



ICAR Research Complex for Eastern Region, Patna

भारतीय कृषि अनुसंधान परिषद् का पूर्वी अनुसंधान परिसर, पटना

ICAR RCER NEWS

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From the Director's Desk



The low and highly fluctuating agricultural productivity and farm income is causing detrimental effect on the interest in farming, and farm investment, and is also forcing more and more farmers, particularly younger group, to leave

farming. It is apparent that income earned by a farmer from agriculture is crucial to address agrarian distress and promote farmers welfare. Realizing the need to pay special attention to the plight of farmers, the Hon'ble Prime Minister announced to double the farmers income by 2022 to promote farmers welfare, reduce agrarian distress and bring parity between income of farmers and those working in non-agricultural profession.

Agriculture in Eastern India have been facing the challenges of the new economic regime, besides the usual problems of rising population, unemployment and poverty; declining investment in agriculture and degradation of natural resources. The second generation problems have emerged in agriculture due to over exploitation of natural resources after Green Revolution. Hence, the major focus needs to be given on resource conservation technologies (RCTs) including retention of crop residues on soil surface to

improve the soil health. Use of RCTs especially zero tillage (ZT) in wheat in rice-wheat system is one of the fast growing technologies in the region, and has resulted in average yield gain of 7.6%, seed saving by 12-15 kg/ha and reduction in cost of crop establishment by Rs. 1500/ha. The technology has been adopted in more than 2.5 lakh hectare area during last 5 years in Bihar. Spread of this technology even in 50% wheat growing area (10.6 lakh ha) by 2022 will result in an additional production of 2.12 lakh tonnes of wheat besides net savings of 13,800 tonnes of seed and Rs 1632.4 million on crop establishment. Besides, the technology is spreading fast in other winter crops like lentil and chickpea. Similarly diversification of rice-wheat system with pulses, vegetables, green manuring crops like *Sesbania*, etc. is urgently required to improve the soil fertility and to mitigate the adverse effects of climate change.

The Eastern region has developed a large number of technologies related to agri-horti crops, vegetables, livestock, poultry and fisheries. In order to enhance agricultural productivity, sustainability and profitability, there is a need to make planned efforts for promotion and use of these technologies in befitting manner so as to increase farmer's income, ensure sustainable food and livelihood security, besides achieving the nutritional security at household and even at individual level.

Research Highlights

‘RCEGP 16-1’ - A white-flowered spontaneous mutant of grass pea with very low β -ODAP content

Grass pea (*Lathyrus sativus* L.), an important cool-season legume species have a high degree of inherent tolerance to abiotic stresses viz. waterlogging and drought. The partial insect aided outcrossing system has made it a highly climate resilient species. In eastern India, it serves as an important component of rainfed agriculture. Chhattisgarh, West Bengal and Bihar account for 95% of the total area and production. Grass pea is usually cultivated by the farmers in *paira/utera* cropping system for human consumption as well as fodder purpose. Recently, its marketing has been banned as grass pea seeds due to high content of neurotoxin known as β -N-oxalyl-L- α , β -diaminopropionic acid (β -ODAP). Therefore, β -ODAP needs to be reduced through genetic means to a safe level (0.10%-0.12%) for human consumption. Breeding efforts in grass pea has led to the isolation and selection of a spontaneous mutant ‘RCEGP



16-1’ from an ICARDA line ‘63101’. This genotype has spreading growth habit with white flower. Under complete rainfed condition, it has yielded more than 1.0 t/ha in 112 days with 100-seed mass of 6.8 g. The biochemical analysis has revealed that its seeds have highly reduced β -ODAP content (0.13%). This promising genotype ‘RCEGP 16-1’ has been multiplied for further evaluation.

(A K Choudhary)

Diversification of rice-wheat system with winter vegetables and summer greengram for increasing farmers’ income

Rice-wheat system is the major cropping system in middle IGP. However, there has been a significant slowdown in yield growth rate and sustainability of this system due to decline in soil health and climate change effects. Growing long duration rice delays the sowing of succeeding crops, resulting in lower crop yields and profits. In order to diversify the rice-wheat system for obtaining higher monetary returns, six rice based cropping systems viz. rice-wheat-moong, rice-tomato-greengram, rice-potato-greengram, rice-cauliflower-greengram, rice-broccoli-greengram and rice-garden pea-greengram were evaluated after long duration rice (MTU 7029) and short duration rice (Swarna Shreya). MTU 7029



took 146 days whereas Swarna Shreya matured 26 days earlier to it. Winter crops grown after short duration rice produced significantly higher yield than those grown after long duration rice. The yield of cauliflower, broccoli and garden pea after short duration rice was 35.1, 10.57 and 5.78 t/ha, respectively. Winter vegetables viz., cauliflower and broccoli took lesser number of days than others and gave an opportunity to go for one more short duration crop during winter season. Hence, spring onion and spinach were grown as a bonus crop after harvesting of cauliflower and broccoli, respectively. As compared to short-duration rice, the yield of cauliflower, broccoli, garden pea, was reduced by 77, 75 and 94 per cent, respectively when grown after long-duration rice.

(Shivani)

TP30495: A rice genotype with submergence tolerance

Rice genotype ‘TP30495’ is identified to be tolerant to complete submergence of 21 days at early vegetative phase (42 days after sowing). The genotype has its origin in IRLON 2016 Set 1 received from the International Rice Research Institute, Manila, Philippines. Among the 18 rice genotypes in the set, TP30495 was the only genotype which could regenerate after submergence. Even the Swarna *sub1*, which was used as the submergence tolerant check, was unable to regenerate. Thus TP30495 could be new submergence tolerant rice with better submergence tolerance than Swarna *sub1*.



A view of submergence plot (after de-submergence) with no surviving rice plant



Regenerated plants of ‘TP30495’

(N Bhakta)

Yield and water productivity of summer crops enhanced through drip irrigation and polythene mulching

Summer season crops viz. moong bean, cowpea and french bean were grown with drip and furrow irrigation system. In case of drip irrigation, the crops were directly sown in rectangular geometry with two rows per lateral placed on raised beds having 10 cm height and 80 cm width at spacing of 60 cm x 20 cm. Results of drip and drip irrigation

with mulch were compared with farmers' practice of furrow irrigation. Application of polythene mulch with drip irrigation resulted in significantly highest yield of 0.70, 15.30 and 2.5 t/ha and the highest



water productivity of 1.17, 26.42 and 4.25 kg /m³ for moong bean, cowpea and French bean, respectively. Values of crop yield and water productivity were lowest under traditional practice of furrow irrigation. Because of higher water use in furrow irrigation systems, the water productivity recorded for these crops was the lowest (0.02 to 2.02 kg/m³). The economic water productivities of 15.6, 176.1 and 28.3 Rs/m³ were realised in case of moong bean, cowpea and French bean, respectively under drip irrigation with mulch which was 33.0, 6.1 and 28.7% higher as compared to drip without mulch.

(BK Jha and SS Mali)

Evaluation of mango segregants

The mango segregants developed by the institute (C.H.M.1 to C.H.M.8)) were evaluated for fruit quality. The average fruit weight ranged between 126.60g (C.H.M-3) to 267.20g (C.H.M-4). The genotype C.H.M-7 recorded the minimum peel content (13.25%), whereas, minimum seed content (12.34%) was recorded in case of C.H.M-4 and maximum pulp content (70.05%) was recorded in the C.H.M-7. The maximum TSS (19.50°B) was recorded in case of C.H.M-1. Keeping in view the fruit quality (average fruit weight >200 g, pulp content >65 %, TSS >19°B), the genotypes C.H.M-1 and C.H.M-2 were found to be most promising.

(Bikash Das and M K Dhakar)

Evaluation of selected greater yam genotypes for yield and nutritional traits

Greater yam (*Dioscorea alata*) is an important tropical tuber crop which has potential to be an important food crop for tribals in Eastern Plateau and Hill Region. Five genotypes of greater yam collected from Jharkhand, Chhattisgarh and Odisha were evaluated along with two checks *viz.*, Orissa Elite and Hati Khoja for tuber yield and nutritional traits like total carbohydrate, total mineral content and anti-oxidant activity. Tuber yield ranged from 16.02 to 42.24 t/ha. The genotype ACC-34, a collection from Tunko village under Namkum block of Ranchi district of Jharkhand recorded the highest tuber yield. The range for total carbohydrate content of tuber was 10.52 to 27.19%. The genotype ACC-113 recorded highest total carbohydrate content followed by genotype ACC-124 (20.85%). Total mineral content ranged from 411.66 to 1156.95 mg/100g FW of tuber. The genotype ACC-113, a collection from Amajhola village under Kanker block of Uttar Bastar. Kanker

district of Chhattisgarh recorded the highest mineral content. The anti-oxidant activity ranged between 98.86 to 392.64 mg AEAC/100g FW of tuber. The released variety Orissa Elite recorded the highest anti-oxidant activity. Among the seven genotypes, ACC-34 was very promising for tuber yield and promising for total mineral content of tuber and can be promoted under tribal farming system in Eastern Plateau and Hill Region.



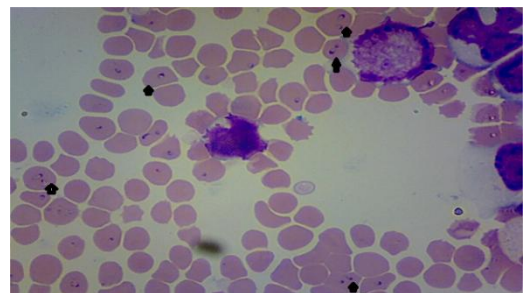
Promising Grater yam genotype ACC-34

(R S Pan)

Clinical and molecular diagnosis of Bovine tropical theileriosis in Bihar

Bovine theileriosis is economically important haemoprotozoan disease caused by obligate intracellular protozoan pathogenic parasite *Theileria annulata* and transmitted by ticks of the genus *Hyalomma*. *T. annulata* infects cattle, yak and milder infection in buffaloes. Incidence varies with season, age of animals, breed, region, etc. Clinical diagnosis is based on

high fever, enlarged pre scapular lymph node, lacrimation, salivation, respiratory distress, etc. However, often difficult to diagnose based on clinical findings due to non-specificity and ignorance of farmer. Laboratory diagnosis is based on blood smear examination using Giemsa or Leishman’s staining. Confirmative diagnosis of pathogenic Bovine theileriosis can be done by PCR amplification and sequencing. Based on these we have confirmed occurrence of Bovine theileriosis in Bihar by pathogenic *Theileria annulata* and the sequence was found to have 100% homology. The sequences has submitted to NCBI bearing accession Nos. MH737680.1, MH737681.1 and MH737682.1.



Blood semar showing piroplasm (arrow) of *Theileria* sp. (Geimsa stain, 100X)

(Pankaj Kumar)

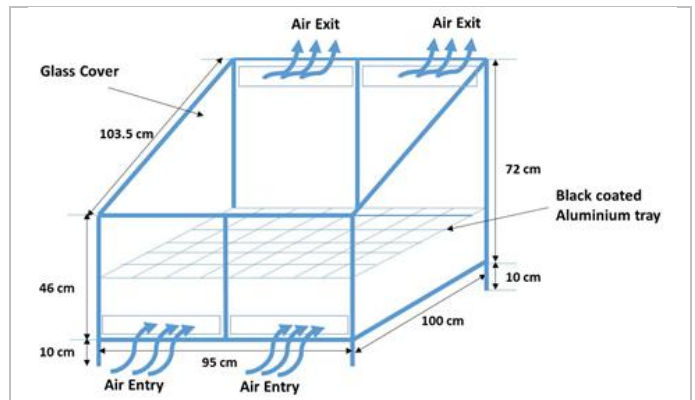
Solar aerator for fish pond

A sprayer type solar aerator was developed with 750W induction motor pump and 900 Wp solar panel to aerate a fishpond of 30 m x 40 m with standing water depth ranging between 1.0-1.5 m. It sprays pond water high in the air to diffuse air-oxygen into it. Apart from oxygen diffusion it also breaks thermal stratification of water column by blending high oxygenated top water with less oxygenated sub surface water layers. For 6 to 7 hours day time operation, 23-28 percent average increase in dissolved

oxygen was reported compared to control value of 4.0 - 4.4 ppm. This increase oxygen concentrated found almost same within 12 - 15 m radius with aerator at the centre and decreases gradually over the rest part of the pond. The impact of aeration on the fish growth was evaluated in terms of weight gains over a month. With initial weight of 50 -75g the final weight was 150-175 compared to the control condition weight, 100 -125g.



black colour coated perforated aluminium tray was fitted inside the dryer to provide platform for spreading the vegetables. The dryer cover is a glass of 6 mm thickness which avoids entry of dust and other foreign matter. There were two air inlets at base of the dryer and two air outlets at upper backside of the dryer. One thermometer was fitted inside and one outside the dryer to measure the temperature difference between inside and outside.



Schematic diagram of the solar dryer



Drying operation of leafy vegetables using solar dryer

The dryer has a capacity of drying 2.5 kg leafy vegetables per batch. Drying curves (time Vs moisture content) were developed for different underutilized leafy vegetables

(A Rahman)

Low cost solar dryer developed

Dried leafy vegetables have larger share in the diet of tribal population in the Eastern India. Leaves, shoots and flowers of vegetables are plucked and dried for future use during lean season. Sun drying is the most common drying practice followed by the farming community. This method was not hygienic and was time and labour intensive. To reduce the time and manpower requirement in drying, a low cost solar dryer was developed for drying of leafy vegetables. The dryer consist of a cabinet made up of compressed wood and a glass cover with handle. It has a base size of 95 x 100 cm and incline size of 95 x 103.5 cm. A

showed that it takes about 2.0–2.5 hrs for drying of different small and large sized leafy vegetables as against 3.75–10.0 hrs in sun drying method.

(Tania Seth)

Events Organized

Agri-Expo 2018

The institute, in collaboration with Professional Agricultural Management Services (PAMS), Gurgaon organized a three days Agri-Expo-2018 at institute campus to showcase the latest science and technological developments in the field of agriculture and allied sectors w.e.f. 11th - 13th January, 2018. Nearly 1000 farmers from different parts of Bihar participated in the programme. Dr. Prem Kumar, Hon'ble Agriculture Minister, Govt. of Bihar graced the occasion as Chief Guest. The programme was Chaired by Dr BP Bhatt, Director, ICAR-RCER, Patna. The Chief Guest lauded the efforts of organizers for organizing this event for creating the technological awareness among farming community.



Six progressive farmers from different districts were also felicitated during this Expo. *Kisan gosthi* was major attraction of this Expo where large number

of farmers interacted with scientists of ICAR-RCER, KVKs, SAUs and other research institutes. Nearly 40 different ICAR institutes, State Agricultural Universities and private sector organizations dealing in agricultural technological inputs participated in the Expo, and exhibited their technological products.

Institute Management Committee meeting

The 20th meeting of the Institute Management Committee (IMC) was organized on 16th January, 2018 at ICAR Research Complex for Eastern Region, Patna. Dr B P Bhatt, Director and Chairman of the IMC welcomed all the members of the IMC and apprised them of the various developmental activities of the Complex. The proceeding of 19th Institute Management Committee Meeting (IMC) held on 09.02.2015 was confirmed.



The Member Secretary presented the Action Taken Report on the proceedings of the 19th Meeting of IMC, to the satisfaction of all the IMC Members. The Chairman assured the Institute Management Committee that the Complex shall achieve the annual target of expenditure, by the end of the financial year 2017-18. The IMC appreciated the Resource Generation for the financial year 2016-17 & 2017-18.

Institute Foundation Day

The ICAR Research Complex for Eastern Region, Patna celebrated its 18th Foundation Day at the institute campus in Patna on 22nd February 2018. Shri Radha Mohan Singh, Hon'ble Minister of Agriculture and Farmers Welfare, Govt. of India graced the occasion as the Chief Guest. Dr Prem Kumar, Agriculture minister, Govt. of Bihar; Shri Ranvendra Pratap Singh, Minister of State for Agriculture, Agricultural Education and Research, Govt. of Uttar Pradesh; Shri SK Singh, Agricultural Production Commissioner, Govt of Bihar and Dr Sanjeev Chaurasia MLA, Digha constituency were the Guests of Honour on this auspicious occasion.

In his inaugural address, Shri Radha Mohan Singh congratulated the Institute for its 18th Foundation Day. He focused on doubling farmer's income by year 2022 and informed that states of eastern and north east India will be the centre of second green revolution in future. He emphasized on need for adoption of integrated farming system in order to cater the threats of climate change. Earlier, Dr BP Bhatt, Director, ICAR RCER, Patna welcomed the chief guest and other dignitaries and presented the achievements of the institute during last year.

During the inaugural function, Mobile



app on Soil Nutrient Management, Aam Suraksha (mango protection) and Solar power app, database and software developed by the institute were launched by Hon'ble chief guest. Books on "Powering Second Green Revolution Through Emerging Technologies"; and "*Baans (Bamboo) ke vividh roop ewam unka upyog*", training manual and an extension bulletin were also released. Seventy three selected progressive farmers from all seven eastern states viz Bihar, Eastern UP, West Bengal, Odisha, Assam, Chattisgarh and Jharkhand were felicitated by the Chief Guest for their significant contribution in the field of agriculture. Renowned personalities from press and media and 15 farmers under Index Based Flood Insurance project were also awarded during the ceremony. The ICAR-RCER, Patna best worker award were also given in Administrative, Technical and Supporting staff categories.



Director, NRC Litchi, Director, ATARI, Patna, representatives from IWMI, New Delhi and Hindustan Insecticides Ltd. New Delhi, Director Extension Education, DRPCAUI, Pusa, Director Extension, BASU, Patna, scientists from different institutes and officials from different govt. departments were also present. An Exhibition to demonstrate the new technologies and products in agriculture

were also organized on this occasion where 15 stalls from ICAR Institutes, other govt agencies and input dealers displayed their products and technologies. A Scientist Farmers interaction was also organized for the benefit of farmers. Nearly 2000 farmers from all the seven eastern states participated in the event and benefitted from exhibition and Farmer-Scientist interaction.

Research Advisory Committee Meeting

XVth Research Advisory Committee Meeting of the Institute was held during 22th-23th March, 2018 at ICAR RCER, Patna under the Chairmanship of Dr. A. N. Mukhopadhyay, Ex-Vice Chancellor, AAU, Jorhat and members Dr. S. Bhaskar, ADG (Agronomy, Agroforestry & Climate Change), ICAR, (Dr. Ashwani Kumar, Ex-Director of Indian Institute of Water Management, Bhubaneswar, Dr. Gopal Nath Tiwari, Professor, Centre of Energy Studies, I.I.T, New Delhi, Dr. K.P. Sampath, Ex- Director, ICAR-NIANP, Bengaluru and Dr. Shivendra Kumar, Ex-Head, ICAR RCER Research Centre, Ranchi. All the Heads of Division and scientists of ICAR RCER, Patna, Research Centre, Ranchi, Research Centre, Makhana, KVK Buxar and KVK, Ramgarh participated in the meeting and presented the achievements of their respective divisions, centers and projects. The RAC also visited the experimental farms and laboratories of the institute and made valuable suggestions for improvement.



State Level Agriculture Fair-cum-Farmers' Scientists Interaction Meet

A State level agriculture Fair-cum-farmers' scientists interaction meet was organized during 13-15th April, 2018 at Zila School Ground, Motihari, Bihar. Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture & Farmers Welfare, Govt. of India graced the occasion as Chief Guest and Shri Pramod Kumar, Hon'ble Minister of Tourism, Govt. of Bihar attended the inaugural function as Guest of Honour.

In his inaugural address, the Chief emphasized upon skill development programmes being under taken in the field of agriculture and allied fields. Projects on fisheries development in Majharia, Kararia,



Sirsa and Rulhi wetlands of East Champaran district funded by National Fisheries Development Board, Hyderabad was also launched by the Chief Guest. A Mobile Soil Test Laboratory of Dr Rajendra Prasad Central Agricultural University, Pusa was inaugurated for the farmers of adjoining districts of North Bihar.

The Guest of Honour, Shri Pramod Kumar motivated farmers to take advantage of new schemes of Govt. of India as well as Govt. of Bihar to increase their farm productivity and income level. Inaugural session was attended by MLAs and MLCs of East Champaran district, Dr AK Singh, DDG (Agril. Extension), Dr Joykrushna Jena, DDG (Fisheries, and Animal Science),

Dr Anand Kr Singh, DDG (Horticulture, and Crop Science) Dr. Rameshwar Singh, VC, BASU, Patna; Dr. R.C. Srivastava, VC, DRPCA, Pusa and Directors of more than 10 ICAR Institutes. Dr. B.P. Bhatt, Director, ICAR-RCER, Patna welcomed the Chief Guest and other dignitaries. In his welcome address, Dr. Bhatt outlined the objectives of the event and informed the gathering about the major attraction of the fair such as Farmers' Scientists Interaction, exhibition and live demonstration of different agricultural implements, crop varieties, mobile solar operated pump, input supplies, samples of agricultural products and other technologies during this three day mega event.



Farmers' scientist interaction meet was organized on each day in different fields of agriculture and allied subjects viz. fish production and management; pulse production; paddy and sugarcane cultivation; production and management of horticultural crops with special focus on banana, litchi, mushroom, onion, garlic, vegetable cultivation as well as poultry rearing. Scientists from different ICAR institutes and SAUs answered the queries of the farmers on these aspects during the meet. Sixty five public and private sector organizations including ICAR Institutes, SAUs, KVKs, NGOs, cooperative societies, input supply agencies, etc. put their stall and displayed different products,

technologies, live samples, etc. for the benefit of farmers as well as other stakeholders. On concluding day, ie on 15th April 2018, best stall award was given under different categories viz. Private, Government/PSUs. Nearly 6000 farmers, including members of FPOs, FIGs, entrepreneurs and other stake holders from different districts of Bihar, officials of state and central government scientists of different ICAR institutes and SAUs participated in the three-day event.

International Yoga Day

ICAR Research Complex for Eastern Region, Patna celebrated 4th International Yoga Day on 21st June, 2018. To mark the occasion, Director ICARRCER, Patna and Director ICAR-ATARI, Patna along with the scientists and staff of the institute performed Yoga from 8:00 AM to 9:30 AM



under the instruction of Dr J.J. Gupta, Yoga Expert of the institute. He told that Yoga is for physical, mental, and/or spiritual practice attributed mostly to India. The role of Yoga in daily life was narrated by Dr S.K. Singh, Principal Scientist of the institute.

Zero tillage-Happy Seeder Summit Workshop

One day Zero tillage-Happy Seeder Summit Workshop on "Value chain and policy

interventions to accelerate adoption of zero tillage in the rice-wheat Farming systems across the Indo-Gangetic Plains” was organized in collaboration with the University of Adelaide, Australia, ACIAR (Australian Centre for International Agricultural Research), TAAS (Trust for Advancement of Agricultural Sciences), CIMMYT (International Maize and Wheat Improvement Centre) and ICAR-RCER, Patna on 27th June 2018 at ICAR Research Complex for Eastern Region, Patna. Around 50 participants from ICAR RCER Patna, BAU Sabour, Dr. RPCAU, Pusa, KVKS of Bihar and West Bengal, CGIAR (CIMMYT-CSISA), State Government Officials of Bihar, representatives from NGOs, FPOs, Machinery manufacturers and progressive farmers participated in this Workshop. Dr. B. P. Bhatt, Director ICAR-RCER, Patna welcomed the Chief Guest Padma Bhushan Dr. R.S. Paroda, Chairman TAAS and the former Secretary DARE and DG, ICAR, and other participants. He also gave the brief presentation on prospects and key issues related to the conservation agriculture (CA) in Eastern India. In this workshop policy makers and stakeholders associated with the Happy Seeder and Zero-Till Seed drill value chains were invited to participate. The main focus of this workshop was on discussions related to a draft Policy Position Paper featuring key recommendations merging out of the ACIAR project that has

been executed by the University of Adelaide, aimed at convincing Government to create an enabling environment for faster adoption of HS/ZT seed drills. Dr. Adom Loch and Jay Cummins from University of Adelaide, Australia briefed about very purpose of the workshop and a detailed group discussion was held under six different themes. In his closing remarks, the Chief Guest Dr. R.S. Paroda stressed up on the following points.

- The second generation problems have emerged in agriculture due to over exploitation of natural resources after Green Revolution. Hence, the major focus in CA should be on the retention of crop residues on soil surface to increase the organic matter content and to improve the soil health.
- Twin pillar approach is required by good agricultural practices and farm mechanization by conserving natural resources so that we can pass on what we inherited.
- IGP is the food bowl of India but organic carbon content is below threshold level.
- Actual coverage area under CA technologies in different crops needs to be documented.
- Custom hiring centres (CHCs) should be opened at village /Panchayat level to manage the CA machinery effectively.
- Globally 150 mha areas come under CA like in Brazil, Argentina, USA, and Canada all in rainfed condition but in India CA is confined to irrigated eco-system. Hence, there is an ample scope to popularize this technology in rainfed areas too.
- Scientists and policy makers should work together for the prosperity of Indian farmers.
- Emphasis need to be given on scaling up CA innovations at Global forum for impact on small holder farmers.



- Full package of CA along with correct knowledge should be provided to the farmers.
- Incentives should be given to the farming communities to adopt and promote the CA.
- Capacity building program should be oriented at the farmers participatory mode to promote the advance practices of CA.
- Opening of the agri-clinic at village level to speed up CA programmes at the framers field.
- Trained youth should be appointed as extension agent to disseminate the knowledge of CA packages among the farmers.
- Advocate the policy to immediate stop the residues burning.

International Womens' Day

International Women’s Day was celebrated by KVK, Buxar on 8th March 2018. SAC, member Smt Juhi Pandey was the Chief Guest of the programme. She urged the women to come forward for strengthening the society and capable of doing everything. Total 41 women participated in the programme.



Training Programme on Operation and Maintenance of Farm Implements

Three days training programme on operation and maintenance of ploughing and sowing implements was organized from 7th to 9th February, 2018 at Buxar. The programme was inaugurated by SDM Buxar Shri Gautam Kumar and SDPO Buxar Shri Shaishav Yadav, and presided over by the Programme Coordinator I/c KVK Dr. Deokaran. Total number of 40 young rural youth participated in the programme.



Training on Seed Production and Certification

One day training programme was organized by KVK, Buxar on 18th March, 2018 with the collaboration of Bihar State Seed and Organic Certification Agency, Patna. Shri Kamlesh Kumar Sub Divisional Agriculture Officer was chief guest of the programme. Main focus of the programme was to make farmers aware of about seed production and certification. Farmers were also trained for organic farming and certification of organic produce to get better market for organic produce. Total numbers of 72 farmers were present in the programme.

Training on Seed Production Techniques of Improved Rice Varieties

One day training programme on seed production techniques of improved rice varieties was organized by KVK, Buxar on 25th May 2018 in which 25 rural youth participated. The group of rural youth was trained in the seed production work of improved variety of rice and other crops. Seed selection, seed treatment, seed certification and post-harvest management process were also discussed.



Web telecast of Prime Minister Interaction programme with farmers

The institute and KVK arrange the Web telecast of Prime Minister Interaction programme with farmers on 20th June 2018. Total 81 farmers and farm women were participated in the programme. Farmers were listen the interaction of prime minister with farmers of different parts of the country and also aware about how the farmers were innovate/discover new technologies and practices in agriculture and doubling their income.

Animal Health Camp

One animal health camp was organized on 25th June under NICRA project of KVK Buxar. Total number of 98 animals (cattle

and Buffalo) of 32 farmers was vaccinated for Foot & Mouth Diseases (FMD), Hemorrhagic Septicemia (HS) and Black Quarter (BQ).



Community Rice Nursery under NICRA Project

Under NICRA project community rice nursery (CRN) of Swarna Shreya, Swarna Sub-1, Rajendra Sweta and Rajendra Kasturi was grown to tackle the problem of aberrant weather situations. Total 24 numbers of farmers were involved in this programme, and 75 acre area was transplanted through CRN.



Live Telecast of Prime Ministers' Address during Krishi Unnati Mela

On the occasion of Krishi Unnati Mela at IARI, New Delhi, Hon'ble Prime Minister, Sri Narendra Modi addressed the farmers and the scientist on 17th March 2018. The

live telecast of the programme was arranged by KVK, Buxar at Nagar Bhawan Sabhagar, Buxar. A total number of 1086 farmers participated in the programme. District Development Commissioner, Buxar Sri Arvind Kumar was the Chief Guest. Other officers of Line Department like District Agriculture Officer, District Animal Husbandry Officer, District Fisheries Officer, and Project Director ATMA were present in the programme. The Extension officials like Agriculture Coordinators, Kisan Salahkar, Block Technology Manager, Assistant Technology Officer, NGO workers and Farmers Producer Groups were also present in the programme.



Our new colleague

- **Mr. Pawan Jeet**, Scientist (SWM) w.e.f. 25.06.2018

Transfers

- **Mr. Alok Kumar**, AO transferred to ICAR-NBAIR, Bengaluru w.e.f. 01.01.2018
- **Dr. Md. Idris**, Pr. Scientist transferred to ICAR-NCIPM, New Delhi w.e.f. 23.06.2018
- **Dr. T.L. Bhutia**, Scientist transferred to ICAR-NRC on Orchids, Sikkim w.e.f. 26.06.2018

Editorial Committee

J. S. Mishra, Shivani, PK Sundaram, Pankaj Kumar, Bikash Das and VK Yadav

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