



NRCL

newsletter

(An ISO 9001:2008 Certified Institute)

From the Director's Desk

Litchi is one of the most relished fruits by virtue of its colour and distinct flavor. India is only the second largest producer of litchi in the world after China. At present, litchi is cultivated in more than 90 thousand hectares of area with a production of more than 6.0 lakhs tonnes. A wide gap exists between the present litchi productivity and the realizable potential productivity. In this regard, maintenance of desirable yield levels is pertinent. Reducing yield and quality fruits including wilting of litchi plants has been a matter of concern for the stakeholders and scientists. Our centre has developed *Trichoderma viride* fungus; a based technology NRCL Trichoderma strain 'NRCL T-01' has been very effective in recovery of wilting trees of litchi. Large scale adoption by farmers has validated the beneficial effects of the identified strain. Trial packs of the talc based Trichoderma formulation is also available for large scale use.



Development of North-East is our priority. Demonstration and Training on 'Good Agricultural Practices in Litchi' in NEH region has been taken up at several locations in the state of Nagaland and Meghalaya. It gives me immense satisfaction that ICAR-NRCL has provided 12000 plants of litchi cv. Shahi to 150 beneficiaries in four districts of Nagaland viz. Peren, Dimapur, Wokha, and Kohima. Under the collaborative venture with ICAR RC NEH, Nagaland Centre more than 87 ha has been brought under litchi cultivation in cluster mode.

A Winter School on 'Understanding Flowering Mechanism and Management of Bearing in Sub-tropical Fruits' was organized at the centre from 1-21, December 2017. This winter school covered different aspects on source-sink relationship and physiology of flowering in mango, citrus, grapes, guava, litchi, pomegranate and other sub tropical fruits, vis-a-vis techniques for managing the crop-load and bearing behaviour. Special emphasis was given on managing alternate bearing tendencies in major tropical and sub tropical fruit trees through INM, IPM, canopy architecture management and rejuvenations in the winter school. The 16th Institute Research Council (IRC) was organized and several new research projects were initiated and finetuned. The centre also organized and hosted important training programme in collaboration with ATMA. Institutional activities like *Swachhata Pakhwada* was organized with all full vigor and sincerity. I'm happy to present the current issue of our newsletter containing important happenings and developments at our centre. Hope you enjoy reading the issue.

Highlights

- NRCL Trichoderma - a biological fungicide developed at NRCL Muzaffarpur
- एनआरसीएल ट्राइकोडर्मा का किसानों के प्रक्षेत्र में प्रभावोत्पादकता प्रदर्शन
- NRCL organized Winter School
- Training on GAP in Litchi
- *Swachhata Pakhwada* and Field Day celebrated

In this issue

NRCL Technology	2
News Features	4
Events and Meetings	5
Swachhh Bharat Abhiyan	8
Awards & Honours	8
राजभाषा गतिविधियाँ	9
Human Resource Development	9
Visitors	10
Publications	10
Staff News	12



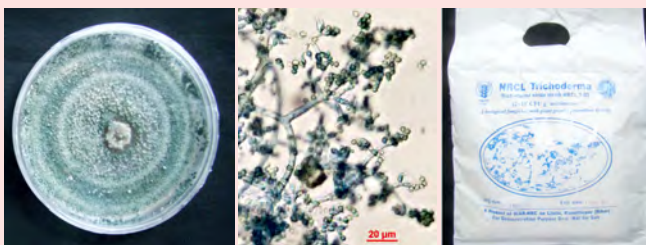

(Vishal Nath)
Director



NRCL Technologies

NRCL Trichoderma - a biological fungicide developed at NRCL Muzaffarpur

Trichoderma is a soilborne friendly fungus useful in organic farming. 'NRCL Trichoderma' - a popular name among farmers, is a biological fungicide based on the strain 'NRCL T-01' of *Trichoderma viride* (= *Trichoderma asperellum*) which was developed at ICAR-National Research Centre on Litchi, Muzaffarpur (Bihar). This strain of *Trichoderma viride* was isolated from rhizosphere of litchi at NRCL experimental farm, Mushahari (Muzaffarpur). The isolate is novel in terms of promoting growth, tolerance to a wide temperature regime (15-40 °C), pH (4.0-9.0) and salinity (can grow up to 1.5M NaCl) and production of volatile and non-volatile compounds inhibitory to pathogens. 'NRCL Trichoderma' was developed as talc based formulation for field application following a series of *in-vitro* and field assays. On the auspicious occasion of 16th 'Foundation Day' of NRCL, it was released, as 'NRCL Trichoderma'. Trial pack is available at the Centre for the purpose of field-demonstration and use by the farmers. Over the years, it has been proven panacea for managing tree wilt of litchi, sheesham, arjun, and papaya caused by *Fusarium* spp., besides its efficacy in managing several other soil borne diseases in tree and vegetable crops by the farmers of Muzaffarpur, East Champaran and adjoining districts of Bihar. Besides controlling diseases, it also works as an excellent bio-fertilizer promoting plant growth. It can be used in all farm crops, fruits, vegetables and flowers.



Culture of *Trichoderma viride* strain NRCL T-01 and trial pack of talc-based Trichoderma formulation



Distribution of NRCL Trichoderma under Farmers' FIRST Project

एनआरसीएल ट्राइकोडर्मा का किसानों के प्रक्षेत्र में प्रभावोत्पादकता प्रदर्शन

ट्राइकोडर्मा जैविक खेती में उपयोगी एक हरफनमौला मित्र कवक है। 'एनआरसीएल ट्राइकोडर्मा' ट्राइकोडर्मा विरिडे (=ट्राइकोडर्मा अस्पेरेल्लम) स्ट्रेन 'एनआरसीएल टी-01' आधारित एक जैविक फफूंदनाशी उत्पाद है जिसे भा.कृ.अनु.प.-राष्ट्रीय लीची अनुसंधान केंद्र, मुजफ्फरपुर ने विकसित किया है। यह स्ट्रेन उच्च मृदा लवणता (पीएच.) और तापमान के प्रति सहिष्णु है। यह मिट्टी से उत्पन्न होने वाले रोगों विशेष रूप से उकठा रोग (पौधा सूखनेवाला रोग/उकठा रोग/म्लानि रोग) के लिए एक कुशल जैविक नियंत्रक के रूप में कार्य करता है। इसके साथ ही, यह जैव-उर्वरक के रूप में भी काम करता है जिससे उत्कृष्ट पौध वृद्धि होती है। क्षेत्रीय परीक्षणों में, यह लीची, शीशम, अर्जुन और पपीता के म्लानि रोग को नियंत्रित करने में रामबाण साबित हुई है। यह फसलों, फलों, सब्जियों और फूलों में इस्तेमाल किया जा सकता है। किसानों के लिए इसका परीक्षण-पैक (ट्राइल पैक) केंद्र पर उपलब्ध है।

एनआरसीएल प्रयोगिक प्रक्षेत्र में ट्राइकोडर्मा के प्रयोग से लीची के पेड़, जिसके पत्ते पीले हो कर सूखने लगे थे, फिर से हरे भरे हो गए और उनमें काफी अच्छा मंजर और फल भी हुआ है। इसी तरह प्रक्षेत्र में लगे शीशम, अर्जुन और पपीते के कई सूखते पेड़ जो म्लानि रोग से प्रभावित लग रहे थे, एनआरसीएल ट्राइकोडर्मा के प्रयोग से उन्हें बचाया जा सका। श्री संजय कुमार, ग्राम-विषणपुर जगदीश (आथर), मुजफ्फरपुर के किसान के खेत में कई शीशम पेड़ सूखने की कगार पर थे। जब उन्होंने एनआरसीएल ट्राइकोडर्मा की संस्तुत मात्रा गोबर के खाद के साथ डाला तो शीशम के पेड़ फिर से स्वस्थ हो गए और उनमें नयी पत्तियाँ आ गईं।

श्री बाबूलाल मिश्रा, ग्राम भरुआबाद, मेहसी, पूर्वी चंपारण के किसान जिसे एनआरसीएल ट्राइकोडर्मा का परीक्षण-पैक संस्थान के स्थापना दिवस के अवसर पर दिया गया था उन्होंने इसे बैंगन की फसल में प्रयोग किया। श्री मिश्रा ने अपनी प्रतिपुष्टी में बताया की एनआरसीएल ट्राइकोडर्मा के प्रयोग से न केवल उनकी बैंगन की फसल अच्छी हुई बल्कि इससे 'फल एवं तना बेधक कीट' का प्रकोप भी रासायनिक कृषि करनेवाले किसान की तुलना में काफी कम रहा।



म्लानि रोग प्रभावित लीची के पौधे की सूखी डालियों की छंटाई एनआरसीएल ट्राइकोडर्मा के प्रयोग से पौधे को जीवनदान एवं प्रस्फुटित कल्ले



एनआरसीएल ट्राईकोडर्मा के प्रयोग से लाभ

1. यह रोगकारक जीवों के वृद्धि को रोकता है और पौधों को रोग मुक्त करता है। यह पौधों के रासायनिक प्रक्रियाओं को परिवर्तित कर पौधों में रोग-रोधी क्षमता को बढ़ाता है। अतः इसके प्रयोग से रसायनिक दवाओं, विशेषकर कवकनाशी पर निर्भरता कम होती है।
2. यह पौधों में रोगकारकों के विरुद्ध तंत्रगत अधिग्रहित प्रतिरोधक क्षमता (सिस्टेमिक एक्वायर्ड रेसिस्टेन्स) की क्रियाविधि को सक्रिय करता है।
3. यह मृदा में कार्बनिक पदार्थों के अपघटन की दर को बढ़ाता है अतः यह जैव उर्वरक की तरह भी उपयोग में लाया जा सकता है।
4. यह पौधों में एंटी-ऑक्सीडेंट गतिविधि को बढ़ाता है। टमाटर के पौधों में ऐसा देखा गया कि जहाँ मिट्टी में ट्राईकोडर्मा डाला गया उन पौधों के फलों की पोषक तत्वों की गुणवत्ता, खनिज तत्व और एंटी-ऑक्सीडेंट की मात्रा अधिक पाई गई।
5. यह पौधों की वृद्धि को बढ़ाता है क्योंकि यह फॉस्फेट एवं अन्य सूक्ष्म पोषक तत्वों को घुलनशील बनाता है। इसके प्रयोग से घास और कई अन्य पौधों में गहरी जड़ों की संख्या में बढ़ोत्तरी दर्ज की गई जो उन्हें सुखाड़ में भी बढ़ने की क्षमता प्रदान किया।
6. ये कीटनाशकों, वनस्पतिनाशकों से दूषित मिट्टी के जैविक उपचार (बायोरिमेडिएशन) में महत्वपूर्ण भूमिका निभाते हैं। इनमें विविध प्रकार के कीटनाशक जैसे- ओर्गनोक्लोरिन, ओर्गनोफॉस्फेट एवं कार्बोनेट समूह के कीटनाशकों को नष्ट करने की क्षमता होती है।

एनआरसीएल ट्राईकोडर्मा के प्रयोग की विधि

1. **बीजोपचार:** बीजोपचार के लिए प्रति किलो बीज में 5-10 ग्राम ट्राईकोडर्मा पाउडर (फार्मूलेशन) जिसमें 2106 सी.एफ.यू. प्रति ग्राम होता है, को मिश्रित कर छाँव में सूखाने के बाद बुआई करें।
2. **कंद उपचार:** 10 ग्राम ट्राईकोडर्मा प्रति लीटर पानी में डालकर घोल बना लें फिर इस घोल में कंद (बल्व) को 30 मिनट तक डुबा कर रखें। फिर इसे छाया में आधा घंटा रखने के बाद बुआई करें।
3. **सीड प्राइमिंग:** बीज बोने से पहले खास तरह के घोल में बीजों को लथ-पथ कर छाये में सूखाने की क्रिया को 'सीड प्राइमिंग' कहा जाता है। ट्राईकोडर्मा से सीड प्राइमिंग करने हेतु सर्वप्रथम गाय के गोबर का गारा (स्लरी) बनायें। प्रति लीटर गारे में 10 ग्राम ट्राईकोडर्मा उत्पाद मिलाएँ और इसमें लगभग एक किलो बीज डुबो कर 12 घंटे के लिए रखें। उसके बाद बीज बाहर निकाल कर छाये में थोड़ी देर सूखने दें, फिर बुआई करें। ये प्रक्रिया खासकर अनाज, दलहन और तिलहन फसलों की बुआई से पहले करना उपयुक्त होता है।
4. **सीड प्राइमिंग का दूसरा तरीका:** बीज बोने के पूर्व बीज को पानी में भिंकोकर 12 घंटे के लिए लथ-पथ करके रखें। इसके बाद ट्राईकोडर्मा उत्पाद 10 ग्राम प्रति किग्रा बीज की दर से मिलाएँ और बीज को एक ढेर के रूप में रखें। उच्च आर्द्रता को बनाए रखने के लिए एक नम जूट बोरी के साथ ढेर को ढँक दें। इस तरह 48 घंटे के लिए लगभग 25-32 डिग्री. सेल्सियस तापक्रम और उच्च आर्द्रता में बीज को सेते हैं। इससे ट्राईकोडर्मा

का बीज की सतह पर चारों ओर एक सुरक्षात्मक परत बन जाता है। अब बीज नर्सरी में बोने के लिए तैयार है।

5. **मृदा शोधन:** एक किलोग्राम ट्राईकोडर्मा पाउडर को 25 किलो गोबर की सड़ी खाद में मिलाकर एक सप्ताह तक छायादार स्थान पर रख कर उसे गीले बोरे से ढँकें ताकि इसके बीजाणु अंकुरित हो जाएँ। इस कम्पोस्ट को एक एकड़ खेत में फैलाकर मिट्टी में मिला दें, फिर बुआई/रोपाई करें।
6. **नर्सरी उपचार:** बुआई से पहले 5 ग्राम ट्राईकोडर्मा उत्पाद प्रति लीटर पानी में घोलकर नर्सरी क्यारी को भिगोएँ।
7. **कलम और अंकुर पौधों का जड़ उपचार :** एक लीटर पानी में 10 ग्राम ट्राईकोडर्मा घोल लें और कलम एवं अंकुर पौधों की जड़ों को 10 मिनट के लिए घोल में डुबाकर रखें, फिर रोपण करें।
8. **पौधा उपचार:** प्रति लीटर पानी में 10 ग्राम ट्राईकोडर्मा पाउडर को घोलकर पौधों के जड़ क्षेत्र को भिगोएँ।
9. **पौधों पर छिड़काव:** कुछ खास तरह के रोगों जैसे पर्ण चित्ती, झुलसा आदि की रोकथाम के लिए पौधों में रोग के लक्षण दिखाई देने पर 5-10 ग्राम ट्राईकोडर्मा पाउडर प्रति लीटर पानी में मिलाकर छिड़काव करें।
10. **फलदार वृक्ष (लीची और आम) में प्रयोग:** पेड़ के क्षेत्रक की बाहरी सीमा से लगभग एक फीट अंदर की तरफ मिट्टी में 100-200 ग्राम/पेड़ ट्राईकोडर्मा उत्पाद को 2-4 किलोग्राम सड़ी गोबर की खाद या वर्मीकम्पोस्ट में मिलाकर पेड़ के चारों तरफ 30 सेंटीमीटर की चौड़ाई में छिड़क दें और उसे कुदाल से मिलाएँ। मिट्टी में नमी की पर्याप्त मात्रा बनाये रखने के लिए ट्राईकोडर्मा डालने के बाद हल्की सिंचाई कर दें।
11. **हरी खाद के लिए प्रयोग :** अच्छी हरी खाद के लिए सनई या ढेंचा को मिट्टी में पलटने के बाद 5 किग्रा ट्राईकोडर्मा पाउडर प्रति हेक्टेयर की दर से डालकर जुताई कर दें।

एनआरसीएल ट्राईकोडर्मा संवर्धित खाद

इस विधि से किसान ट्राईकोडर्मा उत्पाद की छोटी मात्रा से पर्याप्त मात्रा अपने स्तर पर बनाकर न केवल बड़े क्षेत्र में प्रयोग कर सकते हैं बल्कि अपने ही स्तर पर इसे गुणित कर ज्यादा से ज्यादा फसलों में भी प्रयोग कर सकते हैं। परंतु ध्यान रखें की यह प्रक्रिया लंबी अवधि के लिए न करें। 100 किलोग्राम सड़ी गोबर की खाद, वर्मीकम्पोस्ट या नीम की खल्ली लें। इसे किसी छायेदार शेड में फैलाकर रखें। फिर इसके ऊपर एक किलोग्राम ट्राईकोडर्मा उत्पाद बुरक दें और कुदाल या फावड़ें से अच्छी तरह मिलाएँ। अगर ये सूखी लगे तो हल्के पानी के छींटे दे दें। इसके बाद इसे पॉलिथीन या जूट के बोरे से ढक दें। हर 7 दिन के अंतराल पर मिश्रण को मिलाएँ। लगभग 20 दिन में खाद ट्राईकोडर्मा संवर्धित हो जायेगी जिसे खेतों में विस्तारित कर अथवा गड्डे में डालकर फसल लगाएँ। बागवानी पौधों जैसे- आम, लीची इत्यादि में रिंग बेसिन बनाकर संवर्धित खाद डाला जा सकता है।



News Features

Demonstration and Training on GAP in Litchi in North Eastern Hill (NEH) region

During 2017-18, the centre made commendable inroads into widening its presence in the North Eastern state of Nagaland. ICAR-NRCL had provided 12000 plants of litchi cv. Shahi to 150 beneficiaries in four districts of Nagaland viz. Peren, Dimapur, Wokha, and Kohima. In collaboration with ICAR RC NEH Region, Nagaland Centre, Medziphema, ICAR-NRCL conducted a demonstration programme on litchi cultivation and establishment of new orchard at Ngwalwa village in Peren district of Nagaland. Altogether 56 farmers from nearby villages of Punglwa, Ngwalwa, Heningkunglwa and Gaili participated in the programme. Under the collaborative venture, more than 87 ha area has been brought under litchi cultivation on cluster approach. Demonstration on litchi cultivation was also done at Kupehe and Molvomunder in Dimapur, Nagaland. As a follow-up measure, a team of four scientists from ICAR-NRC Litchi conducted a 3-day training programme on 'Good Agricultural Practices in Litchi' from 3-5 August 2017 at ICAR RC NEH Region, Nagaland Centre, Medziphema. The trainees numbering about 60 were trained on different aspects of litchi production, protection, postharvest management and value addition.

Air-layers of litchi cultivars Shahi, China, Kasba and Mandraji (25 each) were provided for studying the survival in nursery and subsequent establishment of litchi block at Research farm, Division of Horticulture, ICAR RC NEH Region, Barapani, Meghalaya.



Planting material of litchi provided by ICAR-NRCL after arrival in Nagaland



Demonstration programme on litchi cultivation an Ngwalwa village, Peren, Nagaland



Training programme on GAP in Litchi from 3-5th August 2017 at ICAR RC NEH Region, Nagaland Centre, Medziphema, India



Glimpses of training programme on GAP in Litchi from 3-5th August 2017 at ICAR RC NEH Region, Nagaland Centre, Medziphema



Practical sessions during training programme on GAP in Litchi from 3-5th August 2017 at ICAR RC NEH Region, Nagaland Centre, Medziphema

New Deputy Director General (Horticultural Science) Dr. Anand Kumar Singh Joined ICAR Head Quarter

A fellow of National Academy of Agricultural Science, Dr. Anand Kumar Singh, born in Ghosaon, Jaunpur, India on 1 January 1962 and graduated from Banaras Hindu University, Varanasi (1983), and obtained post graduate (1985) and doctorate degree (1989) from Indian Agricultural Research Institute, New Delhi (1983-89). He served as Research Associate and Fellow, Tata Energy Research Institute, New Delhi during 1991-98 and selected as Senior Scientist (Horticulture) for IIVR, Varanasi (1998-2000) and also served at Division of Fruits & Horticultural Technology, IARI, New Delhi (2000-2006). He also selected as Head, Division of Fruits & Horticultural Technology, IARI, New Delhi (2006-2015). Before joining ICAR HQ, as DDG (Horticultural Science), he was Managing Director, National Horticulture Board and Executive Director, National Oilseeds and Vegetable Oils Development (NOVOD) Board, Ministry of Agriculture and Farmer's Welfare, Government of India from 2015-2017.

He adorned with various awards like Mombusho Award, Japan, (1989-91); Visiting Scientist, Saga University Japan



(1999-2000); DBT Associateship (2006-07); Gold Medal, Horticulture Society of India (2008); Gold Medal, Delhi Agri-Horti. Society, (2009); International Registrar-*Mangifera* spp., Commission for Nomenclature & Cultivar Registration, ISHS, UK, (2007-2015). He has also been given awards like Fellow of Horticulture Society of India (2008), Hill Horticulture Development Society, Uttarkhand (2005); National Academy of Biological Sciences (2012) and International Society of Noni Sciences (2016).

His major research area is genetic improvement, plant tissue culture, plant molecular biology of horticultural crops, transcriptome analysis of fruit crops etc. He has published more than 12 research papers. We NRCL family firmly believe that under his visionary and dynamic leadership, horticulture science will scale of new heights.

Events and Meetings

Field Day

A Field Day was organized at Kankatti (East Champaran), an adopted village under *Mera Gaon Mera Gaurav Programme* on 13th September, 2017. Besides current problems of crops in fields and their management, zero budget natural farming (ZBNF) practices were advocated that



eliminates the dependence of farmers on commercial inputs like fertilizers and pesticides. These measures use the ecological engineering principles which encourage beneficial microbes and pest predators to take care of crop health and productivity. Ethnomedicinal plants such as neem (*Azadiracta indica*), catnip or catmint (*Nepeta cataria*), karanj (*Pongamia pinnata*), goma or thumba (*Lucas aspera*), aak (*Calotropis procera*), datura (*Datura stramonium*), garlic (*Allium cepa*) etc. were extracted in cow urine was advocated as natural pesticides and preparation and application method was demonstrated. A practical demonstration of application of NRCL Trichoderma in litchi and vegetables were also



NRCL scientists demonstrating preparation of organic inputs and interacting with farmers

undertaken during the programme. The programme was coordinated by Dr. Vinod Kumar, Dr. Sanjay Kumar Singh, and Shri Prabhat Kumar.

Another field day cum kisan gosthi on best management practices in litchi was organized at Bakhari, Muzaffarpur, Bihar on 3rd November, 2017. About 25 litchi growers of the village attended the programme. The participants were taught on modern canopy management practices to facilitate utilization of vacant space within litchi orchard through cultivation of locally popular intercrops like turmeric and



Field day on best management practices in litchi at Bakhari, Muzaffarpur

Mishrikand. Demonstration of girdling technology was also performed along with management of leaf litter in litchi orchard.

World Soil Day

World Soil Day was celebrated on 5 December 2017 at farmer's field in village Damodarpur, East Champaran Bihar. On this occasion, Hon'ble MLA Sh. Shyambabu Prasad Yadav was invited as chief guest and various activities were carried out. Soil Health Card was distributed to fifty farmers from the villagers of Ujhilpur and Damodarpur of East Champaran district of Bihar. At the outset, the Director welcomed the guests and highlighted the critical importance of soil and its crucial role in agriculture. The gathering was appraised the importance of soil sampling and management for quality and assured litchi production. The initiative of providing Soil Health Card undertaken by NRCL was highlighted which is bedrock towards achieving the target of doubling farmers' income. Various aspects towards production management, integrated disease and pest management of litchi was elaborated to the public.



Distribution of Soil Health Card at Damodarpur, Mehshi, E-champaran

Winter School

A Winter School on 'Understanding Flowering Mechanism and Management of Bearing in Sub-tropical Fruits' was organized at the centre from 1-21, December 2017. Dr. Susheel Soloman, Vice-Chancellor, CSAUAT, Kanpur, UP was Chief Guest for the inaugural session.



Participants of the winter school with the scientific staff of NRCL and invited speakers



Nineteen participants from eight states (Rajasthan, UP, Bihar, MP, Jharkhand, West Bengal, Uttarakhand, and Arunachal Pradesh) of the country attended the school. This winter school covered different aspects on source-sink relationship and physiology of flowering in mango, citrus, grapes, guava, litchi, pomegranate and other sub tropical fruits, and managing its crop-load and bearing behaviour. There was special emphasis on managing alternate bearing tendencies in major tropical and sub tropical fruit trees through INM, IPM, canopy architecture management, rejuvenations etc. The trainees were taught about innovative approaches for estimation of various parameters on physiology and biochemistry using HPLC, GCMS, AAS, IRGA, UV-VIS spectrophotometers etc.

Institute Research Council

During the year, 16th Institute Research Council (IRC) meetings were held on 11-16th December, 2017 under the chairmanship of Director, ICAR-NRCL. During the meetings, progress report of research projects along with technical programmes was discussed in detail. The new research projects were also discussed and finalized.



16th IRC meeting in progress

ATMA-sponsored 5 days training programme on production and marketing of export quality litchi

A five day training programme on production and marketing of export quality litchi sponsored by ATMA was organized at NRC on Litchi on 26-30 December, 2017. A total of 22 farmers from Samatipur district of Bihar were trained on various aspects of good agricultural practices in Litchi



production, management of pests and diseases, water and fertilizer management and it's processing towards export quality production of litchi.

Commemoration of Vigilance Awareness Week

Vigilance awareness week was organized by ICAR-NRC on Litchi, Muzaffarpur from 30th October-4th November, 2017 with theme "My Vision-Corruption Free India". An oath towards Integrity Pledge was administered by the Director, Dr. Vishal Nath to all the staff of the centre acknowledging their commitment to uphold the highest standards of honesty and integrity. He extorted that the purpose of observing Vigilance Awareness Week is to educate the public at large about the corruption related practices and also educating them how to report about it. He said that it acts like a mass movement of involving people in saying no to corruption.



ICAR-NRCL participated in the East Zone ICAR Sports Meet 2017

A squad 10-members, led by Chief-de-Mission Dr. S.D. Pandey and Team Manager Sh. Abhishek Yadav, represented ICAR-NRCL at the ICAR Sports Tournament for Eastern Zone held at ICAR-RCER, Patna from 12-16 December, 2017. The team participated in various sports events, and the volleyball team secured the runners' up position.



Participants of ICAR-NRCL in the East Zone ICAR Sports Meet 2017



Swachh Bharat Abhiyan



ICAR-NRC on Litchi celebrated *Samagra Swachhta Diwas* on 24 Sept 2017 with full enthusiasm. A village Narauli Binda (Muzaffarpur) was selected which was under recent flood and is suffering from after flood vagaries of sanitation and hygiene, in this mission employees of NRCL employees contributed their best and carried out following activities to make *Swachha Bharat Mission* successful.

- *Shramdaan*: NRCL employees devoted their work and time for cleanliness drive.
- *Plantation*: Plantation of Litchi plants and flowering plants done in village.
- *Sensitization* of villagers to develop proper toilet facility and discourage open defecation.
- *Pledge*: Villagers joined *Swachhta Mission* by taking pledge.
- Bleaching powder was dusted in after flood water logged areas.
- Villagers were sensitized to adopt modern methods of composting which will help in making better fertilizer from cow dung and farm waste/household waste.

Sarwatra Swachhta Diwas celebrated on 25 September, 2017 in which all employees performed shramdaan. On this occasion cleanliness drive was organised in public place, cleaning of road, pathway, parking shade etc.

On 2nd October, 2017 Gandhi Jayanti was celebrated with enthusiasm to spread the message of "*Swachha Bharat-Swastha Bharat*" by employees. On this occasion Cleanliness drive was organized in and around campus of NRCL. "*Swachhta Pakhwada*" was organized from 16 to 31 October 2017 at Mushahari, Muzaffarpur by spreading the message of cleanliness and hygiene "*Swachha Bharat-Swastha Bharat*". Director of the centre Dr. Vishal Nath administered "*Swachhta Pledge*" to the scientists and staff to bring the Mahatma's dream into reality. In addition, several initiatives were taken for overall cleanliness of office building and premises, residential campus and research farm.

Awards and Honours

- Dr. S.D. Pandey was awarded with Bharat Vikash Award on 19th November, 2017 by Institute of Self Reliance, Bhubaneswar, Odisha, India.
- Dr. Swati Sharma was awarded with Excellence in Research Award-2017 by Agricultural Technology Development Society, Muradnagar, Ghaziabad, Uttar Pradesh, India

राजभाषा गतिविधियाँ

राजभाषा हिंदी के प्रचार प्रसार हेतु 1-30 सितम्बर, 2017 के मध्य हिंदी चेतना मास का आयोजन किया गया। इस अवसर पर कुल 6 प्रतियोगिताओं (वर्ग पहली, प्रश्नोत्तरी, श्रुत लेखन, आशुभाषण, टंकन तथा निबंध लेखन) का आयोजन किया गया और उत्कृष्ट प्रदर्शन करने वाले प्रतिभागियों को पुरस्कृत किया गया। नराकास की पहली छह माही बैठक 30 सितम्बर, 2017 को केन्द्र के सभागार में किया गया। श्री मनिन्दर कुमार बलियारसिंह, आंचलिक प्रबंधक, बैंक ऑफ इंडिया एवं सचिव, नराकास, मुजफ्फरपुर, समारोह के मुख्य अतिथि एवं श्री सुदीप सैनी, सचिव, नराकास, मुजफ्फरपुर, समारोह के विशिष्ट अतिथि थे। समारोह की अध्यक्षता डॉ. विशाल नाथ, निदेशक, राष्ट्रीय लीची अनुसंधान केन्द्र ने की। सचिव, नराकास, मुजफ्फरपुर ने हिन्दी के प्रचार प्रसार में कम्प्यूटर के योगदान पर प्रशिक्षण दिया। मुख्य अतिथि ने सभी विजेताओं को पुरस्कृत किया। अपने सम्बोधन में उन्होंने कहा कि हिंदी भाषा विविधता में एकता का प्रतीक है। हिंदी पुरातन भी है और आधुनिक भी। हिंदी भारतीयता की चेतना है। यही कारण था कि विभिन्न भाषा-भाषी



नराकास द्वारा 2016-17 का द्वितीय पुरस्कार प्राप्त करते डॉ एस. के. पुरबे, नोडल अधिकारी (हिन्दी)

लोगों ने हिंदी को ही पूरे भारतवर्ष की एकमात्र संपर्क भाषा माना और उसे ही आजादी की लड़ाई का माध्यम भी बनाया। हिंदी का विकास देश की उन्नति के लिए आवश्यक है। ज्ञान विज्ञान, प्रौद्योगिकी एवं उद्योग आदि में हिंदी का प्रयोग कर हम आगे बढ़ सकते हैं। राष्ट्रीय लीची अनुसंधान केंद्र, मुजफ्फरपुर को केंद्र सरकार के संगठनों में उत्तम प्रदर्शन के लिए राजभाषा शील्ड प्रतियोगिता में द्वितीय स्थान प्राप्त हुआ।

Human Resource Development

S. No.	Title	Venue & Date	Participant(s)
1.	ICAR sponsored CAFT Training programme on Use of ICT in agriculture education for accelerated learning	Bihar Agricultural University, Sabour 4-24 July, 2017	Dr. Evening S Marboh
2.	Workshop on "Regional Group Leaders and Guide Teachers orientation programme" in 25th National Children's Science Congress 2017 organized by Science for society, Bihar in collaboration with BCST and SCERT, Bihar	ICAR-NRC on Litchi, Muzaffarpur, Bihar 8-9 July, 2017	Dr. SK Purbey
3.	7th JPIC meeting pertaining to the operation of the DAE Litchi Technology Demonstration cum Treatment Facility & Centre of Excellence (DLTF-COE)	BARC, Mumbai 21 July, 2017	Dr. SK Purbey
4.	Summer School on "Analytical, Instrumental, and Imaging Techniques Related to Food Safety Management"	ICAR-CIAE, Bhopal 6-26 July, 2017	Dr. Alemwati Pongener
5.	Workshop on "District level Project Orientation for Group Leaders and Guide Teachers" in 25th National Children's Science Congress - 2017	Chapra, Saran, Bihar 27 July, 2017	Dr. SK Purbey
6.	Workshop on "District level Project Orientation programme for Group Leaders and Guide Teachers" in 25th National Children's Science Congress 2017 organized by Science for society, Bihar in collaboration with BCST and SCERT, Bihar	Muzaffarpur, Bihar 1 August, 2017	Dr. SK Purbey
7.	Short training on "Selection, adjustment, operation and maintenance of Agricultural implements for field and Horticultural crops"	ICAR-CIAE, Bhopal 1-10 August, 2017	Dr. Ramashish Kumar
8.	Administrative Vigilance	ISTM, New Delhi 7-11 August, 2017	Sh. Abhishek Yadav
9.	CAFT training programme on Advanced Statistical Techniques in Biometrics	ICAR-IASRI, New Delhi 10 to 30 August, 2017	Dr. Evening S Marboh
10.	CAFT training on "Challenges and opportunities in food processing in context to value addition and postharvest management of agricultural products.	CFST-Institute of Agricultural Sciences, BHU, Varanasi 1-21 September, 2017	Dr. Swati Sharma
11.	Meeting on SFC of SMD:Horticulture Division, ICAR HQ	Krishi Bhawan, New Delhi 13-14 September, 2017	Dr. Vishal Nath Dr. SK Singh
12.	National Seminar on Innovations in Horticulture: Production to consumption	GBPU&T, Pant Nagar 14-15 September, 2017	Dr. Vishal Nath
13.	Methodological Framework for implementation of FFP	Lucknow, 3-6 October	Dr SK Purbey Dr Kuldeep Srivastava
14.	Review meeting of Vigilance Officers	New Delhi, 9-10th October, 2017	Dr. Amrendar Kumar



15.	Training Workshop on 'Methodological Framework for Implementation of FFP'	ICAR-IISWC, Dehradun 6 -9 November, 2017	Dr. SK Singh
16.	3rd Krishi Road Map of Bihar Conference	Patna, Bihar 9 November, 2017	Dr. SD Pandey Dr. Amrendar Kumar
17.	One day seminar on "Marketing and Export"	MSME, Muzaffarpur 27 November, 2017	Dr. SD Pandey Dr. SK Purbey
18.	Team NRCL participated in Eastern Zone Sports tournament	ICAR Research Complex for Eastern Region, Patna, Bihar 13-16 November, 2017	Dr. SD Pandey (CDM)
19.	Organized Winter School on "Understanding Flowering Mechanism and Management of Bearing in Sub-Tropical Fruits"	ICAR-NRC on Litchi, Muzaffarpur 01-21 December, 2017	Dr. Vishal Nath Dr. SK Singh Dr. Alemwati Pongener Dr. Alok K Gupta
20.	Participated in Winter School on "Understanding Flowering Mechanism and Management of Bearing in Sub-Tropical Fruits"	ICAR-NRC on Litchi, Muzaffarpur 01-21 December, 2017	Dr. Abhay Kumar Sh. Prabhat Kumar
21.	World Soil Health Day	ICAR-NRC on Litchi, Muzaffarpur 5 December, 2017	Dr. Vishal Nath Sh. Prabhat Kumar Dr. S. K. Singh
22.	National Workshop on 'Let us listen to the Farmers'	ICAR-NAARM, Hyderabad. 22-23 December, 2017	Dr. SK Singh

Visitors

S.No.	Distinguished Visitors	Affiliation	Date
1.	Dr. P.K. Ray	Ex, Head, Dept. of Horticulture, DRPC AU, Pusa, Samastipur	7 th December, 2017
2.	Dr. S. K. Singh	Head, Division of FHT IARI, New Delhi	8 December, 2017
3.	Dr. Devendra Pandey	CISH, Lucknow	8 December, 2017
4.	Dr. Sushil Solomon	VC, CSAUAT, Kanpur (UP)	8 December, 2017
5.	Dr. Dilip Kumar	Ex-Director, ICAR-CIFE, Mumbai	23 December, 2017
6.	Dr. Prem Kumar	Hon'ble Minister Agriculture, Govt. of Bihar	5, December, 2017



Visit of Dr. Prem Kumar, Minister of Agriculture Govt. of Bihar

Publications

Research papers

Kumar, A., Singh, S.K., Pandey, S.D., Patel, R.K. and Nath, V. (2017). Effect of foliar spray of chemicals on flowering and fruiting in litchi. *International Journal of Current Microbiology & Applied Science* 6(5): 1337-1343.

Lal, N., Gupta, A.K. and Nath, V. (2017). Fruit retention in different litchi germplasm influenced by temperature. *International Journal of Current Microbiology and Applied Sciences* 6(12): 1189-1194.

Pandey, A.K., Singh, P., Singh, S.K. and Gupta, K. (2017). Application methods and doses of paclobutrazol affect growth, yield and fruit quality of litchi (*Litchi chinensis* Sonn.) cultivars. *International Journal of Current Microbiology and Applied Sciences* 6(8): 3280-3288.

Singh, S.K., Malhotra, S.K., Bhargava, R. and Singh, R.S. (2017). Morphological and physiological characterization of guava (*Psidium guajava*) under hot-arid zone of Rajasthan. *Indian Journal of Agricultural Sciences*. 87(4): 491-495.

Srivastava, K., Patel, R.K., Kumar, A., Pandey, S.D., Reddy, P.V.R. and Nath, V. (2017). Integrated management of litchi fruit and shoot borer (*Conopomorpha sinensis*) using insect growth regulators under subtropics of Bihar. *Indian Journal of Agricultural Sciences* 87(11): 1515-1518.

Papers in seminars/symposia/conferences

Singh, S.K., Nath, V. and Purbey, S.K. (2017). Alternate bearing in litchi (*Litchi chinensis* Sonn.) trees. In: Abstract Book of 'International



Symposium on Horticulture: Priorities & Emerging Trends' (5-8 September 2017) pp 346.

Books/Book Chapters

Barman, K., Sharma, S. and Siddiqui, M.W. (2017). Emerging postharvest treatments of fruits and vegetables. Apple Academic Press, USA & CRC Press, Boca Raton, Florida, USA. ISBN: 9781771887007.

Gupta, A.K., Marboh, E.S. and Singh, M. (2017). Reality of bearing potential and realized yield of litchi cultivars. In: *Training manual of Winter School on Understanding Flowering Mechanism and Management of Bearing in Sub-tropical Fruit Crops*, 1-21 Dec., 2017 (Eds. Nath, V., Singh, S.K., Pongener, A., Gupta, A.K. and Sharma, S.). ICAR-NRC on Litchi, Muzaffarpur, pp 156-159.

Kumar, A. (2017). Molecular biology of flowering in perennial plants. In: *Training manual of Winter School on Understanding Flowering Mechanism and Management of Bearing in Sub-tropical Fruit Crops*, 1-21 Dec., 2017 (Eds. Nath, V., Singh, S.K., Pongener, A., Gupta, A.K. and Sharma, S.). Published by ICAR-NRC on Litchi, Muzaffarpur, pp 42-47.

Kumar, A., Pandey, S.D., Patel, R.K. and Singh, S.K., (2017). Effect of girdling in bringing regularity in litchi. In: *Training manual of Winter School on Understanding Flowering Mechanism and Management of Bearing in Sub-tropical Fruit Crops*, 1-21 Dec., 2017 (Eds. Nath, V., Singh, S.K., Pongener, A., Gupta, A.K. and Sharma, S.). Published by ICAR-NRC on Litchi, Muzaffarpur, pp 111-116.

Kumar, P. (2017). Quick and qualitative analysis of nutrient deficiency symptoms and managing plant nutrition. In: *Training manual of Winter School on Understanding Flowering Mechanism and Management of Bearing in Sub-tropical Fruit Crops*, 1-21 Dec., 2017 (Eds. Nath, V., Singh, S.K., Pongener, A., Gupta, A.K. and Sharma, S.). Published by ICAR-NRC on Litchi, Muzaffarpur. pp 145-155.

Kumar, V. (2017). Role of arbuscular mycorrhizal fungi and Trichoderma in improving growth and physiology of litchi and mango. In: *Training manual of Winter School on Understanding Flowering Mechanism and Management of Bearing in Sub-tropical Fruit Crops*, 1-21 Dec., 2017 (Eds. Nath, V., Singh, S.K., Pongener, A., Gupta, A.K. and Sharma, S.). Published by ICAR-NRC on Litchi, Muzaffarpur. pp 138-144.

Nath, V. (2017). Litchi Scenario in India. In: *Training manual of Winter School on Understanding Flowering Mechanism and Management of Bearing in Sub-tropical Fruit Crops*, 1-21 Dec., 2017 (Eds. Nath, V., Singh, S.K., Pongener, A., Gupta, A.K. and Sharma, S.). Published by ICAR-NRC on Litchi, Muzaffarpur. pp 1-5.

Pandey, S.D., Kumar, A., Srivastava, K. and Patel, R.K. (2017). Canopy and nutrient management in litchi. In: *Technological innovations in integrated pest management: Biorational and ecological perspective* (Ed. Abrol, D.P.). Published by Scientific publishers, New Delhi, pp 327-334.

Technical Bulletins/Manuals

Kumar, A. Pandey, S.D., Patel, R.K., Kumar, P., Kumar, G., Pongener, A., Ganeshamurthy, A.N. and Nath, V. (2017). Soil fertility and crop nutrition in litchi: Delineation, deficiencies and management of nutrients. *Technical Bulletin NRCL-TB-12*, pp 28.

Nath, V., Singh, S.K., Pongener, A., Gupta, A.K. and Sharma, S. (Eds.) (2017). Understanding flowering mechanism and management of bearing in sub-tropical fruit crops. (Training manual) National Research Centre on Litchi, Muzaffarpur, Bihar, India.

Extension Folder

Patel, R.K., Pandey, S.D., Kumar, A., Srivastava, K. and Nath, V. (2017). Litchi: Package of practices for organic production. NRCL-EB-23.

Technical and Popular Articles

Kumar, A., Pandey, S.D., Patel, R.K., and Singh, S.K. (2017). लीची में नियमित: किसानों की पक्की आमदनी | लीचिमा 3(1): 23-25.

Nath, V., Gupta, A.K., Pandey, S.D., Singh, A., Srivastava, K. and Mishra, D.S. (2017). Gandaki Sampada: a new litchi variety. *Indian Horticulture* 62(2): 21-22.

Pandey, S.D., Kumar, A., Patel, R.K., Srivastava, K., Purbey, S.K. and Nath, V. (2017). कम लागत एवं अधिक लाभ हेतु लीची की नई तकनीकें, लीचिमा 3(1): 43-45.

Patel, R.K., Kumar, R., Pandey, A.P., and Verma, J.P. (2017). Litchi ke saath machhaliya bhi. लीचिमा 3(1): 49-51.

Patel, R.K., Srivastava, K., Kumar, A. and Pandey, S.D. (2017). जैविक लीची उत्पादन: आय के साथ पर्यावरण भी सुरक्षित | लीचिमा 3(1): 26-31.

Purbey, S.K., Sharma, S. and Pongener, A. (2017). *Litchi ke swadish padartha aamdani badhane ke shrot*. *Litchi* 3(1): 41-42.

Purbey, S.K., Sharma, S. and Pongener, A. (2017). लीची फल उपचार से बढ़ती उपलब्धता एवं समृद्धि | लीचिमा 3(1): 46-48.

Srivastava, K., Pandey, S.D., Patel, R.K. and Gupta, A.K. (2017). *Litchi ke pramukh hanikarak keeto ki pahchan avam prabandhan*. *Litchi* 3(1): 36-38.

कुमार वि., कविता, सिंह, एस.के. एवं शर्मा, एस. (2017)। नीलगाय से फसलों की सुरक्षा कैसे करें? लीचिमा 3(1): 60-62 |

कुमार, वि., एवं अनल, ए.के.डी. (2017)। उभरते रोगों से बचाव: लीची बागवानी से बेहतर लाभ. लीचिमा 3(1): 32-35 |

सिंह, एस.के. एवं राय, आर.आर. (2017)। पूर्वी भारत में द्वितीय हरित क्रांति की आवश्यकता, उद्यान रश्मि 16(2): 4-7 |



Staff News

New entry

- Dr. Abhay Kumar, Scientist SS (Biotechnology) joined the centre on 10th July, 2017 on transfer from ICAR-Directorate of Groundnut Research, Junagadh, Gujarat.
- Sh. Ranjit Kumar, Assistant joined the centre on 18th Sept, 2017 under direct recruitment through ASRB, New Delhi.
- Sh. Dileep Kumar, Assistant, resumed his duty on 01st Nov, 2017 as Assistant on completion of deputation as AAO from ICAR-CPRS, Patna.

Promotion

- Dr. R.K. Patel, Senior Scientist (Fruit Science) has been promoted to Principal Scientist with effect from 15th July, 2016.
- Dr. Kuldeep Srivastava, Senior Scientist (Agril. Entomology) has been promoted to Principal Scientist with effect from 10th July, 2016.

Transfer & Deputation

- Dr. Gopal Kumar, Senior Scientist (Soil Science) was relieved from the centre on 31st July, 2017 on being transferred to ICAR-Indian Institute of Soil & Water Conservation, Dehradun.

Compiled and Edited by

Dr. Abhay Kumar
Dr. Sanjay K Singh
Dr. Ramkishor Patel
Dr. Alemwati Pongener

Published by

Prof. (Dr.) Vishal Nath

Director

ICAR-National Research Centre on Litchi
Mushahari Farm, Mushahari,
Muzaffarpur 842 002, Bihar (India)

Email: nrclitchi@yahoo.co.in

Website: www.nrclitchi.org

<https://www.facebook.com/nrconlitchi>



National Bank for Agriculture and Rural Development







Our Functions:

- Provide Credit/Refinance for production credit and investment credit to eligible banks and financing institutions.
- Development functions undertaken through Farm Sector Promotion Fund (FSPF), Financial Inclusion Fund (FIF), Watershed Development Fund (WDF), Tribal Development Fund (TDF), Rural Infrastructure Development Fund (RIDF), etc.
- Supervisory functions in respect of Cooperative Banks and Regional Rural Banks.

Our Mission: Promotion of sustainable and equitable agriculture and rural prosperity through effective credit support, related services, institution development and other innovative initiatives.

- Research and Development on matters of importance pertaining to agriculture, agricultural operations and rural development including the provision of training and research facilities.
- Consultancy services related to Agriculture & Rural Development through subsidiary (NABCONS).

Head Office Plot C-24, 'G' Block Bandra Kurla Complex, Bandra (East) Mumbai - 400 051

www.nabard.org

[/nabardonline](https://www.youtube.com/nabardonline)

Taking Rural India >> Forward

