

12.05.2016

# THE HINDU

## **‘Revise drought management manual’**

*Central govt. gets instruction to create disaster mitigation fund and to fix a time limit for declaration of drought on scientific grounds*



The apex court asked the Centre whether it was not its responsibility to warn the states about the drought like situation likely to prevail in the near future. Photo: Ritu Raj Konwar

The Supreme Court on Wednesday asked the Centre to create a disaster mitigation fund to tackle drought - like situation and directed the Agriculture Ministry to hold a meeting within a week with affected states like Bihar, Gujarat and Haryana to assess the conditions.

A bench headed by Justice M B Lokur directed the Centre to also implement the provisions of Disaster Management Act and fix a time limit for declaration of drought on scientific grounds.

It also asked the Centre to revise the drought management manual to provide effective relief to calamity-hit farmers and prepare a national plan to tackle the crisis.

“Agriculture Ministry is directed to hold a meeting within a week with Chief Secretaries of drought-hit Bihar, Gujarat and Haryana to assess the situation,” the bench also comprising Justice N V Ramana said.

The court also directed that the National Disaster Response Force should be trained and equipped to tackle the drought-like situation.

Additional Solicitor General P S Narasimha had on April 26 told the bench that Centre is alive to the situation prevailing in the drought-hit areas and states are working hard to provide every possible relief to the farmers in such natural calamity hit areas.

Earlier, the apex court had told the Centre whether it was not its responsibility to warn the states about the drought like situation likely to prevail in the near future.

The court had expressed its concern over low compensation paid to calamity-hit farmers and observed that it was leading some of them to commit suicide.

The petitioner NGO, Swaraj Abhiyan, in its revised prayer, had sought a direction to Centre to abide by the provisions of MNREGA Act and use it for employment generation in drought-affected areas.

The PIL filed by the NGO had alleged that parts of 12 states of Uttar Pradesh, Karnataka, Madhya Pradesh, Andhra Pradesh, Telangana, Maharashtra, Gujarat, Odisha, Jharkhand, Bihar, Haryana and Chattisgarh were hit by drought and the authorities were not providing adequate relief. PTI

***The court also directed that the National Disaster Response Force should be trained and equipped to tackle the drought-like situation.***

## Farming solutions through FB

*Krishi (Agriculture), a Facebook initiative, offers solutions and advice on various agricultural concerns*



assistance onlineKrishi (Agriculture) a facebook group for solutions in agriculturePhoto : Thulasi Kakkat

A tech solution to the many problems faced by the farm sector has been creating wonders. Type Krishi (Agriculture) on Facebook and an interactive world that aims at assisting the farming community open out before you.

The reach of this FB initiative is not confined to Kerala.

They have more than one lakh members spread across the country and West Asian nations. Apart from communicating through FB, the group arranges meetings of farmers at various places.

The group recently held an awareness camp at the Souhrdaya Welfare Society, Ponnurunni, Ernakulam.

“When a small-time farmer like me posts queries regarding organic farming, solutions to plant diseases, on flowers, the manure to be used and more, we get numerous posts that provide invaluable information.

These posts are from experts in the field of agriculture to traditional farmers. Similarly, those engaged in terrace farming and kitchen gardens provide information of the availability of seeds and plants.

All we need to do is send a self-addressed stamped envelope in their name and the seeds and plants will reach your doorstep in a few days time,” says Nirmala Pillai, administrator of the group.

At the get together a display and functioning of a self-made waste processing unit was the cynosure of all eyes. The portable unit made by C.V. Vijayaghosh can easily be made and used in every household.

“I used to make and sell this waste treatment unit of 50 litre capacity for Rs. 800. After I met with a motorcycle accident, I stopped making it. But I give instructions through FB to all who want to make it,” says

Vijayaghosh. He also gives tips on terrace farming through phone. On every inch of his six cents of land at Palarivattom, where he stays, he has flowers, fruits and vegetables.

On his terrace Vijayaghosh grows vegetables and fruits like lady’s finger, pomegranate, guava, mint leaves, spinach, clove, tapioca and even banana. The slurry from the waste treatment barrel is the only manure he uses.

“I came with my wife Sunitha from Kozhikode to attend this camp. We have been involved in bio-farming and the camp was really useful. We came up with vital information and seed packets,” says T.R. Madhukumar, Journalist.

Krishi (Agriculture) is a one-stop destination for all queries on farming and its allied activities shared and passed on by a group of dedicated, experienced people who are passionate about green, organic, flowers, fruits and vegetables.

*The reach of this FB initiative is not confined to Kerala. They have more than one lakh members spread across the country and West Asian nations*

### **Insure farmers against climate change**



FARMER'S NOTEBOOK: "Our agricultural research programmes need to be retooled towards dryland research." Picture shows a farmer at Mayong in Assam's Morigaon district. —PHOTO: RITU RAJ KONWAR

Bundelkhand is where India's marginal farming dream died. Known for the dacoits of Chambal and the Rani of Jhansi, the arid region, occupying districts of Uttar Pradesh and Madhya Pradesh, has experienced drastic variation in climate in recent times.

It faced a drought from 2003 to 2010, then floods in 2011, delayed monsoons in 2012 and 2013, and drought again since 2014.

Farmers tried everything to adapt — growing a mix of dry crops during the *kharif* season, while interspersing the winter *rabi* wheat with cash crops like chickpea and mustard.

They invested heavily in borewells, tractors, threshers and seeds and fertilizers through formal and informal credit.

The past two winters, with hailstorms and unseasonal rain, destroyed crops (chickpea yields were mostly wiped out, the arhar crop failed completely), leading to farmer suicides (3,500 since 2003) and mass migration.

Mitigation has been lacking; contractors not farmers benefit, and instead of providing crop insurance, warehouses are built.

Bereaved families, hoping for compensation from the Uttar Pradesh government (Rs.7 lakh on death), were instead offered wheat bundles.

### **India, a climate change hotspot**

India is uniquely vulnerable to rising temperatures — it ranks in the top 20 in the Climate Change Vulnerability Index. Our average surface temperature, over the past four decades, has risen by 0.3° Celsius, accompanied by a rising incidence of floods, droughts and cyclones.

With the majority of all landholdings in India measuring less than a hectare, marginal farmers face a steep decline in household income and a concomitant rise in household poverty through exacerbated droughts.

Climate change would impact soil health, with increasing surface temperatures leading to higher CO<sub>2</sub> emissions and reducing natural nitrogen availability.

Mitigating this by increasing chemical fertilizer usage could impact long-term soil fertility, leaving the soil open to greater erosion and desertification.

Meanwhile, migration patterns, farmer suicides and stagnating rural incomes, along with increasingly ad hoc land acquisition in the name of public goods, have politicised the idea of climate mitigation.

Marginal farmland will increasingly be useless for agriculture.

Our dependency on rain continues to amplify — rain-fed agriculture is practised in the majority of our total cropped area supporting a significant

proportion of the national food basket (55 per cent of rice, 90 per cent of pulses, 91 per cent of all coarse grain).

Our regional crop patterns assume a specific range of weather variability, failing to cope with the recent high periods of heavy rainfall with long dry intervals.

In 2013, large crops of wheat, gram, lentils and mustard, weeks away from harvesting, were destroyed in untimely rains.

India's flood-affected area has doubled since Independence, despite generous state spending on flood protection schemes.

Research has highlighted the deleterious impact of climate change on crop production.

By 2100, the *khari*f season will face a varying temperature rise (0.7-3.3° Celsius) with rainfall significantly impacted.

Limited temperature rises could lead to a 22 per cent decline in wheat yield in the *rabi* season, while rice yield could decline by 15 per cent. Other staple crops — sorghum, groundnut, chickpea — could see a sharp decline.

Its impact is already prevalent: it is estimated that without rising temperatures and rain variability, India's rice production over the past four decades could have been 8 per cent higher.

India is home to the largest hungry population — falling agricultural yields will only make matters worse.

### **Some policy prescriptions**

Our low agricultural productivity remains a key constraint. According to the Swaminathan Committee on Farmers (2006), for rice, we produce 2,929 kg per hectare, while China produces twice as much.

For other staples, we remain woeful, producing 913 kg of groundnut per hectare, while Indonesia produces nearly half as much more.

As suggested by the National Commission on Farmers, a rural spending plan, focussed on investments in agriculture infrastructure, particularly in irrigation, rainwater harvesting and a national network of soil-testing laboratories is needed.

Simple water harvesting and conservation measures (micro-irrigation, watershed management and insurance coverage) can reduce the majority of the potential loss due to drought (Intergovernmental Panel on Climate Change, 2013).

Drought strategies should be extended to the village level — for example, each village should have a village pond, created under the Mahatma Gandhi National Rural Employment Guarantee Scheme.

Indian agricultural policy has made us structurally vulnerable to climate change.

As suggested often by the National Commission on Farmers, conservation farming and dryland agriculture should be promoted. Each village should be provided timely rainfall forecasts along with weather-based forewarnings regarding crop pests and epidemics in various seasons.

Afforestation, in a biodiverse manner, should be encouraged to help modify regional climates and prevent soil erosion.

Our agricultural research programmes need to be retooled towards dryland research — it has been argued that adoption of drought-tolerant breeds can help reduce production risks by nearly a third, while offering attractive returns to breeders.

Changing planting dates could have a significant impact; research highlights that planting wheat earlier than usual can help reduce climate change-induced damage.



Zero tillage and laser-based levelling can also help conserve water and land resources.

Crop planning can be conducted as per the climatic zones of different regions, while utilising better genotypes for rain-fed conditions.

We should focus on expanding our formal credit system to reach all marginal farmers.

Insurance coverage should be expanded to all crops while reducing the rate of interest to nominal levels, with government support and an expanded Rural Insurance Development Fund.

A debt moratorium policy on drought-distressed hotspots and areas facing climate change calamities should be announced, waiving interest on loans till farming incomes are restored.

The Centre and States should launch an integrated crop, livestock and family health insurance package while instituting an Agriculture Credit Risk Fund to provide relief in the aftermath of successive natural disasters.

Climate change will impact the entire food production chain, affecting our food security.

Livestock production, often considered to be a substitute to farming for marginal farmers, would face reduced fodder supplies given a decline in crop area or production.

With India's population rising, demand for diversified crops will be hard to square with diminishing yields.

Agricultural investments in food crops, along with systemic support for irrigation, infrastructure and rural institutions can help move India beyond climate change-induced food insecurity, strengthening our stressed food production systems.

Through adaptation and mitigation measures, we can overcome this Hobbesian crisis.

Feroze Varun Gandhi is a Member of Parliament, representing the Sultanpur constituency for

the BJP.

### **Tobacco farmers find better alternative in pulse crops**

*Sequel to larger pictorial warning and subsequent cut in crop size*



Tobacco leaf being collected for processing in Ongole.— FILE PHOTO: KOMMURI SRINIVAS

Pulse crops, particularly Bengal gram and red gram, prove to be a better alternative for farmers in Prakasam district who have been traditionally growing tobacco.

If the present lacklustre market for tobacco, the principal commercial crop in the district, continues in the wake of the larger pictorial warning enforced by the Central government from April 1, more farmers will switch over to protein-rich pulse crops even if the Centre dilly-dallied on coming out with a

financial package to show the farmers a sustainable economic alternative as suggested by the WHO Framework Convention on Tobacco Control (WHO FCTC) while taking steps to phase out tobacco cultivation.

With the Tobacco Board cutting down the crop size for Andhra Pradesh from 172 million kg to 120 million kg, farmers took to cultivation of Bengal gram, both local and exportable varieties, in a record 92,000 hectares in the drought-prone district during the last rabi, explains Agriculture Joint Director J. Muralikrishna to *The Hindu*.

Farmers spend on an average Rs. 20,000 per acre to grow the pulse crops and by adopting better agronomic practices got an average yield of four to five quintals per acre, he adds.

Even as tobacco growers rued over the market slide in the wake of the larger pictorial warning even though they stuck to the crop size fixed by the crop regulator, Bengal gram growers have made a kill with the price of the local variety crossing the Rs. 5,700 mark per quintal as against Rs. 3,000 per quintal two years ago and export quality KAK-II and Mexican bold varieties touching Rs. 7,500 and Rs. 10,000 per quintal respectively.

Farmers in the drought-prone district have also taken up red gram cultivation in 77,000 hectares and made handsome gains with the market price ruling at a high of Rs. 10,000 per quintal thanks to the country-wide shortage of pulses.

### **No option**

“If the present trend continues, farmers will have no option but to quit tobacco cultivation altogether during this year and go for pulse crops including black gram, red gram and Bengal gram in a big way,” say farmers in the Podili region.

“I am able to purchase an acre of land with the super profit made from growing red gram,” discloses Sangala Venkateswarlu, a farmer from Podili,

who grew red gram in five acres spending Rs. 1 lakh to get an equal amount as profit by selling 20 quintals of the produce.

Farmers, who have been traditionally growing tobacco in Ongole and its surroundings, have realised that Bengal gram, is the better bet given the local demand for pulses than tobacco, the market price of which is determined more by global market condition, says M. Bangarababu, a progressive farmer who harvested nine quintals of Bengal gram during the rabi season.

*With the Tobacco Board cutting down the crop size, farmers took to cultivation of Bengal gram in a record 92,000 hectares.*

*J. Muralikrishna*

*Joint Director of Agriculture*

### **Partnership to boost agri-preneurship**

University of Agricultural Sciences at Raichur has signed a Memorandum of Agreement (MoA) with International Crops Research Institute for Semi Arid Tropics (ICRISAT) to boost agri-preneurship development and to enhance agricultural growth through innovation and partnership.

The MoA was inked by Vice-Chancellor of UAS P.M. Salimath and Deputy Director General of ICRISAT (research) Peter Carberry at Patancheru facility of ICRISAT on the outskirts of Hyderabad recently.

The MoA will provide support to establish an agri-business incubator (AI\BI) at the main campus of the university at Raichur.

The ICRISAT will also help in identifying and promoting agri-business start-ups as well facilitate agr-technology transfer in north Karnataka to enhance the impact of outreach activities of the university in the region.

As per the MoA, entrepreneurs will get technical and business development support in seed production, farm machinery and food processing domains.

Technical support will also be enabled to develop business models, capacity building and training for incubator personnel, facilitate strategies and systems for technology commercialisation. Dr. Salimath said that the partnership opened a new chapter for the university to promote technology and agri-based entrepreneurship programme in the region.

***University of Agricultural Sciences, Raichur, signs MoA with ICRISAT***

### **6,000 solar pumpsets given to farmers in coastal districts**

*APEPDCL on promotion drive*

The Andhra Pradesh Eastern Power Distribution Company Limited (APEPDCL) is on a drive to promote solar pumpsets in the agriculture sector.

Talking to *The Hindu*, the Chairman and Managing Director of the Discom R. Mutyala Raju said that the government has sanctioned 6,000 solar pumpsets for the coastal districts that fall under the jurisdiction of the Discom.

According to him, Srikakulam has been given 1,300 sets; Vizianagaram 1,600; Visakhapatnam 1,300; Rajahmundry 1,600 and Eluru 200 sets.

Mr. Raju said that 1,781 solar pumpsets of 5 hp and 3hp were already operational. The break-up is: Srikakulam 232; Vizianagaram 535; Visakhapatnam 463; Rajahmundry 440 and Eluru 121.

### **Basic requirement**

The solar pumpset project is jointly being operated by the APEPDCL and NREDCAP, and the basic requirement is that a farmer needs to allocate about 270 to 450 sq.ft. of 'shade free' land to install the solar panels.

For a 5 hp system, the total cost is about Rs. 4,29,000. While the beneficiary pays about Rs. 55,000, about Rs. 1,62,000 is borne by NREDCAP and Rs. 2,12,000 will be borne by the APEPDCL. In the case of 3 hp motors, the total cost is about Rs.3,36,378, in which the beneficiary's share is about Rs. 40,000 and Rs. 97,200 will be borne by NREDCAP and Rs. 1,99,178 will be paid by the APEPDCL.

### **5-year maintenance**

According to Mr. Raju, the pumpsets work to a depth of about 200 ft. and NREDCAP will provide the necessary equipment such as solar panels, high quality pumpsets, electric cables and water pipes. The pumpsets also come with a five-year annual maintenance contract, said the CMD of APEPDCL.

For more details, agriculturists can contact the nearest APEPDCL office.

### **Mangalapuram drumstick: grown as family tradition**

*There are about 400 families in the village, which see it as an additional source of income*



A vendor selling Mangalapuram drumsticks in Vijayawada.—PHOTO: V. RAJU

For most people, drumstick is simply a popular Indian vegetable. But for Mangalapuram villagers, growing the green-skinned, stick-like vegetable has become a family tradition.

The villagers are keeping up with the family tradition, which started some two centuries ago.

One would find at least two drumstick trees in their backyards even today. There are about 400 families in the village, which see it as additional source of income.

With very meagre recurring expenses, every resident earns not less than Rs. 25,000 a year as additional income.

The variety has become such a hit that vegetable vendors at Kaleswara Rao (KR) Market or Rythu Bazaars cannot desist from yelling “Mangalapuram managakayalu here.”

The farmers who used to go all the way to K.R. Market, which is about 15-km from here, to sell their produce some decades ago, now sit relaxed as wholesalers and traders themselves come to village to procure the drumsticks.

“I remember that my father used to walk down to K R Market carrying drumsticks in a *kavadi* (yoke like) on his shoulders.

Not just he, all his peers used to do the same. Now things have changed. the traders are coming to our village,” says 76-year-old Thota Subba Rao.

In those days, a bundle of 100 drumsticks used to fetch Rs. 2 hardly. Now, Rs. 200 to Rs. 300 is paid, he says.

Madu Durga Rao, another resident, says, for last three years the demand is going up considerably.

“I earned Rs. 25,000 from five trees in my backyard. All the credit goes to family tradition,” he adds.

The residents proudly say that the soil in their village enhances the taste and yield of drumsticks.

Nowhere one would find this type of crop. Go to neighbouring Sitaramapuram or Apparaopeta, the drumsticks grown there have no demand on a par with ours, they say.

Mr. Subba Rao recalls that the property used to be divided taking the number of trees into consideration. “My grandfather got a drumstick tree as his share, while his brother got 60 cents of land.”

Our ancestors believed that a drumstick tree was more valuable than land. An acre of land hardly cost Rs. 100 then, while family that got tree as share used to earn around Rs. 8 a month, he explains.

Interestingly, the drumsticks are not cultivated as crop here. The trees are planted on hedges in fields or grown in backyards.

### **Distribute water among four States, says Telangana**

The third and final day of hearing over water sharing before the Krishna Water Disputes Tribunal at New Delhi on Wednesday saw the Telangana government putting a front that there was need to redistribute the river water between the four riparian States because there were substantial hydrological changes since the allocations were first made by the earlier tribunal headed by Bachawat.

Senior counsel C.S. Vaidyanathan informed the tribunal, now chaired by Brijesh Kumar, that the changes include climatic and, hence, the allocations made by the Bachawat tribunal could not become a basis.

Also, the availability of water in the river had come down, which forced farmers to shift from water-intensive crops like paddy to other irrigated dry crops.



### **‘New solar policy for State soon’**

The State will soon get a modified Solar Power Policy to achieve the 6,000 MW target set for 2020 by the Union government.

“We seek active participation from the industry in the form of inputs so that the same can be included in the new modified policy,” Energy Minister D.K. Shivakumar said on Tuesday.

Speaking at a seminar on solar energy organised by the Bangalore Chamber of Industry and Commerce, the Minister also said the government was contemplating phasing out or drastically reducing the subsidy granted by the State every year on power supply and other grants.

These subsidies amount to around Rs. 8,000 crore a year. A large part goes into providing free power to farmers to run irrigation pump sets.

“This way we will be able to reduce the subsidy burden and the money can be utilised for better purposes,” he said.

### **No change in mutton price, demand**

Despite the bird flu scare, the price and demand for mutton has remained unchanged across the city.

Mutton is priced between Rs. 440 and Rs. 480 a kg now. A butcher in Shivajinagar said the demand has not fallen, but nor has it risen given the high cost and the fact that many just don’t like mutton.

Meanwhile, the price of chicken hovered between Rs. 130 and Rs. 150 a kilogram on Wednesday.

However, Karnataka Poultry Farmers’ and Breeders’ Association general secretary H.N. Nagabhushan said a drop in both demand and price is expected in the coming days.

## **Banana prices up**

The increase in the price of plantain in the weekly wholesale auction market in Paramthivelur town has brought much cheer to the farming community.

A large number farmers of Paramthivelur and surrounding villages have raised plantain crop in a large area this season.

The plantains of this area are sent to the southern states of Kerala, Karnataka and Andhra Pradesh and also to the districts of Salem, Coimbatore, Erode, Karur and Dindigul by lorry loads daily.

In the last few weeks, the 'Poovan' variety bunch fetched a maximum price of Rs. 150, 'Rasthali' variety bunch Rs. 200, 'Pachai naadan' bunch Rs. 200; 'Karpooravalli' variety Rs. 200. Each 'monthai' variety banana fetched a price of Rs. two.

More than 1,000 bunches of various varieties of plantains were brought to the weekly wholesale market in Paramthivelur on Monday.

'Poovan' variety bunch was priced at Rs. 200; a bunch of 'Rasthali', 'Pachai naadan' and 'Karpooravalli' varieties were priced at Rs. 250 each, Each 'Monthai' plantain was priced at Rs. three.

The price hike has delighted the local farming community.

## **Take steps to prevent outbreak of bird flu**

Following symptoms of outbreak of bird flu in Bidar district in Karnataka, the Animal Husbandry Department has asked poultry farmers to ensure all precautionary measures in place to prevent outbreak in the district.

District Collector V. Dakshinamoorthy said that farmers should install footpath with chlorine dioxide sprayed on it so as to prevent the virus entering the shed.

A total of 45 Rapid Response Team comprising veterinarians and assistant veterinarians, assistants were monitoring the 988-odd poultry farms round-

the-clock, he added. He asked all the vehicles entering and leaving the farms to be sprayed with disinfectants on wheels and ensure all precautionary and safety measures are in place. Mr. Dakshinamoorthy said that transporting of poultry and eggs were monitored by officials.

### **Overwhelmed by drought, farmer sets plants ablaze**



Hope lost:After losing his ‘mosambi’ plants, L.V. Shivanna, now plans to grow ragi on his farm near Halebid in Hassan district.— Photo: By Special Arrangement

*Shivappa was the first to successfully cultivate mosambi in Hassan*

L.V. Shivappa (50), a farmer in the district, cut down his mosambi (sweet lime) plants and set them ablaze on his farm, near Halebidu in Belur taluk on Tuesday.

The non-availability of water and the failure of seven borewells that he had drilled one after the other in last two years forced him to take this step.

Interestingly, five years ago, Mr. Shivappa was in the media for being the first to take up mosambi cultivation in Hassan district and succeeding in his efforts. Now, he is in the news again for reducing the fruit plants to ashes.

Mr. Shivappa is one of the vice-presidents of the Hassan district unit of Karnataka Rajya Raitha Sangha.

He was interested in conducting experiments on his 3.5 acre farm at Lingayyana Koplū.

Seven years ago, he was part of a tour organised by the Horticulture Department to Belgaum district where he had the chance to interact with mosambi growers at Gokak.

### **Past success**

“Following the tour, I decided to grow mosambi on one and a half an acres of land.

I bought mosambi saplings for Rs. 260 each from Gokak. My experiment was successful, though the Horticulture Department officers suggested I do not grow mosambi,” he said.

With a total of 230 plants on his farm, he managed to obtain a good yield for three years.

“I was getting two crops a year and each season brought in a good income. Annually, my income from the mosambi farm was about Rs. 1.25 lakh. However, in the last two years, the plants started dying,” he said.

### **Dried-up borewells**

A dip in rainfall and a decrease in the yield of the borewells started affecting the plants.

In 2015 and 2016, Shivappa spent nearly Rs. 6 lakh on digging seven borewells on his farm consecutively. “Each borewell was 700-800 ft deep. I did not get water from them. In the last one year, nearly 200 of my mosambi plants died. Only around 30 were left, I cut them down and set them on fire,” he said.

Mr. Shivappa, the father of two children, is now left with his coconut farm spread over two acres.

He has taken a loan of up to Rs. 10 lakh from private persons. “I could not take a loan from the bank as the land on which I have been cultivating is still in my father’s name,” he said.

### **Lack of benefits**

He also did not enjoy any benefits such as subsidies from the State government in any form for taking up horticulture. He now plans to grow ragi on his farm.

“We live about 13 kms away from Yagachi reservoir in Belur, yet we don’t have sufficient water to drink, let alone for agriculture purposes.

We, the farmers in Halebidu hobli, have appealed to the State government several times to irrigate our land, but have failed to get a response,” he said.

*The farmers in Halebidu hobli have appealed to the State government several times to irrigate our lands, but there has been no response so far.*

*L.V. Shivanna*

*Farmer*

*Mr. Shivappa says that despite repeated appeals, the State government has not responded even once.*

### **DFRL to adopt two villages for technology transfer**

Mysuru-based Defence Food Research Laboratory (DFRL) will soon identify two villages in the district and work towards improving their living standards with the help of technological intervention.

Speaking to *The Hindu* on the sidelines of the National Technology Day Exhibition on its premises on Wednesday, DFRL Director Rakesh Kumar Sharma said the initiative follows a suggestion by Pratap Simha, MP, during the recent visit of Defence Minister Manohar Parrikar to the laboratory.

After choosing the village, the DFRL will discuss with the local community, including panchayat leaders, to identify a technology that would be of use to the community.

“For instance, if farmers grow tomato, we can provide them with post harvest storage and processing technology that helps them make a product they can market,” he said.

### **Biodigester toilet**

Depending on the need, Dr. Sharma said a biodigester toilet can be installed in the village, which can help generate energy for the community from human waste.

Already, DFRL’s biodigesters have been used by the Railways and other private players. DFRL will also work on installing a solar energy plant in the village, he said.

After identifying the village and the technologies to be used, Dr. Sharma said the DFRL will deploy its staff to liaise with the village to ensure its effective implementation.

After a couple of months, the DFRL proposes to invite Mr. Parrikar to the village to see for himself the change brought about by the technology.

Dr. Sharma said the project will be funded either by the Defence Research Development Organisation (DRDO) or under Mr. Simha’s MP Local Area Development (MPLAD) funds.

It may be mentioned here that Mr. Parrikar, during his recent visit to Mysuru, directed DFRL to share its technological expertise with the villages to not only improve its economic standards, but also raise their cleanliness and hygiene levels.

## **CFTRI takes the lead in helping banana growers**

*Creates a robust food value chain to benefit farmers*



Lending a hand:CFTRI has a range of technology available to make banana-based products.— PHOTO: M.A. SRIRAM

A model called FRIG (Farmers, Government, R&D, and Industry) has been launched, with the Central Food Technological Research Institute (CFTRI) taking the lead in helping banana growers.

A recent stakeholders' meeting involving growers, processors and market players in the banana processing industry was organised at the CFTRI with the aim to create a robust food value chain, which would be beneficial to the processing industry.

There were press reports during December 2015 that farmers were forced to sell banana for a meagre Rs. 2 a kg.

In this context, AcSIR students, as part of their project studies, initiated interaction with farmers of Chamarajanagar district.

Accordingly, around two tonnes of fresh banana was procured and processed at the Institute Pilot Plant, and packed and stored in cold storage.

Some buyers were brought into the loop for the purchase of banana pulp. Samples were sent to pulp exporters for evaluation of the product from their end.

And some quantity of pulp was sold through this route, said CFTRI Director Ram Rajasekharan.

CFTRI has a range of technology available to make banana-based products, which include banana nectar, RTS beverages, banana bar, and so on.

### **RTS beverage**

Some quantity of Ready to Serve (RTS) beverage was made from the pulp and made available through CFTRI canteen for sale to staff and students of the institute.

### **For anganwadi centres**

Interaction with the Department of Women and Child Development was a major step, as they agreed to buy banana bars for distribution as a food supplement to anganwadi children.

About 25 gm/day of the bar can provide approximately 90 kcal energy along with other micronutrients for a price of Rs. 4, he explained in a release here.

Farmer groups, buyers and export houses, along with officials from the department and technologists from CSIR-CFTRI, attended the meet to share their views and formulate a sustainable framework for a better future.

Accordingly, the model of FRIG was unveiled by Prof. Rajasekharan. Demonstration on value-added products from banana was also arranged on this occasion.

### **New variety to be released**

Te CFTRI will release a new plant variety that has the potential to protect banana crop from spoilage, said Director Ram Rajasekharan.



The plant can be grown as an intercrop along with other plantations, he said.

The CFTRI plans to work for establishing a semi-processing unit through farmers' cooperatives with support from the government and other agencies, transfer of technology free of cost to such agri-enterprises, and training and creating a network amongst them for ensuring proper returns to growers, he said.

### **Drought: The government's manual**



A dried pond at a village in Hamirpur district of drought-hit Bundelkhand area in Uttar Pradesh. Photo: Rajeev Bhatt

*Centre's drought crisis management plan explains that relief measures must be implemented by States with its active cooperation.*

According to the Drought Management Manual brought out in 2009, a drought is assessed on five parameters.

1. Availability of drinking water
2. Availability of irrigation water
3. Availability of fodder

4. Availability of food grains

5. Energy sector requirement

In 2015, the Centre released a comprehensive Drought Crisis Management Plan.

Read with the crisis management plan, the manual explains that relief measures must be implemented by State governments with the Central government's active cooperation.

The manual sets out four important measures that a State government should take at the time of a drought, with the Union government's help.

1. It should use the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) to provide immediate employment to drought-affected people.
2. The public distribution mechanism should be strengthened to provide food and fodder as a measure to sustain the rural economy.
3. The government should initiate actions to recharge the groundwater table by building check dams and providing pipeline water and other irrigation facilities.
4. The government should either waive off or defer farmer loans and arrange for crop loss compensation.

## **Maharashtra: All water-intensive crops to be brought under drip irrigation**

Notwithstanding the financial hurdles, the Centre and the state are all set to make drip irrigation a compulsion, as part of the long-term drought mitigation policy.



The state government will bring all water-intensive crops under drip irrigation in the next three years.

However, there are financial implications in the way as sugar mills have urged the government to stand guarantor for loans it seeks from banks for investment in drip infrastructure.

Notwithstanding the financial hurdles, the Centre and the state are all set to make drip irrigation a compulsion, as part of the long-term drought mitigation policy.

Chief Minister Devendra Fadnavis said, “There is no alternative to drip irrigation for all high water-intensive crops. To begin with, we will have to make drip irrigation mandatory for sugarcane crops.”

All studies by government on water management recommended that all water-intensive crops/horticulture, including sugarcane, bananas, grapes should be brought under drip irrigation.

Prime Minister Narendra Modi, after a drought meeting with the chief minister, had observed, “I have stressed on vitality of increasing water use efficiently through sprinkler and drip irrigation, including in sugarcane cultivation.”

A senior cabinet minister said, “Despite the necessity, we have to adopt flexibility. We will extend subsidies upto 50 to 75 per cent to small and marginal farmers from backward category who switch over to drip irrigation to enable them to sustain the additional expenditure.”

Sugar mills are not seeking direct subsidies. But they have urged the state government to stand guarantor for bank loans they would seek for investments in drip infrastructure.

However, the ministry of finance is not very keen on making immediate commitments. As sources said, “Rs 4,000 crore support to farmers for drip irrigation is not viable in the long run.”

At present, less than 20 per cent of sugarcane growers have adopted drip irrigation.

The chief minister indicated that various research institutes and collaborations with Israel can pave the way for adapting a more economical model for drip irrigation in rural Maharashtra.

Former minister for cooperation, Harshvarshan Patil, said, “I fully support the state government’s initiative for making drip irrigation compulsory for sugarcane crops. We have to go for better water management.”

The results from drip irrigation, compiled by the state government across districts reeling under drought, show that drip irrigation, along with protected farming yielded higher and better crop.

The higher expense in drip infrastructure is easily recovered through dividends from higher production.

The agriculture department is playing a crucial role to provide logistical and technological support to farmers’ groups ready to experiment in drought prone districts in Vidarbha and Marathwada.

### **Centre can’t shirk responsibility while dealing with drought: Supreme Court**

The bench also issued directives for updating the drought management manual - published in 2009 — after taking into account rainfall deficit, timely declaration of drought and other factors.



Drought: Issuing the string of directions on a PIL filed by NGO Swaraj Abhiyan, the top court reproached the Centre for its failure to ready the

national plan even after 10 years of the Disaster Management Act coming into force.

RULING THAT “the buck will eventually stop with the Government of India”, the Supreme Court Wednesday directed the Centre to consider drought as a disaster and constitute a national response force along with a consolidated fund within six months to deal with drought situations.

A bench of Justices Madan B Lokur and N V Ramana also issued directives for updating the drought management manual – published in 2009 — after taking into account rainfall deficit, timely declaration of drought and other factors like dry land farming, water harvesting, drip irrigation etc.

“Humanitarian factors such as migration from affected areas, suicides, extreme distress, the plight of women and children are some of the factors that ought to be kept in mind by state governments in matters pertaining to drought and the Government of India in updating and revising the manual.

Availability of adequate foodgrain and water is certainly of utmost importance but they are not the only factors required to be taken note of,” said the bench.

Issuing the string of directions on a PIL filed by NGO Swaraj Abhiyan, the top court reproached the Centre for its failure to ready the national plan even after 10 years of the Disaster Management Act coming into force.

“Evidently, anticipating a disaster such as a drought is not yet in the ‘things to do’ list of the Union of India and ad hoc measures and knee-jerk reactions are the order of the day and will continue to be so until the provisions of the

Disaster Management Act are faithfully implemented... risk assessment and risk management also appear to have little or no priority as far as the Union of India and the state governments are concerned,” it said.

It said the Centre could not shirk its responsibility by stating that it was for the state government concerned to declare drought and that the Union government had a limited role since the Act placed a “considerable responsibility” on them to assist the states and help them with valuable inputs.

“The Union of India has certainly to maintain a delicate and fine balance between federalism and its constitutional responsibility, and that it must do, otherwise it is ultimately the common person who will suffer and be in distress because of a situation not of his or her making,” said the court.

While noting that whether or not to declare a drought could neither be a judicially manageable exercise nor could definite standards be fixed, the bench said the judiciary will still intervene and pass necessary orders since scores of lives are involved.

It held that declaration of drought is not a complicated affair but a manageable exercise, which could have appropriate conclusions based on scientifically drawn data, which required use of modern technology to make an early determination of a drought or drought-like situation after doing away with “colonial methods and manuals that follow a colonial legacy”.

The court added it was not necessary to declare drought for the entire state and that it should be so declared for districts or some villages too. Criticising the state governments in Bihar, Gujarat and Haryana for an “ostrich-like attitude” to drought-hit areas, the bench underlined that a delayed declaration of drought particularly affected women and children while also putting an undue strain on the resources of the states.

It asked the agriculture secretary to convene a meeting within a week with the chief secretaries of Bihar, Gujarat and Haryana to review the drought situation.

## **Price spiral: A tale of two commodities**

A buffer stock for sugar could have been useful today, as it has proved for wheat.



The coming months could see the Centre do to sugar what it has done for pulses and onions in the last one year. Stock-holding limits on traders might be just the start.

On September 18, the Centre fixed “minimum indicative quotas” for export of sugar by mills during the new 2015-16 season starting October.

Each mill was given a target, with the total exportable quantity of four million tonnes (mt) allocated based on their three-year average production.

A subsequent notification dated December 2 further extended a “production subsidy” of Rs 4.50 per quintal on the cane that mills purchased, subject to fulfilment of their export obligation.

But barely five months on, the tide has turned. From forcing/incentivising mills to export with a view to get rid of surplus sugar stocks and improving domestic price sentiment, the Narendra Modi government is today singing a completely different tune.

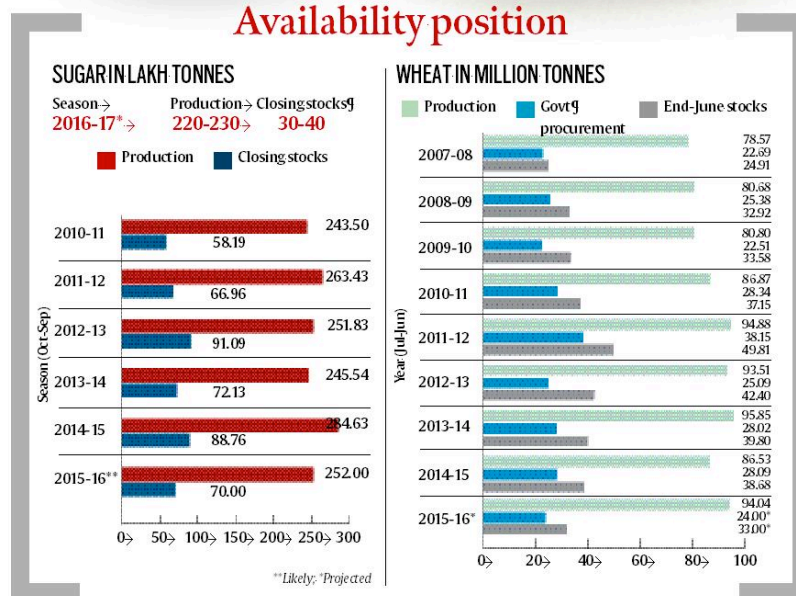


On April 29, the Department of Food and Public Distribution issued an order imposing stock limits on sugar.

No trader can now hold more than 500 tonnes at any given time, except in the deficit Kolkata region where the limit is 1,000 tonnes.

Moreover, any stock of sugar has to be compulsorily sold within 30 days of its receipt.

There is also talk of the mandatory export quotas for mills being withdrawn, even as about 1.5 mt of sugar has already been shipped out of the country.



This about-turn has been attributed primarily to drought in Maharashtra and Karnataka.

India's sugar production is expected to fall to 25.2 mt this season from 28.46 mt in 2014-15 mainly because of huge drops in the two states — from 10.52 mt to 8.4 mt for the former and from 4.99 mt to 4.1 mt for the latter.

Given carry-over stocks of 8.88 mt with mills, estimated domestic consumption of 25.6 mt and exports of 1.5 mt, there would be some 7 mt of sugar when the next 2016-17 season begins in October.

The real problem, though, will be in 2016-17.

Sugarcane being a 12-month crop, the effects of lower plantings in Maharashtra and Karnataka will be felt more in the coming season.

With its projected cane area contracting to around 6.3 lakh hectares (lh), from 9.3 lh and 10.5 lh in the preceding two seasons, Maharashtra's sugar output may further dip to 5.5-6 mt.

Low reservoir water levels in the northern districts of Gulbarga, Bijapur, Bagalkot and Belgaum are, likewise, slated to pull down Karnataka's production to 3-3.1 mt.

Even assuming Uttar Pradesh (UP), Tamil Nadu and other states to produce an extra 1.5 mt, it isn't going to take the country's total output in 2016-17 beyond 22-23 mt. That, with opening stocks of 7 mt, internal consumption of 26 mt and zero exports, will leave just 3-4 mt of sugar in September 2017.

This wouldn't suffice for even two months' consumption, as against a normative requirement of three months. The question to ask, however, is: Wasn't the fact of a drought in Maharashtra and Karnataka known?

This newspaper had in early-December — just when the production subsidy linked to exports was announced — warned about the possibility of Maharashtra's sugar production plunging to even below 5 mt in 2016-17 (<http://bit.ly/1Wprajl>).

Why this sudden dawning of wisdom on the Centre's part? Now, it can be argued that the Centre's big push for exports was prompted by low ex-factory realisations for sugar.

These averaged Rs 23.74 per kg in Maharashtra and Rs 25.64/kg in UP during the 2014-15 season, touching lows of Rs 20.14 and Rs 22.54/kg respectively in July.

But couldn't the objective of propping up prices to enable mills pay cane growers have been better achieved by creating a buffer stock of sugar on government account? Such stocks amounting to 5 mt had, after all, been created in 2007-08 in response to a similar glut situation.

The annual subsidy burden on a 2-mt buffer — the Centre paying the interest, storage and insurance charges on the sequestered sugar that remains in the godowns of mills — would have been in the region of Rs 1,250 crore.

That cost, in hindsight, may have been well worth bearing. Apart from helping improve prices and clearing cane dues of farmers, the sequestered sugar would have been most useful today.

Instead, the Centre chose to force mills to export at Rs 3-3.5 per kg below what they would have realised by selling in the domestic market.

From its standpoint, the Rs 700 crore or so towards production subsidy on export of 2 mt would have cost less than maintaining a buffer stock for the same quantity.

But these calculations clearly underestimated the extent of drought and its impact on domestic sugar availability.

It is useful to draw a contrast here with another commodity — wheat. A short winter, courtesy El Nino, has probably resulted in a lower crop this time.

Even if not reflected in the agriculture ministry's production estimate of 94.04 mt, the fact is that official procurement of wheat is set to fall sharply to about 24 mt.

But thanks to stocks built up from the past, there will still be 33 mt-odd of wheat in government warehouses on July 1 — more than the 27.58 mt minimum buffer required for this date.

And the credit for that goes to Punjab's farmers, who have delivered 10.5 mt of the 22.3 mt procured so far in the current marketing season.

The coming months could see the Centre do to sugar what it has done for pulses and onions in the last one year. Stock-holding limits on traders might be just the start.

This could next be extended to the mills themselves — by bringing back “release” of a minimum quantity of sugar every month into the market.

And, of course, there can also be resort to large-scale imports, though Assembly elections next year in UP — where the votes of sugarcane growers matter — may not make this an easy proposition.

All this could have been avoided if only there was a buffer stock in sugar as in wheat.

### **A solution towards addressing the farm technology drought**

The Centre can extend the model of Defence for acquiring cutting-edge foreign knowhow in agri.

It's hardly a secret that barring in wheat or paddy, no major yield breakthrough has been achieved by Indian scientists for over two decades.

The recent confrontation between Monsanto and the Centre over pricing of Bt cotton seed technology has yet again brought into focus the need to constantly update technology to sustain gains in agriculture.

It's hardly a secret that barring in wheat or paddy, no major yield breakthrough has been achieved by Indian scientists for over two decades.

This is more so in pulses, oilseeds and high-value agriculture sectors like horticulture, dairy and poultry.



Dramatic productivity gains in major cereals during the seventies and eighties were made possible mainly through technology sharing by non-profit international research bodies, such as CIMMYT (the International Maize and Wheat Improvement Center, Mexico) and the International Rice Research Institute in Manila.

While our scientists improved many of the genetic lines sourced from these centres and adapted them to the country's huge diversity of agro-climatic conditions, the original strains and the science behind them were, however, developed in foreign labs before they could support technology in Indian fields.

It was this international cooperation between government, non-government and research bodies that enabled Indian farmers, at least in the better resource-endowed regions, to achieve significant productivity breakthroughs in wheat and rice.

By the early 1990s, India was self-sufficient in foodgrain production.

Recapitulating this history is important in the context of the on-going dispute with Monsanto because it reveals how the then government clearly differentiated between strategy and tactics.

The reflexive anti-US and anti-MNC sentiment, prevalent among influential sections of academia, civil society and the media, apart from bureaucratic and political circles here, wasn't any weaker then than now.

Yet, the political leadership stared down a shrill campaign to block the import of a small quantity of breeder seeds of dwarf wheat varieties for multiplication in India; from its standpoint, the larger strategic objective of food security was more important than any short-term tactical loss of support among key support bases.

Ending dependence on food aid was given higher priority than pandering to fears regarding destruction of indigenous bio-diversity or loss of seed sovereignty.

In the instant case, more than one senior agricultural scientist has confirmed to this writer that Monsanto had originally made an offer for an outright transfer of its Bt gene technology to the Centre for a one-time payment in single-digit million US dollars.

The Centre could, then, allow any public or private entity to produce cotton seeds incorporating this technology at a fixed royalty. In retrospect, this may have been a major missed opportunity.

The Monsanto offer was made sometime in the mid-1990s, but a combination of scientific pride and bureaucratic caution seemingly ensured that it never got beyond a few conversations.

Monsanto subsequently licensed the technology to a joint venture with a private Indian seed company.

The commercial royalty levied on this technology lies at the heart of the current dispute with some of the sub-licensee firms that have incorporated it into their own cotton hybrids.

With various courts and the Competition Commission of India, too, getting involved, we'll have to wait and see how the issue gets resolved.

However, the larger question — of accessing cutting-edge technology, spanning crop husbandry and even high-value agriculture — remains unanswered.

Frequent technology upgrades are critical to attain the ambitious vision of doubling farm incomes by 2022. Can it be done without seeking technology from outside? The answer is an unequivocal no.

The approach to acquiring critical agricultural technology could follow the pattern emerging in another area of strategic importance:

Defence. To provide the armed forces with cutting-edge capabilities, the Centre is today taking the lead for identifying proprietary technologies and negotiating their transfer to Indian entities (often from one foreign private company to an Indian one), so that the necessary platforms (guns, tanks, fighter jets, warships etc.) are manufactured in India.

Technology for agriculture needs to be approached in a similar manner.

Let the Niti Aayog list critical gaps in our agri technology portfolio and fill a priority list with outright import and adaptation of on-the-shelf technologies from anywhere in the world.

The Centre can negotiate the purchase of the identified technologies, using government-to-government purchase mechanisms similar to those in defence acquisitions.

This will greatly reduce the commercial complexity of such buy-outs, with the Centre holding the rights to domestically license a range of technologies at reasonable rates of royalty (or even zero where warranted, such as in pulses).

But why not simply liberalise flows of planting material or germplasm from abroad and allow private entities to enter into tie-ups of their choosing?

Well, the chances are we will run into a hundred Monsanto-type problems.

The political economy of agriculture now will not permit market forces to have free play; the temptation for state agents to influence economic decisions would remain a threat to businesses in the near term.

Only when this situation has improved over a decade or so, and market-determined pricing for inputs becomes accepted practice, can one realistically expect agricultural technology liberalisation in the full sense.

### **Rain-fed Agriculture: Seizing the desi advantage through improved breeding**

Eight new publicly-developed cotton varieties hold out hope for dryland growers.





These are claimed to not only be more resistant to drought, salinity, diseases and insect pests, but also produce fibre of good quality.

Even as Monsanto's threat to "reevaluate" its presence in India — following a government move to slash royalty on the US life sciences giant's proprietary Bt cotton technology — has created uncertainty in the cotton trade, the Central Institute for Cotton Research (CICR) here sees this as an opportunity for revival of native desi varieties incorporating improved fibre characteristics.

Scientists in various state agricultural universities have developed eight new improved desi varieties under the CICR-spearheaded All India Coordinated Research Project on Cotton.

These are claimed to not only be more resistant to drought, salinity, diseases and insect pests, compared to the 'American' cottons occupying much of the cotton area in the country today, but also produce fibre of good quality.

Their fibre length ranges between 28 to 30.5 mm, with tensile strength of 27-30 grams/tex and fineness of 4.5-5 micronaire. This makes them superior to the traditionally cultivated desi varieties that produce coarser fibre (7-8 micronaire) with shorter staple length (20-22 mm) and less bundle strength (19-20 grams/tex).

At the time of Independence, about 98 per cent of India's cotton area was covered by desi varieties belonging to the *Gossypium* "arboreum" and "herbaceum" species.

Their inferior fibre quality — modern spinning mills, unlike the old hand-spun yarn units, require longer, stronger and finer lint — led to their gradual displacement by 'American' cottons of the *Gossypium* "hirsutum" species.

Even before Bt cotton's advent in 2002, the share of desi varieties in total acreage had fallen to 25 per cent, and have shrunk further to under 2 per cent

now. The coarse lint from desi cotton is used only for surgical and absorbent purposes or to make mattresses, denims and stuffed toys.

But if CICR's director K R Kranthi is to be believed, this will change with the newly-bred long-linted arboreum varieties.

“For the first time in the world, an effort to revive native varieties is being done on such a big scale,” he claims.

In 2015-16, field trials of the improved varieties were conducted at 15 different locations across India to test for desired fibre traits as well as crop yields.

The results have been encouraging.

The varieties would be reevaluated in the coming planting season also to test for the stability of results.



### THE NEW DESI COTTON BLOCKBUSTERS

VARIETY	DEVELOPER	FIBRE LENGTH (MM)	BUNDLE STRENGTH (G/TEX)	KAPAS YIELD (KG/HA)
PA-812	MAU	30.5	29.7	1,337
ARBa-1502	UAS	28.7	28.9	1,320
DWDa-1502	UAS	28.2	27.3	1,342
GAM-231	NAU	29.0	27.2	1,408
PA-785	MAU	29.4	29.2	1,361
PA-778	MAU	28.1	26.9	1,143
PA-740	MAU	28.0	27.4	1,697
ARBa-1302	UAS	28.6	26.9	1,329

MAU: Marathwada Agricultural University, Parbhani;  
UAS: University of Agricultural Sciences, Dharwad;  
NAU: Navsari Agricultural University, Gujarat.

But what the economics of cultivation from the farmer's standpoint? The new desi varieties, Kranthi says, can give 5-6 quintals per acre of raw unginned kapas with normal spacing of 20,000 plants in rain-fed conditions.

These can go to 7-8 quintals and more if high-density planting or sowing in closer-spaced rows with average populations of 55,000 plants per acre is employed.

This is comparable to the yields for the Bt American hybrids grown in rain-fed areas. The new varieties are, moreover, of 5-6 months duration, as against 8 months for Bt hybrids.

The shorter maturity allows for optimal use of moisture from the monsoon rains within the available time window. It also makes these varieties ideally suited for cultivation in the 41 lakh hectares cotton area of Maharashtra and 17 lakh hectares in Telangana that was predominantly rain-fed.

“Farmers in the irrigated cotton belt can afford hybrids, but our concern is to breed varieties for rain-fed conditions.

The new long-staple desi varieties are naturally sturdy and also produce fibre having the required market-worthy parameters,” Kranthi points out. Besides, their seeds don't need to be bought each time.

With varieties, the seeds stored from previous year's crop can be used for. Even if farmers want to sow new seeds, the cost per acre will be only around Rs 800, as against Rs 1,900 for Bt hybrids.

Kranthi hopes to make the new desi varieties available to farmers within the next four years. CICR is already working with NGOs like the Vidarbha Desi Kapas Utpadak Sangh, Yuva Rural Association and Neem Foundation for multiplication of the seeds.

Kranthi isn't averse to Bt genes in the new varieties. It is only expected to protect the crop from bollworm attacks.

Yields per se are a function of the varieties or hybrids into which the foreign genes derived from the *Bacillus thuringiensis* or Bt soil bacterium — coding for proteins toxic to bollworm insect pests — are inserted.

For best yield benefits, it is important that even the varieties or hybrids incorporating the Bt genes are well-suited for the specific agro-eco zones.

For rain-fed regions like Marathwada, Vidarbha and Telangana, the best options are not long-duration American hybrids, but early-maturing desi varieties that are also amenable to high-density planting, adds Kranthi.

### **Number of Gujarat's landless agricultural workers rises**

In 2014-15, the government spent Rs 5,721 crore under nine schemes formulated by the Government of India to provide social security cover to the unorganised workers.



During the ten-year period between 2001-11 when the number of landless agricultural workers decreased in states like Kerala and Goa, it rose in states like Uttar Pradesh, Bihar, Madhya Pradesh and Gujarat.

As per the Census 2011, there are about 14.43 crore landless agriculture workers in the country, of which 68.39 lakh are in Gujarat, Union Minister of State (independent charge) for Labour and Employment Bandaru Dattatreya told the Rajya Sabha Wednesday in reply to a question by MP Parimal Nathwani.

The number of landless agricultural workers in Gujarat increased from 51.61 lakh in Census 2001 to 68.39 lakh in 2011.

The highest — 1.99 crore landless workers — are in Uttar Pradesh, followed by Bihar (1.83 crore), Andhra Pradesh (1.69 crore), Maharashtra (1.34 crore) and Madhya Pradesh (1.21 crore). Interestingly, during this ten-year period, the number of landless agriculture workers went down in Kerala, Goa, Puducherry, Andaman & Nicobar Islands and Daman & Diu, the minister said.

In 2014-15, the government spent Rs 5,721 crore under nine schemes formulated by the Government of India to provide social security cover to the unorganised workers, he said.

### **National Technology Day: Scientists discuss futuristic agri technologies**

CSIO plans to develop a technology based on the sense of smell and taste.



Students visit a science lab on National Technology Day in Sector 30, Chandigarh, on Wednesday.

Sahil Walia Students and science enthusiasts visited laboratories at Central Scientific Instruments Organisation on National Technology Day on Wednesday to interact with the scientists about various technologies.

H K Sinha, director, Central Scientific Instruments Organisation (CSIO), spoke about technologically- advanced instruments like digital green moisture analyser, air assisted electrostatic sprayer for crops, electrostatic telescope, diffraction Lloyd mirror interferometer, myo-meter, postural stability system that have been developed since 2015.

Talking about the developments in the field of agricultural technology, Dr Amol P Bhondekar told the Chandigarh Newline:

“Our general perception towards science is limited to weapons and automobiles.

However, with the increasing population and urbanisation, food and agriculture are becoming an alarming issue, which must be looked at to make the population survive.

Recently, we have developed precision agricultural technologies that increase the agricultural yield and production of crops, analyse soil and seed quality.

We have developed the electrostatic sprayer that charges the molecules and enables the farmers to spray pesticides judiciously and not letting it seep into groundwater or cause cancer owing to overuse.”

With 30 per cent of the agricultural produce going to waste owing to poor storage facilities, CSIO has developed technologies for increasing shelf life of crops.

“We are looking at futuristic technologies like plasma technology to enhance efficacy of germination of seeds and early warning systems for plant health to save crops from certain infestations.

Since the last eight months, we are testing the same in Shimla on apple crop. The results have made us focus on other cash crops as well.

We have also developed mobile apps for measuring accurate pH value of food materials recently,” Bhonekar said.

CSIO plans to develop a technology based on the sense of smell and taste.

“We are in the process of developing electronic nose and tongue to determine quality of crops like tea and cashews.

At present, the testing is done by a human panel, but their judgement is subjective to moods and preferences.

Hence the electronic nose and tongue will provide objective results with least crop wastage,” Bhonekar said. Shedding light on the importance of technological awareness among public, Dr H K Sardana said:

“Over the last year, we have developed a lot of technological instruments focusing on the field of agriculture, medicine, automobiles, aviation and physical security that have been discussed at length by our scientists.

We live in a technologically-advanced age and such events let us disseminate that knowledge to the youth. Realisation of true science lies inside a laboratory and through such events, people can experience it.”

## **Maharashtra: Pre-monsoon boon for Jalyukta Shivar projects**

In the last four days, Maharashtra witnessed unprecedented erratic spells of pre-monsoon showers across remote villages in Vidarbha, Marathwada, North Maharashtra and parts of Western Maharashtra.



At present, there are 34,960 ongoing jalyukta shivar works

At Savargaon, a nondescript village in drought-hit Parbhani, pre-monsoon showers have given farmers a reason to rejoice, with the Jalyukta Shivar project flowing with water.

Images of muddy water turning dry stretches of canals, rivers, ponds into a small rivulets are pouring in from district collector offices to the headquarters in the Mantralaya.

At the outset, pre-monsoon showers are not farmer friendly.

But eight districts of Marathwada anxiously awaiting rain have set aside their crop concerns taking delight in watching the dry canals gushing with rainwater, which was not more than 7.33 mm.



In the last four days, Maharashtra witnessed unprecedented erratic spells of pre-monsoon showers across remote villages in Vidarbha, Marathwada, North Maharashtra and parts of Western Maharashtra.

Officials from Beed, Latur, Nanded, Amravati, Akola, Buldhana, and Nagpur are unveiling images and tales of pre-monsoon showers bringing to life dead and dry canals, farm ponds, village wells and barrages.

However, average rainfall audit shows it is between 7.33 mm and 20 mm across the state. In the second week of May, overall water percentage in 11 mega dams in Marathwada was just three percent, which is alarming.

However, IMD has predicted 130 per cent rains this monsoon in Marathwada. A week ago, Chief Minister Devendra Fadnavis urged district collectors to expedite works of all ongoing Jalyukta Shivar abihyan projects.

The chief minister, battling the worst drought in Maharashtra, said, “If we have good monsoons, we will be able to reap the benefits as we have created almost 1,69,424 projects in the last one year, spread across 6,202 villages.”

The chief minister, who has himself taken the lead in sharing images of ‘Jalyukta Shivar’ posted from rural villages by farmers, NGOs and district officials emphasised, “If pre-monsoon rain of 7.33 mm can bring back life to dry canals, good monsoons will bring better harvest next season as we have created adequate structures.”

Sources in the ministry of water conservation revealed, “In the first phase, we completed 1,69,424 Jalyukta Shivar works across 6,202 villages.

The total expenditure was Rs 2,053 crore.”

There was enthusiastic public participation in the 4,930 projects which had an investment of Rs 274 crore. Fadnavis has repeatedly stressed, “The success of Jalyukta Shivar is people’s participation.

It has turned into a water movement. The villagers are volunteering to participate in projects not only lending physical labour but also generously contributing for the project.”

At present, there are 34,960 ongoing Jalyukta Shivar works. In the second phase, 5000 villages reeling under drought have been accorded priority.

Fadnavis has set a target of making 25,000 villages drought-free in the next three years.

# hindustantimes

## **Sugarcane still finds favour among farmers**



A farmer guards his crop near Paithan in Marthwada district. (Satish Bate)

Last year, Sudhakar Borwankar’s two-acre sugarcane field in Bhada village of Ausa taluka in Latur, failed him after all his six borewells dried up, yielding him one third of the normal output of cane at around 10 tonnes off one acre.

This is, however, not going to deter him from opting for sugarcane next year as long as he can somehow manage the one year water intensive cycle for this crop — 15 million litres for one hectare — even at the cost of digging a new borewell.

“Sugarcane fetches an assured price from factories and output is guaranteed, even if it requires more water.

It’s the only crop that gives farmers some additional cash in hand, “ said Borwankar.

Even as Marathwada faced it’s third consecutive drought last year, farmers like Borwankar hedged their bets on this water-intensive crop and cultivated it on 2.2 lakh hectares. Just as taps dried up in Latur, in February, 46 sugar factories in this drought-hit region, a majority of them controlled by politicians, crushed 1.2 lakh metric tonnes of sugar cane.

In a good year, when the rainfall is more than 50% , Marathwada has 61 functioning sugar factories. In 2013-14 and 2014-15, both drought years, the land under this cash crop was around 2.3 lakh hectares and 2.37 lakh hectares, respectively, just 10,000 hectares less than in a normal year.

This is just a fraction of the total cultivable area in Marathwada, around 50 lakh hectares, but the crop takes up half of the total irrigated area at 4.45 lakh hectares.

In the command area of the Jayakwadi dam, the region’s biggest irrigation project, sugarcane designed to be cultivated over just 5,500 hectares or 3% of the command area can take up nearly 25% of this area in a good monsoon year and averages at 7.84% of the command area (from 1983 to 2006).

This cultivation is at the cost of cotton and wheat, originally designed to get share of 25% of the irrigated area, but have been relegated to an average of 2.17% and 5.84% of the irrigated land in the same period.

There can be a split in opinion over efficacy of sugarcane as a crop and how much water sugar factories use to crush cane, but there is little doubt that this cash crop has pocketed most of the irrigated waters in the region.

Experts say that Marathwada's sugar story is a testimony to the lack of foresight and leadership of its political class. "In 1999, a water commission led by expert Madhav Chitale recommended that sugarcane be moved out of Marathwada and further permissions for factories be stopped.

Not only did the government sit on this recommendation, it went ahead to clear several factories in the region, " said Pradeep Purandare, retired professor at Water and Land Management Institute (WALMI), Aurangabad.

Among those who control co-operative sugar mills or own private factories in the region include kin of former chief minister Vilasrao Deshmukh and senior BJP leader Gopinath Munde, state Congress president Ashok Chavan, state BJP president Raosaheb Danve, BJP leader Subhash Deshmukh, senior NCP leaders among others.


"The sugarcane story in Marathwada is around a decade old and started with the proliferation of sugar mills with political leaders adopting the tried and tested Western Maharashtra model.

I don't see it as being responsible for drought as sugarcane is a minor crop here.

The end result is what we see today where all wells have dried up, " said Sanjeev Unhale of the Dilasa Janvikas Pratishthan.

## Rubber tapping census suggests pooling to tackle labour shortage

Average tapping days			
Region	Total	Male	Female
South Kerala	152	154	144
Central Kerala	143	143	136
North Central Kerala	169	172	147
North Kerala	155	155	155



Declining number of trees, disproportionate wage structure highlighted as key concerns

To address labour shortage in rubber plantations, the “tappers census” emphasises the need of pooling workers through the networking of Rubber Producer Societies.

The first-ever census carried out by Rubber Research Institute of India (RRII) also suggested utilising the potential of female labour through self-help groups to ensure adequate labour supply.

### Female participation

It is pointed out that female labour participation in rubber tapping was only a meagre 7.5 per cent out of the total 77,207 tappers, which is in sharp contrast to higher female worker participation in the large estate sector (60 per cent).

According to the report, the over-riding objective of the group approaches would be institutionalising the multiple grower dependence of the pooled labour along with promotion of Low Frequency Tapping System (LFTS).

The cumulative results of these approaches would ensure adequate labour supply, higher wage income and lower crop harvesting costs.

The census, a pioneering attempt to enumerate rubber tappers engaged in Kerala's small rubber sector, noted that declining number of trees, predominance of single grower dependence,

High Frequency Tapping System (HFTS) and the co-existence of high wage rate and low wage income all have become concerns on the tapping labour market.

This was mainly due to the persistence of organisational arrangements rooted in single grower dependence especially in the context of fragmentation of the holdings and the resultant reduction in the number of trees available for tapping, stated the report, prepared by T Siju, Binny Chandy, Tharian George and B Rajeevan of RRII.

## **Conflict**

The genesis of the issues in the tapping labour market has been primarily rooted in the unprecedented NR market uncertainties and the resultant conflict between the survival strategies pursued by the growers and the tappers to tide over the crisis.

According to them, any realistic attempt to address the stalemate in the sector would involve ensuring adequate number of trees available for tapping with high number of tapping days coupled with Low Frequency Tapping System (LFTS) to minimise tapping costs.

The labour shortage in Kerala's rubber smallholder sector has been one of the major policy challenges in the past one decade.

However, the absence of a reliable database on supply of rubber tappers has been a major bottleneck in formulating appropriate strategy to address the issue.

The report, therefore, suggested a major policy change to manage the existing tappable area, with the given supply of tappers and appropriate institutional interventions.

The results of the census and trends underline the need for adopting cost saving labour potential inherent in the organisational restructuring, based on multiple grower dependence and LFTS.

### **Met extends 'low' watch, shifts location**



The India Met Department has extended the watch for a low-pressure area ('low') in the peninsular seas by another day to Saturday evening.

Significantly, it has also changed the location from around Maldives to 'equatorial Indian Ocean and adjoining South-West Bay of Bengal', which is closer to Sri Lanka. Satellite pictures on Wednesday evening showed clouds spreading out over the Maldives, Comorin and the rest of equatorial Indian Ocean around Sri Lanka.

### **European agency confirms**

The European Centre for Medium-Range Weather Forecasts too agrees on initiation of the 'low' close to Sri Lanka.

It will grow in intensity by the next day and bring Tamil Nadu and Kerala in South India under its footprint, bringing moderate to heavy rain at isolated places.

It would move in a West-North-West direction and park itself over North Kerala-Coastal Karnataka coast, before intensifying and moving along the West Coast until May 21 up till when forecasts are available.

According to the European Centre, the system would have become a major cyclone off the Konkan coast by then.

There is a possibility it might get directed away from the Indian coast towards Muscat/Yemen, as is mostly seen is the case with systems brewing ahead of the onset of the Indian monsoon.

### **To pick up**

But a storm tracker featured by the US Climate Prediction Centre assessed that a 'low' taking shape in the South Bay of Bengal may move north in the Bay with a potential for gathering strength in tandem.

Earlier indications by the agency suggested this system could head towards Myanmar/Bangladesh, but forecasts put out on Wednesday showed a track leading towards Odisha and Gangetic West Bengal.

These are early forecasts and therefore the building storm would need to be subjected to assessment on a daily basis.

### **Heat wave**

Meanwhile, India Met Department said that during the 24 hours ending on Wednesday morning, heat wave conditions were confined to isolated places in West Rajasthan and North Kerala.



On Wednesday, thundershowers lashed isolated places in most of the Met subdivisions in North-West India, East India, Madhya Maharashtra, Vidarbha and Kerala into the afternoon.

Additionally, the Met indicated no change in maximum temperatures over North-West India and Central India during the next two days, but sees a gradual rise thereafter.

### **A summer camp to bring Gen Next closer to farming**



Mangaluru-based Krishi Vijnana Kendra (KVK) has come out with a novel concept: a summer camp on farming and allied activities for youngsters, with a bit of theatre thrown in.

Titled ‘Krishi Ranga’ (Agri-theatre), the summer camp introduces urban children to the activities surrounding agriculture.

### **Creating awareness**

Asked about the need for such a camp when many people are abandoning agriculture as financially unviable, Shivakumar Magada, head of KVK in Mangaluru and organiser of the event, told *Business Line* that the lack of profitability in agriculture is because of poor management, unscientific farming activities and other non-technical issues.

Stating that if the youth are informed of the challenges involved in taking up agriculture, they can come out with creative solutions with the help of science to face these challenges.

“We need more and more educated people to take up agriculture as a profession.

We have chosen school children in the age group of eight to 15, who have a lot of creativity and enthusiasm, so that we can infuse the concepts and principles of agriculture and science associated with it easily,” Magada said, adding that these initiatives will help them find solutions to the challenges.

### **Camp activities**

The one-week summer camp, which began on Monday, intends to impart practical knowledge in the areas of dairy farming, piggery, poultry, agricultural and horticultural activities. Bird watching, composting, and ornamental fish keeping are also part of the programme, he said.

The 26-hectare KVK campus is hardly 5 km away from Mangaluru city. It provides a village ambience for children as the campus has more than 300 coconut trees, wetlands, paddy fields, demonstration units for poultry, piggery, dairy and ornamental fish rearing.

The afternoon sessions focus on learning drama and music on agri-based themes. Noted artistes, progressive farmers and scientists interact with children in such sessions, he said.

Stating that more than 30 children have enrolled for the summer camp, Magada said the participants will be given ‘junior farmer’ certificate and a sapling on the final day of the camp.

“Even if four of these children take up agriculture when they grow up, then I will be happy for bringing the next generation closer to agriculture,” he said.

## **Spices museum at Willingdon Island**

The Spices Board is setting up a spice museum at Willingdon Island to educate tourists and seafarers about the fascinating history and growth of the Indian spices industry.

The museum will showcase the entire gamut of spices, beginning with cultivation and processing right to the finished product, besides its history, usage, storage and quality assessment.

Over 30 raw spices and culinary herbs are to be displayed at the museum.

It will display the history and development of Indian spices industry through an array of paintings, pictures, brochures and books.

The museum will also have a signature stall to facilitate the tourists to purchase authentic Indian spices as presents and souvenirs of Kochi, the land of spices.

A Jayathilak, Chairman of Spices Board, will lay the foundation stone in the presence of Cochin Port Trust Chairman Paul Antony.

The museum will be an information centre on quality spices to attract sailors and overseas tourists.

The signature stall at Willingdon Island, the fifth in India, is a pioneering initiative and the Board intends to leverage it for promoting spices in both India and abroad, Jayathilak said.

## **For commodity trade houses, it is back to basics**

Commodity trade houses are going back to their roots and focusing on what they know best, whether it's energy, metals or agriculture, while shedding peripheral activities.

From the world's largest independent energy trader Vitol's retreat from agricultural markets, to trade house Gunvor pulling out of metals and Archer Daniels Midland's disposing of its chocolate and cocoa businesses, traders are concentrating back on their historically strong activities.

The shift follows a period of rapid expansion and diversification for trade houses, partly triggered by the gap left by banks' departure from physical commodity trading, along with a collapse in profit margins from oil trading in 2010-11 that encouraged energy traders to try other areas.

“Over the past several years, particularly some of the oil traders, but also other traders have done very well in their core areas, but when they have branched out it hasn't been overwhelmingly successful,” said Craig Pirrong, Professor of finance at the University of Houston, and an expert on commodity trading.

The profits of trade houses were mixed in 2015, with those focused on energy mostly faring better than metals or agriculture, but the reversion to core activity is broadly consistent across sectors.

At the same time, companies responsible for moving vast amounts of the world's oil, metals and grains around the world seek to expand in their major markets, particularly via infrastructure and new regions.

This is consistent with trade houses' business model of owning assets in the middle of the supply chain, such as storage or transportation, to trade around.

Louis Dreyfus Company BV, which has traded grains for more than 150 years, is planning to grow its operations in Russia where infrastructure investments are needed for grain exports, along with China.

One of the “ABCD” quartet of companies dominating agricultural trading, alongside ADM, Bunge, and Cargill, Dreyfus is also considering options ranging from joint ventures to the sale of certain assets in its fertilisers, metals, juice and dairy units.

In energy and metals, Gunvor and Trafigura have both said they will focus future growth in their core areas.

One drawback of investing across multiple commodity markets is the management attention, working capital and risk management required.

“The more you take on the more diversion you have, do you really have the management that’s going to be able control all this?” said Robert Piller, commodities lecturer at the Geneva Business School.

## Business Standard

### **Number of landless farm workers in India rose to 144.3 mn in 2011**

The count as per Census 2001 stood at 106.7 million



The number of landless agricultural labourers in the country rose to 144.3 million in 2011 from 106.7 million in 2001, Parliament was informed today.

"The number of landless agricultural workers in India as per Census 2001 was 106.7 million and as per Census 2011 it was 144.3 million," Labour Minister Bandaru Dattatreya told the Rajya Sabha in a written reply.

For the welfare of unorganised workers including sugarcane workers, the government has enacted Unorganised Workers' Social Security Act, 2008, besides various schemes to provide social security cover, he added.

In a separate query, the Minister informed the House that registration, identification and issuance of smart card/U-WIN card to unorganised workers has come under the purview of the respective state/UT governments as per the Unorganised Workers' Social Security Act, 2008.

"However, the government has proposed a unified IT based platform for delivery of the services available under various social security schemes," Dattatreya added.

The proposal is being reviewed on the basis of remarks/ comments received from various stakeholders, he said.

"In view of near universal coverage of Aadhaar, the government is now working on a policy on delivery of various public services using Aadhaar, Jan Dhan Yojana account and existing platform without issuance of smart card/U-WIN card," the Minister added.



## THE TIMES OF INDIA

### **Sugarcane farmers hope to get price support from new govt**

K Venkatachalam, a farmer whose family has been cultivating sugarcane in his five acre land in Erode for the past 50 years, turned to turmeric last year.

He said he was forced to take this decision because sugarcane cultivation did not yield him any profits but only increased his debt burden.

"I had an agreement with an Erode-based sugar mill, but two-years-ago the company agreed to give only 2,250 per tonne," he said. "The money too was paid after a seven-month delay, which spiked the interest on the loan," he

said.

Venkatachalam is hardly the first sugarcane farmer to veer away from the crop. Agriculture department statistics show that the acreage under sugarcane cultivation in the district has fallen by almost 30% in the past four years to around 768 hectares.

There has been a steady decline in acreage when compared with 1,111 hectares under cultivation in 2014-15, 1,038 hectares in 2013-14, 1,458 hectares in 2012-13 and 1,427 hectares in 2011-12.

Farmers say the glut in the global production of sugarcane in the last two years had caused prices to fall, but politicians did not come to their rescue.

Neither the state nor the Centre helped them tide over the crisis when it mattered. In January, DMK chief Karunanidhi demanded the state government take initiatives and ensure that sugar companies settle the dues.

Subsequently, chief minister J Jayalalithaa hiked the state advised price to 550 so that farmers would get 2,850 per tonne when added with the fair and remunerative price fixed by the Centre.

But even that, farmers fear, will not end their woes as the companies are reluctant to settle even past dues. "Now we get a price of only 2,325 a tonne of which they deduct 750 for labour and transportation leaving us with only 1,500," he said.

This year, the sugar mill with which he had tied up with failed to collect the crop, forcing him to find another buyer.

The DMK and the PMK, sensing the mood among the sugarcane cultivating community, have already announced raising the minimum support price to 3,500 per tonne and 4,000 per tonne.

The farmers mainly have three complaints - sugarcane factories not honouring the government fixed price of 2,850 a tonne; factories delaying their full payment by more than six months; and their loan interests going up steadily.

"We want a government that will raise our minimum support price, force the companies to honour the price set by them or at least pay us the difference and waive off our loans completely," said Krishnapuram-based sugarcane farmer, M Ramalingam.

While farmers have welcomed the announcements made by the political parties, they still remain suspicious about their motive.

"The crux of the issue is ensuring the companies honour this price and pay our dues regularly," said Ramalingam.

"This present government did raise our minimum support price marginally, but they did not make the companies honour it because they are hand in glove with companies," said Venkatachalam.

### **Govt virtually rules out debt waiver scheme for farmers**

Virtually rejecting opposition demand for debt waiver to farmers, the government today said Centre is continuously monitoring the drought situation and urged all parties to work together to deal with the problem.

Replying to a short duration discussion in the Lok Sabha on drought, drinking water crisis and inter-linking of rivers, Agriculture Minister Radha Mohan Singh said the Modi-government has done a lot for the farmers in two years and this work cannot be compared with the previous government's work in 60 years.

On the opposition's demand of debt waiver to farmers, he said one of the members from Maharashtra had stated that such a scheme launched earlier have many faults.



To buttress his point, he cited a CAG report to say that Rs 271.49 crore were recovered from people who were not eligible for a debt-waiver scheme, which was to the tune of about Rs 72,000 crore.

In about 5000 cases, action was taken against bank staff and there were also instances of tampering with the records.

"The country is fortunate that a son of poor has become the Prime Minister and that is why he thinks about farmers and village," he said.

On the allegation that ministers are not visiting drought-affected areas and villages, Singh said several meetings have held in the Prime Ministers Office at highest levels with the Chief Ministers.

"This government is continuously monitoring the situation and coordinating with the states," he added.

He also asked the states to spend the amount received from the Centre for farmers on time.

Enlisting the steps taken by the government for farmers, the minister said they are targeting to cover most of the area to come under irrigation.

Under the Pradhan Mantri Krishi Sichai Yojna, he said over 300 districts have prepared their irrigation plans and rest are expected to prepare by September, he added.

"In India if you are to make the villages prosper, you have to give proper irrigation facilities to them...even after 68 years of independence, we were not able to give proper irrigation facilities to farm fields," he said. MORE  
RR DP AKK

## **House panel seeks credit facilities for farmers**

The commercial banks should provide adequate credit facilities to farmers, said an assembly committee in its report placed in the House recently.

These recommendations have come at a time when the government is facing criticism for the rise in the number of farmer suicides in the state.

The panel recommended that the state government bring necessary amendments to the existing law with the objective of organizing sharecroppers and agricultural credit subsidies.

This apart, it also sought the provision of compensation claims on crop loss with a long-term action plan.

Headed by former agriculture minister Amar Prasad Satapathy, the committee said commercial banks should provide interest subvention scheme on crop loan and term loan to the farmers and ensure that it is at par with the cooperative banks.

As commercial banks are not taking any interest in this, the panel argued, the Reserve Bank of India, Nabard and state-level bankers committee should take up the matter for the greater benefit of the farmers.

Similarly, cooperative banks should give priority to more investment in agricultural term loans and the agriculture-allied sector for the survival of the co-operative credit structure.

The report also suggested the constitution of a state-level committee to review the performances of the short-term co-operative credit structure, examine all related issues, mechanism and institutions and recommend corrective actions, etc.