, Nachalur Post, Kulithalai Taluk, Karur District, 639 110. Phone: 97512 22211. e-mail: nfpclnch@gmail.com., rinithaakarikalan@gmail.com annamalai.s@thehindu.co.in

### **Kharif crop sowing crosses 1,026 lakh hectares**

*In lakh hectare*

<b>AREA UNDER KHARIF CROP</b>		
<b>Crop</b>	<b>2015-16</b>	<b>2014-15</b>
Rice	374.09	373.86
Pulses	113.45	101.83
Coarse cereals	183.16	178.44
Oilseeds	183.68	177.49
Sugarcane	48.84	48.74
Jute & Mesta	7.80	8.13
Cotton	115.20	125.75
<b>Total</b>	<b>1,026.23</b>	<b>1,014.24</b>

The total area sown under kharif crops as on September 24, 2015, registered a marginal increase of 1.18 per cent at 1,026.23 lakh hectares against 1,014.24 lakh hectare in the same period in the previous year. Going through the latest figures furnished by the Ministry of Agriculture, total area under pulses accounted for a significant increase of 11.41 per cent. While areas

sown under coarse cereals and oilseeds recorded a rise of 2.65 per cent and 3.49 per cent respectively, cotton saw a big fall of 8.39 per cent, followed by jute & mesta (4.06 per cent). There was a marginal increase in area under sugarcane at 0.21 per cent.

With sowing operations for kharif season nearly coming to an end, the area under rice, the main kharif crop, remained almost flat at 374.09 hectares against 373.86 lakh hectares. Pulses covered 113.45 lakh hectares against 101.83 lakh hectares.

Under this moong dal accounted for a significant rise of 20.49 per cent in acreage at 25.56 lakh hectares against 21.28 lakh hectares. The area under arhar rose by 4.06 per cent stood at 37.64 lakh hectares (36.17 lakh hectares) and urad by 9.52 per cent at 27.83 lakh hectares (25.41 lakh hectares).

Sugarcane covered marginal rise of 48.84 lakh hectares (48.74 lakh hectares). The area under cotton stood at 115.20 lakh hectares against 125.75 lakh hectares in the previous year. The details of the area covered so far and that covered during last year this time are given in the table.

### **Advance estimates**

The recently released first advance estimates of production of major kharif crops for 2015-16 by the Department of Agriculture, Cooperation and Farmers Welfare revealed that total production of kharif foodgrains at 124.05 million tonnes a rise of 3.78 million tonnes over the previous year advance estimates of 120.27 million tonnes.

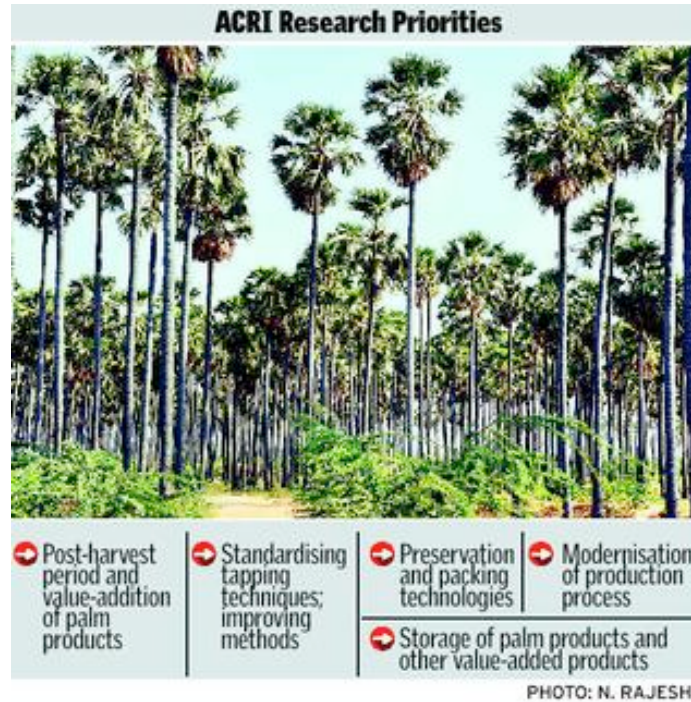
However, compared to the fourth advance estimates of 2014-15, which placed kharif production at 126.31 million tonnes, there is a decline of 2.26 million tonnes (1.8 per cent).

— **S. Varadharajan**

*Areas under pulses, coarse cereals and oilseeds register a rise*

## ACRI to form palm producers' society in Tuticorin

*Research outcome could enhance export of value-added products*



Agricultural College and Research Institute (ACRI), Killikulam, has recognised palmyra as one of the mandatory crops under dry land horticultural crop research as the palm is a suitable and remunerative tree crop for dry lands.

Among the roughly estimated 8.1 crore palm trees in India, nearly 5.1 crore are found in Tamil Nadu. Tuticorin district alone accounted for 50 lakh palmyra trees, V. Subramanian, Dean, ACRI, said here on Sunday. The ACRI, a national-level research centre for palmyra, would form a palm producers' society in the district.

The outcome of the research on palmyra by the institute could brighten the possibility of palm farmers engaging in export of value-added products of neera, fruit, tuber and fibre, which were in good demand.

The research outcome would also benefit consumers get various hygienic products. Palm leaf-based artefacts were being exported in considerable

quantity from Tuticorin port to European countries, Dr. Subramanian told *The Hindu*.

Palmyra was drought-tolerant and possessed high value of chlorophyll stability index and relative water content compared to coconut tree. As it required less rainfall and care, palmyra tree could be planted on marginal lands, sandy plains, field bunds and even on saline tracts.

### **Dwarf genotypes collected**

The Dean said that potential palm-growing areas, including Tamil Nadu, Andhra Pradesh, Bihar, Karnataka, Odisha and West Bengal, had already been surveyed and promising dwarf genotypes were collected at the Killikulam centre.

Priority was given to select only dwarf and high-yielding palms with other desirable growth characteristics such as more leaf and stalk length, good trunk girth, and variability in fruit shape and colour.

The increase in plant height, stem girth, number of leaves, leaf length and petiole length was also being evaluated regularly.

So far, 13 joint-surveys along with scientists from All India Coordinated Research Programme on Palmyra had been undertaken and as a result 265 accessions were collected and being maintained at the ACRI, he said.

### **Turmeric auction fetches good price**

Turmeric was auctioned for Rs. 1.40 crore at the Tiruchengode Agricultural Producers Cooperative Marketing Society on Saturday.

While the 'Virali' variety fetched a price between Rs. 6,469 and Rs. 8,399 per quintal; the 'Kilangu' variety fetched a price between Rs. 5,860 and Rs. 7,585 per quintal and the 'panakali' variety fetched a price between Rs. 9,500 and Rs. 20,499 per quintal.



About 2,700 quintal of turmeric was auctioned for Rs. 1.40 crore on the occasion, according to society sources.

Coconut kernels was auctioned for Rs. 4 lakh at the Mallasamudram branch of the Tiruchengode Agricultural Producers Cooperative Marketing Society on Saturday. While first quality kernels fetched a price between Rs. 67.55 and Rs. 76.15 per bag, the second quality fetched a price between Rs. 41.65 and Rs. 46.75 per bag.

### **Consumer goods under one roof**



The weekly market at Koranguchavadi in Salem city.

Despite the presence of uzhar santhais, super markets and departmental stores, the bi-weekly santhai at Koranguchavadi in the heart of Salem city continues to enjoy good patronage from the consumers.

The santhai meets from dawn till late evening hours on Sundays and Tuesdays for the past many decades. The popularity of this bi-weekly market could be gauged from the fact that the entire Koranguchavadi area, that vehicular traffic gets choked frequently on the main road, particularly during the Sunday evenings.

This santhai has been attracting a large number of consumers not only from various parts of the city but also from faraway places such as Omalur, Salem Steel Plant Road, Taramangalam etc in the wake of sale of all materials,

popularly known as one-stop shop. A large number of farmers of Omalur, Kadayampatti, Mecheri and Mettur and the surrounding villages bring their agricultural produce to this market regularly.

This market supplies all consumer goods under one roof on both the days. Apart from vegetables, temporary shops marketing grocery, utensils, iron wares, pots, furniture, eatables are found in abundance on the small maidan in the residential locality of Sastri Nagar and also on the Koranguchavadi main road.

The presence of weekly santhai on two days in a week well within the Corporation limits only testifies the convenience and the comfort it has been providing to the consumers.

Initially, the shops surfaced only on the little ground. With many residential localities springing up in the vicinity of Koranguchavadi, widening of the main road and the laying of Bengaluru by-pass road etc, has led to the expansion of the santhai in the last one decade.

With the santhai offering a higher profitability, it has been providing attractive marketing avenues for farmers, other merchants, grocers. One of the major reasons for the success of this market, despite the presence of four Uzhavar Santhais in the Corporation limits, is the price factor.

The price of many vegetables and other items are as cheap as in Uzhavar Santhai, says M. Sivakami, a housewife of Salem Steel Plant road, a regular visitor to this market.

Despite its popularity, the market functions with poor infrastructure. It does not have proper parking area nor concrete shops. Shops function on the roadsides haphazardly.

One of the main complaints of the citizens of the city is the presence of temporary shops on both sides of this narrow and busy road for two full days



in a week. It affects the free flow of traffic, says S. Ravikumar, an auto driver attached to Koranguchavadi auto stand.

A cross-section of the regular customers complain that the santhai lacks basic facilities. Besides, the shops are not orderly, causing much inconvenience to the people.

The same views are echoed by the people running permanent shops in Koranguchavadi area. The corporation and the traffic police authorities should regulate the functioning of these shops.

Much space lies idle in the ground in Sastri Nagar and the farmers should be asked to put the stalls there, without occupying the space on the road sides, says K. Ravi, a college student of Sankar Nagar.

He pleads for presence of police to regulate vehicular traffic on both the days at this point.

The weekly market in the Old Suramangalam, also in the corporation limits, is another market popular among the consumers. This market meets on Thursdays. Unlike the Koranguchavadi market, this santhai meets in an open earmarked for this purpose when Suramangalam was still a municipality.

This market, too, has been attracting a good number of farmers and consumers from in and around the city.

### **This gardener believes tulsi can control insect attacks on plants**

Blany D'Souza explaining about his terrace garden at his house in Mangaluru on Sunday

When Blany B. D'Souza, a sought after terrace gardener in the city, says that he has not purchased vegetables for his house since six years, he strongly believes that the Tulsi plant works as a repellent of insects attacking vegetable plants.

Mr. D'Souza at Ist Cross, Manki Stand, has been into terrace gardening since more than a decade.



He said that he placed about six pots with Tulsi plants in his 1,200 sq.ft. terrace garden about one-and-half-months ago. Surprisingly, now the insects attacking vegetable plants have disappeared, he told *The Hindu* .

He said that earlier even though there was an ‘insect trap’ on the terrace, insects continued to attack the vegetable plants. Mr. D’Souza said that he never sprayed any insecticide control solutions, either organic or chemical.

K.R. Chandrashekar, a Professor of Applied Botany, Mangalore University, told *The Hindu* that according to a report published in Parasitology Research Journal in 2008, Tulsi plant has larvicidal properties against mosquito larvae. But without in-depth study into this aspect, no conclusion could be drawn, he said.

His passion for gardening after he returned from west Asia 20 years ago prompted Mr. D’Souza to go in for terrace gardening. Now, his garden has about 200 plants of about 100 varieties, including vegetables, fruits and medicinal ones. He has set up more than 40 terrace gardens in the city for others. These include individual houses, schools, apartments and institutions.

Mr. D' Souza has grown almost all varieties of local vegetables. He has also grown the non-traditional grape in his garden twice. Usually he plants 10 vegetables and 10 fruits on an area of 500 sqft, meeting the requirements of a family.

He is now a resource person on terrace gardening. "If you touch plants and shower love on them, they will not cheat you," he said. Many school children visit the garden to get a hands-on experience. Mr. D'Souza can be contacted at 9972716340.

*Blany B. D'Souza has been into terrace gardening for more than a decade*

### **Agriculture fields damaged in rain**



Agriculture fields were damaged due to heavy rain on Saturday night at Kaneri Mukku in The Nilgiris.

Saturday night's heavy rain damaged agriculture fields in a couple of villages off the Ooty-Gudalur highway in the Nilgiris district.

According to sources, the rain that started around 8.30 p.m. lashed the Sholar Kokkal and Kaneri Mukku villages, resulting in heavy flow in the jungle streams there.

Being low-lying areas, the heavy flow in the streams and rain damaged crops on around 50 acre, said sources. The villages cultivate potato, cabbage, carrot, beetroot and a few other vegetables.

On information, Horticulture Department officials carried out an inspection on Sunday to assess the damage. The loss would be known on Monday.

### **Asian Development Bank doubles climate financing**

#### ADB DOUBLES CLIMATE FINANCING

The Asian Development Bank says it will double its funding to fight climate change to \$6 billion by 2020.

The Manila, Philippines-based ADB says that means its spending on tackling global warming will rise to about 30 per cent of its overall financing.

The bank said Friday it will dedicate \$4 billion to lowering greenhouse gas emissions “through scaling up support for renewable energy, energy efficiency, sustainable transport, and building smart cities.”

The remaining \$2 billion will be spent on efforts to help vulnerable countries adapt to climate change, including “through more resilient infrastructure, climate-smart agriculture, and better preparation for climate-related disasters.”

The announcement comes as the U.N. prepares to discuss SDGs in New York and ahead of an envisioned global climate pact in Paris in December.

### **‘Groundwater level in Bidar worst in 10 years’**

A government study has revealed that groundwater level in the district are the worst in 10 years. Due to over 55 per cent scarcity of rain this year and due to the reduced rainfall over the last few agriculture seasons, the aquifer has slipped by an average of 22 metres.

It had gone down by 10 metres by August. In one month, it has decreased by another 10 metres, officials of the Department of Mines and Geology, who prepared a report about groundwater, said.

The water level has been falling since 2004, the report said. In the last five years, rainfall was above average only in 2013, when the water level rose up by around 10 metres. But the fall began again in 2014.

The worst fall has been in Bhalki taluk (25.38 metres), followed by Humnabad (21.87 metres), Basava Kalyan (19.5 metres), Bidar (17 metres) and Aurad (15.8 metres).

Bidar receives an average of 865 to 910 mm of rainfall. The average water level is at 20 metres and this has doubled this year, according to officials.

### **Agriculturists' award**

Uttara Kannada district level best agriculturists' award for 2015-16 has been conferred to Vishweshwar Narayan Bhat Yellapur in Men's section and Radha Ramesh Hegde Kesarkoppa (Kangod) in the Women's section by the University of Agricultural Sciences, Dharwad. The taluk-level award has been conferred to Santosh Naik Kalakaradi and Pavitra Satish Gouda Kalkoppa in Sirsi taluk.

— Correspondent

### **This mela, get fresh and organic fruit, vegetables and fish**

Agricultural equipment on display at the Krishi Mela which began in Dharwad on Sunday.

*Four-day Krishi Mela begins at University of Agricultural Sciences, Dharwad*

The University of Agricultural Sciences (UAS) campus wore a busy look as farmers and members of the public thronged the campus to attend the four-day Krishi Mela which began on Sunday.



On the first day, the seed mela was inaugurated. This event provided farmers an arena to buy seeds of their choice at subsidised prices. Along with traditional crops, horticultural seeds and fruit and vegetable saplings were also displayed.



The stalls selling jowar and chilli witnessed rush in the afternoon as farmers from Haveri, Gadag and Bijapur arrived to purchase seeds for rabi cultivation.

New varieties of hybrid maize and chilli were on high demand. Farmers said the seed mela helped them get different varieties of seeds under one banner. The Fish Mela, which was a novelty at the Krishi Mela this time too, began on Sunday. An aquarium showcasing more than 200 varieties of ornamental fish was one of the major attractions.

Ornamental fish like monkey-headed flower horn, tinfoil barb, black goldfish, lion-headed gold fish, silver dollar, kissing gourami, asia seabass, lobster, mud crabs and pearl spot are on display.

Organiser Chandrakanth Lingdal said breeding fish could be an additional revenue generation for farmers. Tiger shrimp costs around Rs. 500 per kg, while mud crab costs Rs. 1,000 per kg, he added.



## Fillip to tank irrigation



The ayacut revived with the help of the programme contributes a major share of over five lakh acres paddy cultivated under tanks this kharif season, out of a total of about 15.15 lakh acres extent covered with the food crop, which is less than 60 per cent the normal cultivation for the season. “But for cultivation under tanks and borewells, paddy coverage would have been even worse as none of the major irrigation projects have water for the purpose,” a senior Agriculture Department official said endorsing the role of Mission Kakatiya.

Out of the 9,306 irrigation tanks planned to be taken up under phase-one this year, the initial delays enabled the Irrigation Department to take up works only on 7,350 tanks and over 4,500 of them have been readied for storage of designed quantity of water . The truant monsoon that helped the department take up works on 7,350 tanks has, however, kept several restored tanks in Nizamabad, Medak and Mahabubnagar districts empty.

“Results of the programme will be more visible from next year as poor monsoon has failed our plans to impound several tanks with the help of revived feeder channels this year”, Chief Engineer of Mission Kakatiya M. Ramesh told *The Hindu* adding that 1,159 tanks have received water ranging from 75 per cent to 100 per cent of their capacity with several of them getting recording overflowing surplus weirs more than twice this season.

He explained that the number of tanks that received 75 pc to 100 pc capacity water was high in Adilabad (362), Khammam (346) and Warangal (263) as the three districts received good rainfall compared to other districts in the State. About 100 tanks each in Nalgonda and Karimnagar districts have also received such capacity of water. Another 661 tanks received water from 50 pc to 75 per capacity and 793 from 25 pc to 50 pc capacity.

“The restoration of Ramsamudram Pedda Cheruvu (Chandupatla) in Nakrekal constituency of Nalgonda district, where Chief Minister K. Chandrasekhar Rao launched the programme, has assured irrigation in 3,500 acres in five villages by recharging groundwater table and direct (canal) irrigation to some extent,” another official of the irrigation department said. The extent of the tank bed has been increased to 100 acres from 50 acres by removing about 90,000 cubic meters of silt, he explained.

*Results of the programme will be more visible from next year as poor monsoon has failed our plans to impound several tanks with the help of revived feeder channels this year:*

*M. Ramesh,*

*Chief Engineer of Mission Kakatiya*

### **Vellayani agri college hits 50, celebrations to begin**

Dedication of new technology to compost household waste in a safe and hygienic manner, new amphitheatre, biotech second block, and a pesticide-residue testing laboratory forms part of diamond jubilee celebrations of College of Agriculture, Vellayani, in Thiruvananthapuram, which is set to commence on Wednesday.

The dedication of the new technology- Suchitha- developed by the university in association with Innovation Experience will be yet another contribution of the university when it embarks on a year-long celebration to mark its diamond jubilee.

The technology involves conversion of household waste into manure in a short-period. The waste, dumped into automatic machine, first undergoes a

grinding process and then gets boiled at high degree temperature after adding two chemicals. The waste will be converted into manure within a day.

C.R. Sudharmaidevi, professor, soil science, College of Agriculture, said name of chemicals would be disclosed later, as it is under patent process. The dedication of the technology will be one of highlights of diamond jubilee celebrations.

Chief Minister Oommen Chandy would inaugurate the events in the presence of Minister for Agriculture K.P. Mohanan.

In a release, V.B. Padmanabhan, professor, Kerala Agriculture University, said the Chief Minister would lay the foundation for alumni gate, auditorium, heritage museum and biopark, swimming pool and honey bee laboratory. In the coming months, the university has lined up an array of events such as scientific seminars, honey fest, papaya fest, sporting events and quiz competitions.

The college began in 1955. It came into existence as Agriculture College and Research Institute functioning from Lilind Palace, a contribution of erstwhile royal family of Travancore for agriculture research.

The college offered undergraduate programmes leading to B.Sc (Agriculture). Postgraduate programmes, leading to M.Sc. (Ag.) and Ph.D. degrees were started in 1962 and 1965 respectively.

With the enactment of the Kerala Agricultural University Act by the State Legislature in 1971, the institution was made as a constituent college of the Kerala Agricultural University in February, 1972, and was renamed as the College of Agriculture.

Mr Padmanabhan said since its inception the college had contributed immensely to the growth of agriculture sector in the State.

## **Paddy procurement faces rough weather**

The paddy procurement scheme, launched by the State government through Supplyco, is facing rough weather. Over 10,000 hectares of paddy fields spread over Kuttanad, Ambalappuzha, and other areas are facing uncertainty over the procurement of the second crop.

Though Supplyco is expected to commence procurement on October 1, non-cooperation of millers is bound to create serious problems. In many areas, paddy shoots have fallen down, posing damage to the crop. If not harvested at the earliest, there is the danger of germination of paddy. Even those who have harvested the crop are unable to remove paddy from the fields as the procurement is done at the fields. In the past, farmers were given procurement advice by the officials concerned well in advance so that the harvested paddy could be directly transported from the spot to the assigned millers.

This time, the millers have decided to desist from the procurement drive, demanding a hike in handling charges. As the dispute drags on, the farmers could be the worst hit. If Supplyco fails to take a decision at the earliest, it could sound the death knell of the procurement process, leading to an alarming situation in the paddy farming sector.

### **Intervention sought**

“The government should intervene in the matter urgently,” says Kuttanad Vikasana Samithy executive director Fr. Thomas Peelianikkal. The information that procurement would start only on October 1 has been passed on to the farmers late. There is lack of coordination between the Civil Supplies and Agriculture Ministries, he says.

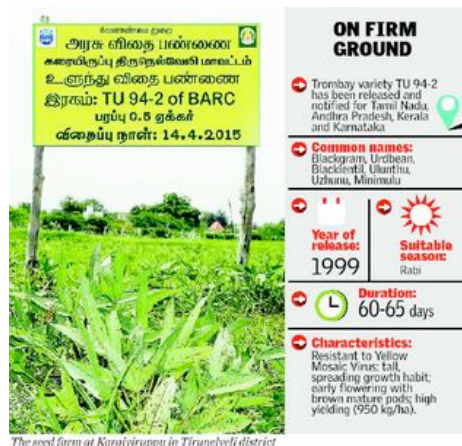
“The issue needs urgent attention from the government,” says P.T. Scaria, district president, Karsha Congress. Farmers’ problems should be resolved on a priority basis, he says.

Rice millers used to collect paddy from the fields, process it, and send it to wholesalers. The Kerala State Rice Mill Owners Association contends that it has been incurring increased expenditure, rendering the job unprofitable.

The moisture content in the paddy being collected from the fields has exceeded stipulated limits, according to association president K.K. Karnan. It results in reduced output of rice, but the millers are bound to meet the quantity requirements as per contract, causing loss. Over 30 mills, among the 100 plus rice mills in the State, have been closed down unable to bear the loss in the past few years, the owners say.

## BARC's black gram, a ray of hope to farmers cultivating pulses

*Variety resistant to 'Yellow Mosaic Virus' causing loss to ryots*



A unique black gram variety, developed by Bhabha Atomic Research Centre (BARC), has provided an effective solution to the dreaded 'Yellow Mosaic Virus' (YMV) problem faced by the farmers of the district cultivating the pulse.

Farmers of this region suffer severe losses every year owing to the prevalence of YMV.

Hence the Department of Agriculture made an appeal to the BARC for supplying sample seeds of its popular black gram variety 'Trombay

Urdbean' (TU-94-2), known for its proven YMV-resistance and shorter maturity period, free of cost.

The crop was grown in the State-owned 83.59-acre seed farm at Karaiyiruppu near here to assess its superior properties and adaptability. The farm is located at the tail-end of Kodagan channel of Tamirabharani river irrigation system in the district.

Normally, 'foundation seeds' of rice and pulses are cultivated, processed and distributed by this farm to meet the demand for certified seeds in this region. "When pulses are raised as rice-fallow cultivation, the epidemic YMV incidences are very common. YMV disease is a major perennial problem faced by the farmers, as it causes a loss of more than 50 per cent to the cultivating farmers and thus has a direct bearing on their livelihoods," said J. Daniel Chellappa, Senior Scientist, Technical Coordination Wing, BARC, Chennai.

After ascertaining the infrastructure facilities at the farm, BARC supplied 20 kg of the seed for the trial conducted at the farm.

"The Trombay variety has now proved and demonstrated its phenomenal cent per cent resistance to the killer-virus at Karaiyiruppu seed farm. The local farmers are excited and firmly believe that TU-94-2 would certainly enhance their livelihoods," Dr. Chellappa said.

The Department of Agriculture, which is immensely satisfied with the performance, has now approached BARC for supply of 100 kg of TU-94-2 for cultivating, multiplying and popularising the superior variety for the benefit of the farmers during the current fiscal.

***Crop grown in State-owned 83.59-acre seed farm at Karaiyiruppu to assess its superior properties and adaptability***



## Scientist finds grass with biosensor property!



It may be a commonly-found variety of grass, but its responses to different stimuli is amazing the scientists and the lay person alike. In fact, a close study will ensure far-reaching thermal, mechanical and sensory applications in future, say the experts.

‘Pandimullu’ (*Aristida paniculata*) is a bristled grass akin to the one used in typical broomsticks. When dipped in water, the stem rotates 360 degrees clockwise and when heated, it rotates anti-clockwise. It also responds when exposed to blood, urine, acid, alkali and petrol. While *Mimosa pudica* (Touch me not or attipatthi) and sunflower also have sensory properties while alive, but this grass reacts even two years after it is plucked.

The amazing discovery was made not by any acclaimed biologist, but surprisingly by a philosophy postgraduate Galla Chandrasekhar. A native of Karakollu village in Thottambedu mandal of Chittoor district, Mr. Chandrasekhar and his band of childhood friends B. Chiranjeevulu Naidu, D. Bathi Naidu, G. Bhaskar, B. Murali, P. Venkateswarlu, P. Sivaiah and G. Sridhar are known in the vicinity as “rural scientists”, as they go into the woods and come back with new findings, be it new plants or new applications of known plants.

A student of science in Intermediate Mr Chandrasekhar shifted to commerce in degree and later ended up studying M.A. Philosophy, but he always “missed science”. “Nature has a solution to all problems and science helps identify it,” he told *The Hindu* humbly. His study on ‘Herbal preparation for controlling nematode and other pest crops’ fetched him an award from National Innovation Foundation, India, which he received from its chairman R.A. Mashelkar at Rashtrapathi Bhavan in 2013.

When tested under high-tech gadgets in Sri Venkateswara University labs, the grass displayed amazing movements. “It acts as biosensor and hence can gauge changes in temperature and the pH (acidity) of solutions. While other plants move in a single direction, this plant has multidirectional movement and this property has several applications,” says D.V.R. Saigopal, professor of virology and coordinator of DST-PURSE (Department of Science and Technology - Promotion of University Research and Scientific Excellence) centre at SVU. “The grass showed tremendous response to temperature and liquid, but the movement was minimal when subjected to magnetic field,” added physics professor O. Mahammad Hussain, who studied it under the optical and scanning electron microscope.

Finding the grass transformed thermal energy into mechanical energy, Mr. Chandrasekhar indicated that when incorporated in an electric circuit, it could be used in fire alarms and water level monitors in tanks and reservoirs. The grass offers a lot of fodder for the scientific fraternity in the form of futuristic applications.

*The grass has futuristic applications in fire alarm, water level monitor*

### **Paddy procurement starts in Haryana**

Procurement of paddy has started in the mandis of Haryana, with 1,410 metric tonnes (MT) of the crop arriving in grain markets so far.

As much as 1,310 MT of paddy has arrived in Ambala and 100 MT paddy in Karnal, a spokesman of Haryana Food and Supplies Department said here on Sunday.

Of the total arrival, 800 MT of paddy has been purchased by Food and Supplies Department, whereas 610 MT has been bought by HAFED, he added.

Farmers have been advised to clean and dry their harvest properly before bringing them to the market so that they do not have to face any problems, the spokesman said. PTI

### **A village with 1,000 borewells**

A borewell work in progress at Kutalapalli village of Nallamada mandal of Anantapur district. (Right) An abandoned borewell.

*Kutalapalli in Anantapur district has more borewells per capita than any other village in the world. All but three of them are dry*

Welcome to Kutalapalli village in Nallamada mandal, once famous for its quality raw silk. Once upon a time, this village amidst two hills had ample water for mulberry cultivation.

Cut to the situation today. Mulberry cultivation and raw silk production have become virtually non-existent. And the village has progressively gone from being water-sufficient to being completely dependent on rains and well irrigation. Then, all in living memory, the rains became scarcer and the wells dried up. The villagers then dug borewells. Hundreds of them.

What could be worse? Well, the situation became even worse with the borewell too drying up. Today, the village has less than three functioning borewells, none of them useful for drinking water.

During that progression from water sufficiency to complete water scarcity, villagers have dug over 1000 borewells in just 16 years. That translates to more than one borewell per male in the village.

The village has 1400 voters, 850 of them male.

Bodugundlapalli Venkat Reddy, a septuagenarian, has seen it all: the riches brought by silk worm rearing as well as today's borewell forest. He once had 25 borewells in the 12 acres of land that he used to own. He's left with four acres now. And six borewells. All dry. "It's as if the entire village has become poor by just drilling borewells," he says.

Adding to Mr Venkat Reddy's narrative, his relative, Mr Obi Reddy, in his forties, says he has drilled in six borewells in his young life. Last year, he says, during one stretch of one month, three huge rigs stayed put in the village to dig borewells. The villagers paid out one crore rupees to the contractors.

Mr. Obi Reddy remembers that frenetic month: "Three rigs came to our village. One from Kadiri (in Anantapur district), one from Tamil Nadu and another from Hyderabad. A deal was struck for one crore rupees. A total of 90 bores were drilled. Seventy of them turned out to be dry. The remaining dried out within six months. Not a single one is operational today."

It's no surprise then that there has been a decimation of agriculture in Kutalapalli. Mr. A. Rajasekhara Reddy, the owner of the lone fertiliser store 10 km away at Nallamanda mandal headquarters, says his business from Kutalapalli has come down over the years from around Rs 15 lakh to less than Rs 1.5 lakh today.

This has been the story of agriculture in Anantapur district over the last century, when farmers began to turn to commercial crops around 1905. Their crop of choice was groundnut. They initially rose to prominence, becoming the largest producers of groundnut in the country. But it's all been downhill since then. The rains have all but vanished here, and the last two decades have been a ceaseless, seamless drought, which has left every social economic system in the village crippled.

If there are no borewells yielding any water, where do they get any water from? As in 70 per cent of the villages in Anantapur district, water comes by tankers these days. Kuttalapalli gets three tankers each from the Duddukunta

Foundation and the Rural Water Supply, serving the 3000 residents of the village.

Kutalapalli falls in Puttaparthi Assembly constituency, represented by the current Information Technology Minister Palle Raghunatha Reddy, but it seems to make little difference.

*It's as if the entire village has become poor by just drilling borewells.*

*-B. Venkat Reddy, farmer*

### **Nethravati Rakshana Samiti questions KNNL advertisement**

Karavali Jeevanadi Nethravathi Rakshana Samiti has urged the government to invite scientists from the Indian Institute of Technology (IISc.), Bengaluru, in the next meeting to discuss the ongoing Yettinahole diversion project.

Raising objection to certain content in an advertisement by Karnataka Neeravari Nigam Ltd. (KNNL) in the media on Sunday, M.G. Hegde, vice-president of the samiti, said the KNNL has said a report on the project by T.V. Ramachandra, professor, Centre for Ecological Sciences, IISc., was his personal one. The IISc. has clarified that the institute was not responsible for the report.

Earlier the KNNL, in an interaction with people on September 19 in the city had said that Mr. Ramachandra was not an expert on hydrology and the report published by him was not authentic.

Mr. Hegde in a statement said the KNNL should invite Mr. Ramachandra in the next proposed interaction over the project with people. He said the KNNL should clarify whether it was rejecting the report of Mr. Ramachandra just because he has not submitted his report titled 'Environmental Flow Assessment in Yettinahole: Where is 24 tmcft to divert?' to the government through the IISc. or whether the report itself was technically incorrect.

Mr. Hegde said Mr. Ramachandra is also an expert scientist of the IISc.

The vice-president said if the KNNL was not ready to agree with the 'private report' of an IISc. scientist how could it trust a detailed project report over the project prepared by a private agency for KNNL. Mr. Hegde alleged that the KNNL was misleading people through the advertisement.

Mr. Ramachandra in his report (Sahyadri Conservation Series 48, ENVIS Technical Report: 91, April, 2015) has said that water yield in the Yettinahole catchment would be only 9.55 tmcft and not 24 tmcft. In that only 0.85 tmcft would be available for diversion.

The report said that of 9.55 tmcft of water 8.7 tmcft was required for domestic purposes, crops, livestock and environmental flow to be maintained to sustain eco system.

***It asks govt. to invite scientists from IISc. for next meeting on Yettinahole project***

### **India to announce climate commitments on Gandhi Jayanti**

India will announce on October 2 its Intended Nationally Determined Contributions (INDCs) in the lead up to the Paris climate summit in December, the government indicated on Friday, hours after Prime Minister Narendra Modi told the U.N. General Assembly that the country's development goals and the U.N. Sustainable Development Goals (UNSDGs) were the same.

“October 2 is the birth anniversary of a great Indian and a great world leader, Mahatma Gandhi, who passionately believed in sustainable development. That would be an appropriate day to announce India's INDCs,” Vikas Swarup, External Affairs Ministry spokesperson, said. October 1 is the deadline for declaring the INDCs, and India will miss it by a day. The INDCs of countries will form the basis for climate negotiations at the Conference of Parties (CoP) 21 under the U.N. Framework Convention on Climate Change in Paris in December. The U.S. administration has said that



climate change would be on the agenda of President Barack Obama's meeting with Mr. Modi on Monday. After a two-day tour of the Silicon Valley in the west coast of the U.S., the Prime Minister will travel back to New York for the meeting.

Mr. Modi said in his U.N. speech that the negotiations would have to be based on the idea of "climate justice" rather than climate action. He elaborated on the climate-friendly initiatives planned for the next seven years, in which 175 GW of renewable energy would be produced and rivers and cities cleaned.

### Climate justice

Explaining the concept of climate justice, Mr. Swarup said: "It is a question of equity. When you talk about emissions, then you need to talk about per capita emissions. India's per capita emission is still 1.7 and America's is 16 or 17."

"Historic responsibility of climate change has to be understood. It is very clear which are the countries that are responsible for the state that we are in today," Mr. Swarup said, adding that the Indian position was not new or different from that of other developing countries.

In fact, what Mr. Swarup has articulated is only the reiteration of a long-held official stand of the Indian government. Most recently, during a meeting of 13 Like-Minded Developing Countries (LMDCs) in New Delhi, Union Environment Minister Prakash Javadekar had asserted that demanding climate action from developing countries should not involve any blame game and all LMDCs unanimously demanded that developed nations ought to take the lead and provide climate finance to developing countries to enable them to make the necessary transition to a low-carbon economy.

### **Saplings planted across Tiruvallur**

A district with a large number of industries — Tiruvallur — is planning to increase its green cover.

The district administration has kicked off a sapling plantation awareness programme in various parts of the district on Saturday.

District Collector K. Veera Raghava Rao, who planted saplings at the District Collectorate, said a campaign was launched in which over three lakh tree saplings were planted on a single day. He said: “The district administration has planned to fulfill objectives of the State government’s Vision 2023, by planting 10 lakh saplings in the district. The first phase of the tree plantation campaign was launched covering 14 panchayat unions, 10 town panchayats, and five municipalities.” The saplings were supplied by the Forest Department through their nurseries from Madhavaram and Kanchipuram and planted in parks, public buildings and on road sides, officials added.

### **Uzhavar Santhais, a hit with farmers and consumers**

The 11 Uzhavar Santhais in Salem district, including four in the Salem Corporation limits, have proved a big hit with the farmers and consumers alike.

These santhais have been attracting hundreds of farmers and people from different walks of life daily. On Sundays, police personnel are posted in front of some Uzhavar Santhais such as Suramangalam Santhai to regulate the vehicles and also the crowd. The popularity of the Uzhavar Santhais in the district could be gauged from the fact that they netted a sale proceeds to the tune of Rs. 49.33 lakh on the Purattasi Saturday on September 26.

People thronged these santhais for the purchase of bhendi, coconut, plantain leaves, plantains, flowers, poosani etc.

As usual, Suramangalam Santhai topped the list with farmers here marketing 23 tonnes vegetable worth Rs. 10.72 lakh on Saturday. The consumers purchased 29 tonnes vegetables worth Rs. 7.16 lakh in Thadagapatti Santhai. The Hasthampatti Santhai registered sales of 14 tonnes vegetables worth Rs. 4.26 lakh, while Ammapettai Santhai registered sale of 17 tonnes of vegetables worth Rs. 3.90 lakh.

The Uzhavar Santhais in Attur, Mettur, Attayampatti, Thammampatti, Jalagandapuram, Elampillai, and Edappadi too attracted a large number of consumers on the Purattasi Saturday.

Uzhavar Santhai sources said that a record number of 42,905 consumers visited the santhais.



**THE TIMES OF INDIA**

### [Kisan Mela ends on a high note](#)

The two-day Kisan Mela concluded at Punjab Agricultural University (PAU) amidst overwhelming response from farmers of Punjab and neighboring states on Saturday.

Dr N K Krishna Kumar, deputy director general (horticulture), Indian Council of Agricultural Research (ICAR), and PAU vice-chancellor Dr Baldev Singh Dhillon exhorted farmers to go for sustainable green revolution.

Dr Kumar said productivity coupled with environmental sustainability and marketing linkage can contribute towards this goal.

Comparing the agricultural models in four states of Punjab, Gujarat, Kerala and Maharashtra, Dr Kumar said Maharashtra has emerged as a number one state in cooperative horticulture, Gujarat is known for marketing network whereas Kerala has got highest standards of living. Such a model needs to be followed in Punjab which is known for maximum contribution towards nations' food security, he said urging the farmers to equip their wards with best agriculture education in order to meet the future requirements of good farm scientists at the upcoming institutes like Postgraduate Horticulture Institute being set up in Amritsar.

Dr Dhillon said, "Farmers' participation motivates us and we learn a lot from them." Expressing concern over vagaries of weather and rising cost of farm inputs, he stressed on farmers to refrain from making excessive use of water, pesticides and fertilizers.

He also urged them to adopt diversification and go for mushroom growing, beekeeping, dairy and poultry farming, piggery and fishery. Dr Dhillon said the university is focusing on skill development for which various training courses on seed production, tissue culture, repair of farm machinery are being organized.

#### Awards for winning farmers

Ludhiana: Farmers, who stood winners in various competitions, were awarded prizes at the concluding day of Kisan Mela of the Punjab Agricultural University (PAU) on Saturday.

In the crop produce competition, Ramanpreet Singh (Patiala), Robanjit Singh (Kapurthala), Tirath Singh (Sangrur), Harmail Singh (Bathinda), Karnail Singh (Fazilka), Jagjit Singh (Patiala), Balraj Singh (Sangrur), Jagpal Singh (Bathinda) and Balkar Singh (Kapurthala) won first prize in the category of okra, bitter gourd, chilli, ram tori, brinjal, radish, onion, lemon and papaya, respectively. Besides, Jinder Singh (Rupnagar) bagged first prize in the category of maize and amla while Amarjit Singh (Faridkot) got first prize in the category of guava and ghiya kaddu. Paramjit Singh (Fatehgarh Sahib) won first prize in the category of garlic and grapes.

Among PAU exhibitions, department of plant pathology, School of Agricultural Biotechnology and Kirshi Vigyan Kendra, Bathinda, were adjudged first, second and third, respectively.

## BOX: Cleanliness campaign

Nature Care movement, a wing of Atam Pargas Social Welfare Council led by vice-chancellor of Guru Kashi University, Talwandi Sabo, Dr Nachhattar Singh, carried out an awareness programme at Kisan Mela.

The members floated the message of clean environment and also advised farmers to use less pesticides, water, fertilizers. Also they took feedback from farmers about crops and their problems. Members of the team led by Dr Nachhattar Singh also conducted a cleanliness drive at the main mela route and also placed dustbins on premises.

## **Fruit market not functional in 2008 to stock Virbhadr's apples: I-T**

The income tax (I-T) department sleuths, who first smelt the rat in the sudden rise of income of Himachal Pradesh chief minister Virbhadr Singh's orchard manager, had found that the Parwanoo fruit mandi in Solan district, which his transporters had shown as one of the destinations for depositing the stock of apples, was not even functional in 2008.

Virbhadr had shown that apples were transported from his Shrikhand orchard in Shimla on tippers, scooters and Maruti Suzuki 800 cars to Parwanoo's fruit market in Sector 6. There, the apples were sold to a firm Universal Apple Associates, owned by proprietor Chunni Lal. His name has also been included in the FIR by the CBI.

"The statement given by Dinesh Kumar Sood, owner of three tippers, is not correct as he has admitted that the apples were transported from Rampur to Parwanoo fruit mandi in FY 2008-09 and prior, where this mandi was not even in operation that year due to the ongoing four-laning of NH-22 (that is Chandigarh to Parwanoo)," the I-T's assessment order on Virbhadr's Shrikhand apple orchards, dated March 25, 2014, said.

TOI has a copy of I-T's probe order, dated March 18, 2014, on disproportionate assets of Virbhadra and Chauhan, which led the CBI to slap corruption charges on them.

I-T said owner Dinesh Sood of three tippers- HP062268 (Tata tipper), HP061968 (Tata tipper), HP06A1123 (Mahindra Bolero Pick-up) - told them and also admitted on oath under Section 131 of the I-T Act that apples were ferried from Shirkhand orchard in Rampur to Parwanoo.

In 2008-09, when Parwanoo mandi was not operational, Virbhadra had first showed his apple income as Rs 7.35 lakh but later revised it to Rs 2.21 crore. The overall revision of agricultural income for three years by him was Rs 6.5 crore from just Rs 47.5 lakh.

Sood's statement was recorded on January 10 in 2014. In its conclusive remarks, while rebutting those claims I-T said neither Virbhadra nor his agent Anand Chauhan had been able to prove the transportation of such a huge crop.

### **How do you plan for something like climate change?**

John Firth, CEO of Acclimatise, a firm that helps public and private sector clients plan for climate change so they can manage attendant risks. Firth was in Dehradun, at a workshop at Wildlife Institute of India, where activities around 'Stocktaking for Sub-national Adaptation and Planning' for climate change are on. Firth co-founded Acclimatise in 2004 in Nottingham, UK. He has over 30 years' experience in environment issues, assessing the impact of climate change and integrating this assessment into decision-making and risk management. He spoke with **Seema Sharma**.



**How would you assess the Uttarakhand Action Plan on Climate Change (UAPCC) submitted by the state government to the Union ministry of environment and forests and climate change?** That document was approved by the Union ministry in May. It is a very comprehensive report. There are, however, gaps that offer scope for further improvement. Issues of vulnerability and risk, with regard to water, health, forest and agriculture needs extended study and prioritization. That is why CDKN (Climate and Development Knowledge Network), funded by the United Kingdom, agreed to provide technical support to conduct studies on the vulnerability and risk mitigation as well as capacity building programme in 13 districts of Uttarakhand.

**What role will Acclimatise have, in the process?** Consultation teams like ours provide advisory support or mentoring, wherever required. We will also monitor and ensure that all our efforts with regard to conducting studies and its outcome will be properly implemented and do not go waste.

**What do you think the state government needs to focus on, to ensure our climate change plans meet success?** There is greater need for dialogue between researchers, the state government, communities and international agencies to share problems and discuss solutions. We notice that the government remains often oblivious to the work of researchers, so policy formulation does not benefit from research. Similarly, researchers have no clue of the state government's action plan. Besides, neither information from research nor government policies percolate to communities. The government is also not aware of the aspirations and problems of communities. This can be sorted out with better and continuous flow of communication between these different levels. CDKN will facilitate this.

**Tell us a little bit of the capacity-building exercise planned for the state as part of the stock-taking exercise.** Capacity of all organizations that will be involved in building resilience to climate change will be built up.

Whether technical expertise, industrial policy, solution seeking - capacity building at each level will be strengthened. Financing is major challenge, which is tackled with state/centre and international agencies.

**Is climate change being adequately planned for, worldwide?** The effects of climate change are being felt in the form of global warming, erratic monsoon, floods, all over the world. It will become even more perceptible in coming twenty to thirty years. We all need to be prepared to meet the challenges and mitigate the harmful impact of climate change through integrated strategy that is well implemented.

## **8 Foods that ward off stress**

Stress is in the air, while on the move, we stress over poor road sense of fellow drivers, in office over mounting workload, at parties over surging real estate rates, and round up as impatient listeners at home. But just who is not stressed today?

Experts blame an erratic diet as a predominant cause of stress, which usually spans into snack breaks, tea breaks and more snack breaks. Though we can do better by tweaking our diet chart to include foods that curb stress.

Here is a list of eight foods that'll do the trick...

**Yoghurt:** Yoghurt works well especially in summer, as it is light and digests easily. Says Dr Shikha Sharma, doctor and wellness expert, "Yoghurt or any dairy product is rich in tyrosine which increases the serotonin level in the brain." She simplifies this for us, "Proteins increase neurohormone in the brain which eases stressed nerves and calms you down." If plain yoghurt bores you, try the ready-to-scoop-up, fruit flavoured version. Strawberry, blackcurrant, litchi and mango are some popular flavoured yoghurt.

**Dark chocolate:** Dark chocolates are nothing short of a delicacy, they send our taste buds spiralling. But there is more to dark chocolate such as lowering stress hormone levels and improving other stress-related biochemical imbalances. Agrees Chef Sachin Sahgal, food and nutrition expert, Tivoli Garden Hotel, "Our body requires a fair dose of antioxidants, and in chocolate the antioxidants come in the form of flavonoids. Besides, the flavonoids are maximum in dark chocolate." Chocolates also go a long way in enhancing mood. Explains Chef Sahgal, "Chocolates are good aphrodisiacs, also known as 'love chemical' which is a mood stimulant and booster. They contain phenethylamine - a safe natural ingredient that is released in the brain when positive emotions such as falling in love are experienced."

**Citrus fruits:** Any fruit of your choice is good enough. "Fruits have natural sugar which de-stresses the mind. It is best to go for citrus fruits or any summer fruit. Besides, the natural sugar in fruits is very healthy for the body. Make any one meal fruit rich, and you will feel the difference in your energy levels," says Dr. Shikha Sharma.

**Almonds:** Almonds not only promote shiny mane, but also work as stress relievers. Elaborates Chef Sahgal, "Almonds are packed with vitamin B2, vitamin E, magnesium, and zinc. B vitamins and magnesium are involved in the production of serotonin, which helps regulate mood and relieve stress. Zinc fights some of the negative effects of stress, while vitamin E is an antioxidant that destroys the free radicals related to stress and heart disease."

**Herbal tea:** Black tea or herbal tea checks calories, and at the same time betters your mood. Justifies Dr. Shikha Sharma, "Chamomile tea, jasmine tea, tulsi tea and other herbal variants of tea do wonders to our system. The herbs act like medicine in calming and relaxing our mind."

**Fish:** An abundant source of Omega 3 fatty acids, fish contains important B

vitamins, particularly the renowned stress fighters B6 and B12. "In fact, B12 is one of the most important vitamins involved in the synthesis of the 'happy' brain chemical serotonin; a vitamin B12 deficiency can even lead to depression. Seafood contains high amount of zinc which relieves one from stress," reasons Chef Sahgal.

**Broccoli:** Broccoli is such a happy, green vegetable. It works magic when added to pasta, rice, salad or simply sauteed with mushrooms and baby potatoes. But did you know the vegetable had stress-busting properties? "Broccoli is chock-full of stress-relieving B vitamins including folic acid, which is also part of the B vitamin family. Folic acid helps relieve stress, anxiety, panic, and even depression. It is also high in fiber content which is helpful in treating constipation and the loose stools associated irritable bowel syndrome which is one of the long term effects of stress," says he.

**Garlic:** Outside of keeping vampires at bay, garlic eases tension and stress, and reduces glucose levels in the body. If you are not sure about how else to include garlic in your diet, pickle it. Garlic pickle lives long and tastes good with quick snacks, rice and chapati. Shares Chef Sahgal, "The development of hypertension is implicated by a state called as oxidative stress where our body produces reactive oxygen species much higher than its antioxidant capacity. Garlic is rich in antioxidants and helps restore these antioxidants which in turn soothe our stress levels."

## **7 weekend snacks under 100 calories**

*We often plan for a relaxing and rejuvenating weekend starting with greasy appetizers and ending with sugar-loaded desserts.*

This mindless indulging in calorie-rich weekend snacks almost ruins our entire week of healthy eating. How about changing this unhealthy cycle and opting for low fat and low calorie snacks this weekend? Instead of jumping

for that jumbo bar of candy, try these simple snack recipes that are not only easy to make but also high in taste and nutrients. What's more, these snacks are all worth 100 calories or less, helping you stay healthy throughout the weekend.



**Dry roasted pumpkin seeds:** Roasted pumpkin seeds are loaded with minerals like magnesium and phosphorus and a quarter cup of this provides only about 75 calories. Wash and drain the seeds on a paper towel and coat them with some vegetable oil. Next, sprinkle some salt on the seeds and spread them on a baking sheet in a single layer. Bake for around 15-20 minutes or until they are golden brown in color.

**Bagels and bread sticks:** Great for a quick evening snack, breadsticks and bagels are low in caloric value, provided you don't coat them with butter or mayonnaise. Among them, brown bread is a healthier option and a slice provides only about 80 calories. Similarly, a medium sized plain bagel earns you about 75 calories.

**Low-calorie popcorn recipe:** Instead of loading your popcorn with oodles of butter, prepare this delicious popcorn snack recipe that helps regulate your weight while keeping you fuller for a longer time. Place the popcorn kernels inside the microwave and cook until the popcorns have popped. Following this, coat the popcorns with monosaturated fat oils like olive oil and serve hot after sprinkling some cinnamon or garlic salt.

**Spicy chickpea:** Another mouthwatering Indian snack recipe with a caloric value below 100 is sweet chickpea. Chickpeas have very high nutritional value and are great as a movie or evening snack. All you need to do is toss some with chopped onions, cucumber, green chilies and lemon juice. For additional favor, sprinkle some chat masala powder or dried Italian seasonings.

**Upma:** Wash and peel onion and garlic into fine pieces and slit some green chilies. Next, roast some sooji (semolina) in a dry pan. After this, boil some vegetables like peas, capsicum and potatoes until soft and cooked. In a second pan, heat some cooking oil and add the slit chilies, onion and garlic and stir for some time. To this, add the cooked vegetables and sprinkle some salt and pepper to taste. Next, pour some water and bring it boil. Once the water starts boiling, add the roasted sooji and keep stirring continuously until the desired consistency is obtained. Remove from the fire and serve hot after adding a few drops of fresh lime juice.

**Yoghurt with fresh berries:** This is another interesting and healthy weekend snack recipe that is rich in nutrients like calcium, proteins and Vitamin C and at the same time has a calorific value below 100. According to studies, adding yoghurt to your natural diet will help you speed up your body's fat burning process and promote weight loss. For this, add some fresh farm berries to around 5.3 ounce of plain, non-fat yoghurt and allow it to chill for some time.

**Sweet potato fries:** Instead of opting for the usual salty French fries, try this tasty healthier version worth just 81 calories per serving. All you need to do to prepare this is to toss the finely cut wedges of one-half of a large sweet potato with a little salt, pepper and olive oil. After this, allow the wedges to bake for around 20-25 minutes at 400 degrees. Once done, season it with some dried or fresh herbs and serve hot. This recipe is an amazing source of



Vitamin A and C and is a healthier option than the regular French fries any day.

### **10 Glasses of water a day to cut fat**



*We have all heard this advice innumerable times. Drink eight to 10 glass of water a day. Experts say that if you are overweight or tend to get most of your calories from processed and salty food, eight to 10 glass of water could actually help you reduce your weight.*

Water could lower your BMI. If you drink eight to 10 glass of water everyday you will end up eating less and also drink fewer calorie-laden beverages. Drinking about 500 ml of water before meal can cut the calories and help in losing weight and as a result lower body mass index (BMI). Water helps in burning fat. You can burn about 50 per cent more fat after drinking water compared with a higher calorie beverage. Water helps you play your sports better. Sweating away just two per cent of your body's water content affects the performance of a sportsperson to a great extent. Drinking enough water can improve your game and save you from the risk of dehydration.

Water can fight hangovers. Being adequately hydrated is the best way not to feel lousy and grouchy after a late night party. Drink a couple of glasses of water hours before the event. Even when you are flying a long distance flight, staying hydrated helps you fight hangover.

## THE HINDU BusinessLine

### **Crude oil falls on slowing global economic growth outlook**

Oil prices dropped in Asian trading hours on Monday despite a fall in US drilling activity for the fourth straight week, with analysts pointing to a poor economic growth outlook as the main reason for low crude prices.



China's August industrial profits dropped 8.8 per cent from the same month last year, and January to August industry profits were down 1.9 per cent.

### **IMF growth forecast**

The International Monetary Fund (IMF) is likely to revise downwards its estimates for global economic growth due to slower growth in emerging economies, IMF head Christine Lagarde said in a newspaper interview.

Brent crude futures were down almost 1 per cent or 45 cents, at \$48.15 per barrel at 0334 GMT. US West Texas Intermediate (WTI) futures were also about 1 per cent lower or 43 cents at \$45.27 a barrel.

Crude futures are now down more than 10 per cent since the end of August. Ratings agency S&P had cut its Brent and WTI forecasts for this year last week by \$5 to \$50 per barrel and \$45 per barrel, respectively, and said it saw 2016 prices at \$55 for Brent and \$50 for WTI.

### **US drilling activity**

Monday's price falls came despite an ongoing reduction in US drilling activity.

US energy companies had cut oil rigs for a fourth week in a row last week, a sign continued weak prices were causing oil and gas producers to reduce drilling plans.

Yet analysts said US oil output was holding up despite the lower drilling.

“A rapid draw-down of the observed backlog of uncompleted wells could lead to higher production later this year and in 2016,” Goldman Sachs said.

Analysts said US output data would likely be the main driver this week of oil prices, especially as Chinese trading slows ahead of its seven-day National Day holiday that starts on October 1.

### **Petroleum supply report**

The US Energy Information Administration is due to release its monthly petroleum supply report on Wednesday.

“We expect there to be laser-focus on US production figures. Even though the data is lagged, signs that U.S. production rolled (fell) could provide a boost to both WTI and Brent flat price,” Morgan Stanley said.

The bank said the global oversupply of crude markets — estimated by some to be as much as 2.5 million barrels per day (bpd) — was likely over estimated.

“We continue to find a 2+ million bpd oversupply scenario highly unlikely given the state of physical markets,” Morgan Stanley said, adding that it saw strong demand in China despite its economic weakness.