COTTON Innovate

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Farmers Training program under NFSM-IRM-HDPS organized

One day farmers training camp was organized at CICR, Nagpur on 31st October, 2015 for the farmers of Wardha District under Insecticide Resistance Management (IRM) in High Density Planting System (HDPS) under National Food Security Mission (NFSM) demonstrations. Around 70 NFSM-IRM-HDPS farmers from different villages of Wardha district attended the training camp. In Wardha District, the IRM/ HDPS program is taken up in 35 villages in 174 acres area on 154 farmers fields with variety Suraj in collaboration with Ramkrishna Bajaj College of Agriculture, Pipri, Wardha. Dr. Sandhya Kranthi, Head, Crop Protection Division, ICAR-CICR Nagpur delivered a lecture on the importance of HDPS and Insects - Pest management in cotton while Dr J. H. Meshram delivered talk on abiotic stress in cotton. The farmers were also shown the demonstration plot of HDPS sown at CICR, Nagpur. During farmer – scientist interaction, farmers reported that some fields observed off type plants in HDPS plots and Boll worm attacked noticed in some fields. Farmers were asked to take corrective measures in the time frame.

Social Services at Deekshabhoomi, Nagpur

To commemorate the 59th Dhammachakra Pravartan Deen at Deekshabhoomi, Nagpur, ICAR SC/ST & Minorities Employees Welfare Association of ICAR Institutes based at Nagpur set up their stall at Deekshabhoomi premises, Nagpur during 21 to 23 October, 2015. The social services stall was inaugurated at the hands of Dr. S. K. Singh, Director NBSS & LUP. Dr. S.T. Gaikwad (Ex-Director, NBSS & LUP) presided over the function. Sh. Bokolia, Chief Administrative Officer, NBSS & LUP, was prominently present. Dr Singh in his inaugural address appreciated the social services carried out by the association every year. Staff (serving as well as retired) of all the four ICAR Institutes (CICR, NBSS & LUP, NRCC and GTC, CIRCOT) actively participated and immensely contributed for the programme along with their families. During the three days; food, snacks and drinking water were distributed to the visiting peoples coming to Deekshaboomi. Four different books on life and mission of Dr. B. R. Ambedkar were distributed to the peoples coming from villages. Shri Sh. V.N. Dhengre conducted the program. Dr S. M. Wasnik, Dr. V.N. Waghmare, Dr. T.H. Hajare, Dr DV Patil, Dr. Sunil Mahajan, Dr. V.S. Nagrare, Dr. J. H. Meshram, Sh. Nana Ramteke, Sh. Anand Kosare, Sh. Shekhar Bankar, Sh. Sunil Meshram, Sh. W.B. Mate, Sh. S.S. Gaikwad, Sh. K.G. Dewale and Sh. Ajay Meshram worked hard work for the success of the programme.

Meeting Attended

- Dr. K.R. Kranthi, Director, ICAR-CICR attended the meeting with Textile Commissioner, GOI on 12.11.2015 to finalize the technical programme for 74th ICAC plenary meeting in Mumbai.
- Dr. K.R. Kranthi, Director, ICAR-CICR conducted field survey of pink bollworm infestation in cotton from Ahmedabad, Bhavnagar, Rajkot, Junagadh and Amreli districts of Gujarat from 13.11.2015 to 17.11.2015.

Television Show

Dr S. M. Wasnik, Principal Scientist (Agric Extension) and Dr D. V. Patil, Senior Scientist (Plant Breeding) participated in a Television Programme on '*e - Kapas* and *Mera Gaon Mera Gaurav*' which was telecasted on November 10, 2015 by Doordarshan Kendra, Nagpur

Indian Cotton Situation - 2015-16

Area harvested : 11,800
Production : 28,500
Import : 800

Export : 4,700
Domestic Use: 25,300
Ending Stock : 12,059

Area in 1000 ha, cotton 1000 bales of 480 lb
Source: GAIN Report

Indian Express 7:11:2015

A gadget that tells farmers how much urea to use on crops

VIVEK DESHPANDE
NAGPUR, NOVEMBER 6

THE CENTRAL Institute of Cotton Research (CICR) has developed a gadget to detect nitrogen intake by crops to enable farmers to use urea as required.

Called Express Nitrogen Guru (ENG), the sensor-based equipment accurately measures the nitrogen content in leaves and immediately prompts the farmer by a voice message the exact quantity of nitrogen (urea) needed. Currently in prototype stage, the gadget is said to be duly unveiled by Chief Minister Devendra Fadnavis at the forthcoming Agrovision farm expo here.

Farmers tend to use urea in excess, which leads to excessive vegetation. The leafy growth attracts many varieties of pests, including sucking pest and white fly, causing considerable damage. "The country pays heavily to subsidise urea to farmers, with the subsidy bill going up to Rs 1.25 lakh crore annually. The new gadget can help farmers use urea economically," CICR Director Keshav Kranthi told *The Indian Express*.

Currently, the Indian Agriculture Research Institute at Pusa has an equipment, Pusa soil test kit, which tests soil samples to determine nutrient contents. "But different parts of the farm may have different nitrogen content. ENG takes a step ahead to check the actual intake of nitrogen by the plant. Moreover, it's hand-held and is hence easy to carry," Kranthi said. "We have checked the results chemically in laboratory and they were found it to be precise."

Times of India 7:11:2015

CICR kit to measure nitrogen uptake by plants

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Nagpur: Central Institute for Cotton Research (CICR) has developed a portable rapid test kit for measuring the status of nitrogen uptake by cotton plants, which is a direct indicator of the plant health. This kit has been developed by a student over one year. The kit not just detects the nitrogen content in the plant but also speaks out the recommendations for improving agricultural practices to the farmer in both Marathi and English.

Named the 'Express Nitrogen Guru' by CICR director Keshav Kranthi, on whose concept the kit was built, can also be customized for other nitrogen intensive crops like wheat, rice, sugarcane etc. Since the kit quantifies the nitrogen content in the plant, it can be used to regulate the quantity of urea application as a fertilizer to the cotton crop and prevent wastage of nitrogen, an extremely common phenomenon in agriculture. Many farmers supply excess nitrogen to the crop and invite problems.

"I am extremely excited about the kit. It will be a revolutionary device for farmers. In fact, it can also be customized for other crops like wheat, rice, horticultural crops etc. We have standardized the system by comparing it with conventional methodology used to assess the nitrogen content. The kit is made up of a light emitting source, a camera, an image processor, a display unit and a voice message delivery system," said Kranthi. The use of fertilizers has gone up from 98kg/hectare about ten years back to 222kg in 2012-13. And this figure is higher for Maharashtra (273kg). But with use of this kit, the wastage of fertilizers, mainly nitrogen input, can be regulated.

There is an existing kit to measure three major plant nutrients (nitrogen, phosphorus and potassium) in the soil called Digital Soil and Fertilizer Recommendations (STFR), developed by Indian Agriculture Research Institute (IARI), Pusa, New Delhi. The CICR kit measures only nitrogen content, but has many advantages over STFR. It is much more handy, portable, gives fast results and does not involve any chemical testing processes. CICR kit conducts the entire analysis and delivers the results in just five seconds using a leaf plucked from a plant in the field.

Abhijit Majumdar, the student, who is an electronic engineer and has converted Kranthi's dream into reality, happens to be the son of Gautam Majumdar, a CICR scientist from the 'farm machines and power' division of CICR, who has been working on various other farm mechanization gadgets.

"The conventional process of assessing nitrogen content is very long and time intensive, requiring laboratory testing as well. The new kit gives instant results and advisory to the farmer. Initially, I built an equipment that used sensors to measure red blue and green (RGB) and also the overall white light. But I couldn't regulate the entry of light into the device. Later, I modified it and the present equipment allows only regulated light to be thrown on the leaf," explained Majumdar.

The equipment sends light on the leaf, which is reflected back on to the sensor. The reflected light is quantified by the device as the nitrogen content. Hence, leaves with different colours like dark green, light green, yellowish colour, reddish etc give different readings and the difference in the health status of the leaves. Based on these readings, the farmer can actually increase or decrease application of urea to his field.

The biggest advantage of the kit is that it gives pre-fed voice messages or directives to the farmer in regional language (Marathi), which are based on the standardized figures for good, average or bad quantity of nitrogen uptake by the plant.

The device has another application. It takes the image of the leaf, can count each spot on the leaf (gossypol glands), which can be used to characterize the quality of the leaves.

TURNING OVER A NEW LEAF

- Device is powered by in-built battery
- Messages on device in English as well as Marathi
- A leaf from plant is placed on transparent plate within the device
- Black back-plate stops external light
- At press of a button, light source inside device is turned on to capture image of the leaf
- Image is processed using on board processor to compute average colour of leaf in both RGB (Red, Green, Blue) and HSV (Hue, Saturation, Value) colour space
- These values are compared to pre-calibrated nitrogen content values in device memory
- Algorithm in device decides how much nitrogen should be applied to the crop to rectify deficiency
- Decision is displayed on device and read aloud through a speaker as a voice advisory in Marathi
- Entire process takes less than five seconds
- Device is immediately ready for next leaf evaluation

Abhijit Majumdar shows how to use the device to find out nitrogen levels

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