

KIRAN NEWSLETTER

Know, Share, Grow

ICAR Research Complex for NEH Region, Umiam, Umroi Road, Meghalaya – 793103

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ICAR RC NEHR, MEGHALAYA CELEBRATES INDEPENDENCE DAY

Along with the rest of the country ICAR Research Complex for NEH Region, Meghalaya celebrated the 73rd Independence Day. Director of the institute Dr N. Prakash unfurled the Tri-colour at the institute premises in the presence of the scientist and the staffs of the institute. Speaking on the occasion he urged for dedicated service from all the staffs. Referring to the Prime Minister Narendra Modi's address to the nation, he advocated to conserve energy, preserve water and to eliminate single use plastic usage. The institute also marked the Sadbhavana Day, the 75th birth anniversary of former Prime Minister, Shree Rajeev Gandhi. On the Sadbhavana Day, a pledge was taken by all the staffs of the institute of oneness and harmony regardless of caste, region, religion and language. Sadbhavana Day is observed on 20th August every year in remembrance of our youngest Prime Minister, Shree Rajeev Gandhi, a goodwill ambassador who propagated communal harmony, peace and national integrity.



ICAR RC NEHR, Meghalaya Celebrates Independence Day



Dr Sanjeev Kumar Balyan, Hon'ble Union Minister of State, Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India visited ICAR Research Complex for NEH Region

DR SANJEEV KUMAR BALYAN, HON'BLE UNION MINISTER OF STATE, MINISTRY OF FISHERIES, ANIMAL HUSBANDRY AND DAIRYING VISITS ICAR RC NEHR, MEGHALAYA

Dr Sanjeev Kumar Balyan, Hon'ble Union Minister of State, Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India visited ICAR Research Complex for NEH Region on the 28th of July, 2019. The minister interacted with the scientists from the institute. He also visited the animal and fishery farms of the institute. Dr Baliyan appreciated the efforts of the scientists in developing farmer friendly technologies for sustainable livelihood. He suggested that the institute should provide handholding support to State Govt. departments on technical matters including Piggery and Milk Mission. The minister laid emphasis on the development of low-cost feed for development of livestock husbandry in the region. Research oriented work of the institute should benefit the tribal farmers for enhancing profitability from livestock enterprises added by him.

INSTITUTE RESEARCH COMMITTEE (IRC) MEETING HELD

The three days long IRC meeting began on the 1st August and concluded on the 3rd August under the chairmanship of Dr N. Prakash, Director, ICAR RC for NEH Region, Umiam at the DNB Conference Hall of the institute. Dr K.P Mohapatra, Member Secretary, IRC welcomed the scientists from the regional centre and headquarter in his introductory address. The meeting was attended by scientists from the entire regional centres and headquarter. Forty-seven new research project proposals from the regional stations and the different divisions of headquarter were evaluated during the meeting. The chairman also assessed 75 ongoing projects and 32 concluding and concluded projects. The chairman expressed the need to minimize the number of institute projects and encouraged to undertake collaborative projects. The pros and cons of various research projects were evaluated in the meeting. Discussion on extension activities were carried out. The main focus of the meeting was to improvise the livelihood of the farmers through various project focusing on the need of the hour. The three days witnessed a series of presentations and

KIRAN's Presentation



COMING SHORTLY !!!

MEET THE EXPERT

discussion on the research projects. The future roadmap for the development of the farmers was also discussed.

IMPCC MEET HELD AT ICAR RESEARCH COMPLEX FOR NEHR, UMIAM

Inter- Media Publicity Coordination Committee held its monthly meet for the month of July at ICAR Research Complex for NEHR, Umiam which was chaired by Engam Pamei Director of outreach and communication. It is an open forum in which the activities of the various organizations are highlighted by the respective representatives. The scopes for improvement are also discussed. Prior to the IMPCC meet the director of the institute Dr. N Prakash launched the Newsletter and Audio-Visual News of KIARN. KIRAN is an interactive web



Launched the Newsletter and Audio-Visual News of KIARN

portal hosted at ICAR Research Complex for NEHR, Umiam. The efforts of ICAR were lauded by the all the IMPCC members representing the various government organizations. The journey of KIRAN began on the 16th of July 2012, with the motive to take agricultural technologies at the tip of a farmer's hand. KIRAN was launched with a motive to bring a change in the society with the use of technology and the apt use of technology can be seen in the knowledge repository. To keep pace with the changing times and to improvise the use of technologies, innovations are adapted in the system of KIRAN to provide better and fruitful results. The newsletter and audio-visual news will bridge the gap and enhance the sharing of the information under the domain of agriculture from around the corner especially from the region.

AGRI BUSINESS INCUBATION CENTRE (ICAR RC NEHR) ORGANISED A DAY LONG WORKSHOP

The Agri Business Incubation Centre (ABI) of ICAR Research Complex for NEHR, Umiam, Meghalaya organised a day long workshop on "Agri- Business Entrepreneurship Development in Northeast India". Budding Entrepreneurs from all over the region participated in the



Agri Business Incubation Centre (ICAR RC NEHR) Organised A Day Long Workshop

programme. Technical sessions were held by eminent personalities from the sector. Sessions on branding packaging and labelling were also conducted. Dr N.S Rathore, DDG, Agricultural Education Indian Council of Agricultural Research, New Delhi was the Chairman of the programme. Speaking to KIRAN news he urged the youth to be "job providers rather than job seekers". He further added that the North-eastern region is bestowed not only with natural beauty but with immense talent and potential which is still untapped and the intervention of the ABI of the institute will bring great results for the region.

FIVE DAYS TRAINING PROGRAMME FOR VETERINARY OFFICERS ORGANISED

The Division of Animal Health, ICAR Research Complex for NEHR, Umiam, Meghalaya organized a five days training programme on "Animal Health Management and Health Care" for Veterinary officers of Animal Husbandry and Veterinary Department, Govt. of Meghalaya. The training programme was organised from 5th- 9th August 2019. The training programme was sponsored by Rashtriya Krishi Vikas Yojana (RKVY). Veterinary Officers from almost all Districts of Meghalaya participated in the programme, both theory and practical sessions were covered during the programme. Most prevalent diseases of livestock and poultry in Meghalaya; antimicrobial resistance; occupational health hazard; bacterial, viral and parasitic diseases of livestock and poultry; conventional and molecular diagnostic techniques were covered during the training programme.

AWARENESS PROGRAMME ON SOIL AND WATER CONSERVATION STRATEGIES

Krishi Vigyan Kendra Ri-Bhoi in convergence with Soil & Water Conservation Division, Nongpoh organized a day long Awareness Programme on "Effective Conservation Strategies of Soil & Water for Climate Resilient Agriculture" under NICRA project in Kyrdem village. The aim of the programme was to explain the farmers the latest conservation technologies and equip them with climate resilient agriculture. To accelerate their awareness, and adoption of soil and water conservation practices to tackle degradation and improve productivity. Fifty farmers from the district participated in the awareness programme. Dr. Mokidul Islam, Dr. Utpal Barua, Mr. Bankitkumar Mukhim, Ms. Jessica Dohdong, Mr. Samir Medhi and Mr. Wesk Nonsiej were the resource persons for the programme.

KVK CHURACHANDPUR DISTRIBUTES BLACKGRAM SEEDS

Krishi Vigyan Kendra Churachandpur, organized a capacity building and input distribution programme on Scientific Cultivation of Blackgram under Rain-fed Condition for Doubling Farmers' Income. The programme was organised in collaboration with Indian

Institute of Agricultural Biotechnology, Rachi, Jarkhand on the 13th and 14th August, with a view to strengthen the farmers to produce their own seed through community participatory approach. Thirty-one progressive farmers from different villages of Churachandpur district took part in the programme. Blackgram VAR. PU 31 and organic fertilizer were also distributed to the farmers. The programme was conducted under the leadership of Dr. I. Meghachandra Singh, Joint Director, ICAR Research Complex for NEH Region, Manipur Centre, Lamphelat.

CAPACITY BUILDING PROGRAM FOR TRIBAL FARMERS ORGANIZED AT DUMTIBARI, WEST TRIPURA

One day capacity building programme and critical inputs cum minor farm machineries distribution programme for tribal farmers' was organized at Dumtibari ADC village, West Tripura. The programme was organised under TSP-ICAR project on "Capacity Building of Farmers in Primary Sectors by Adopting Integrated Watershed Approach". The program was implemented by ICAR Research Complex for NEH Region, Tripura Centre in collaboration with KVK, Belbari, West Tripura with the objectives to improve livelihood and income of tribal farmers through introduction of improved farming practices in a participatory approach. Eighty progressive farmers attended the



Capacity building programme and critical inputs cum minor farm machineries distribution programme for tribal farmers'

programme out of which 60 were female farmers. Various inputs like chicks of dual purpose poultry, poultry feeds, fingerlings, fish feed, lime and potash, mango saplings, vegetables seeds of cowpea, okra, lablab bean, cucumber, bitter gourd, maize were distributed to the farmers. Electric pump, manual sprayer and rose can were also distributed to the farming community for community use. Dr. Anup Das, Principal Scientist, Agronomy, Dr. Gulab Singh Yadav, Scientist, Agronomy, Dr. Chandan Debnath, Scientist, Fisheries, Dr. Vinay Singh, Scientist, Poultry Science and Mr. Diman Das Choudhury, GKMS from ICAR Research Complex for NEH Region, Tripura Centre, interacted with the farmers about improved scientific farming and importance of weather forecasting in agriculture.

ICAR-RC NEHR SIKKIM CENTRE INITIATED 15-DAY TRAINING PROGRAM ON ORGANIC FARMING FOR KRISHI SAKHIS

ICAR- RC NEHR Sikkim Centre, Tadong initiated a 15-days Training Program on

'Organic Farming' for the Krishi Sakhis of Sikkim Rural Livelihood Mission (SRLM), Rural Management and Development Department (RMDD), Govt. of Sikkim in order to update them with latest organic production technologies. 25 Krishi Sakhis from the East and North districts of Sikkim participated in the training program. The program was sponsored by RMDD, Govt. of Sikkim.

JAL SHAKTI ABHIYAN ORGANIZED BY KVK, KHOWAI

"Jal Shakti Abhiyan" was organised at North Pulinpur ADC Village by Krishi Vigyan Kendra, Khowai. 83 farmers and farm women of North Pulinpur ADC Village as well as Duski Village of Teliamura Agri-Subdivision of Khowai district, Tripura actively participated during the Programme. A farmer-scientist interaction was held in which various inputs on scientific management of natural resources were discussed.

TRAINING ON "PRODUCTIVITY ENHANCEMENT OF GINGER AND TURMERIC FOR DOUBLING FARMERS' INCOME" HELD AT KVK RI-BHOI

A 3-days training programme on "Productivity Enhancement of Ginger and Turmeric for Doubling Farmers' Income" was organized by KVK Ri Bhoi, ICAR Umiam, which was funded by CIH, Nagaland. A group of 26 farmer-trainees belonging to two different Self Help Groups from Thadnongjiew and Sohriewblei villages attended the three days training programme. During the training programme, the trainees were made aware of new and improved technologies for cultivation of ginger and turmeric including 'Production Technology of Ginger and Turmeric', 'Single Bud Technique of Ginger and Turmeric propagation'. The trainees were also given training on courses like organic farming, soil health management, management of pests and diseases, post harvest management and value addition of ginger and turmeric. A practical demonstration on value addition and processed products of ginger and turmeric was conducted for on-hand experience for the farmers.

TRAINING ON SOIL AND WATER CONSERVATION CONDUCTED BY KVK, WEST GARO HILLS

A training programme on Soil and Water Conservation was conducted by KVK, West Garo Hills in collaboration with Department of Soil and Water Conservation, Government of Meghalaya, Tura at Marapara village under National Innovations on Climate Resilient Agriculture (NICRA) project. 35 farmers and farm women from 5 different adopted villages of NICRA participated in the programme. The participants were trained on the techniques and methods to harvest water from roof top. The preparation of low-cost filter was also explained. After the technical session, a practical demonstration on calculation of slope percentage was conducted.



Shri. Charan Debarma receiving prestigious ICAR Pandit Deen Dayal Upadhyay Antyodaya Award Winner, 2018.

SUCCESS STORY

It's a dream for Charan Debarma, a Progressive tribal farmer of North Pulinpur ADC Village. It is a long journey for him from a Cannabis Sativa grower to prestigious ICAR Pandit Deen Dayal Upadhyay Antyodaya Award Winner, 2018. He has adopted the Pond Based Farming System under the Project National Innovations on Climate Resilient Agriculture. North Pulinpur is one of the draught prone tribal inhabited ADC villages of the district Khowai under the state of Tripura. Before the intervention of NICRA, Charan Debarma was growing only Kharif rice. In his remaining land he was growing *Cannabis sativa*, a banned crop to grow in India. Under the National Innovations in Climate Resilient Agriculture (NICRA) Project, KVK-Khowai has given training to the farmer about the climate smart agriculture and has constructed a farm pond in his farm, harvested water from the farm pond provided life saving irrigation for paddy during *Kharif* dry spell as well as during Rabi season. A Nano pump was installed nearby to his farm pond which was utilized for providing easy irrigation at a rate of 60 lit of water per hour. The pond was also used for composite fish culture with average yield of 30 q/farmer/year/ha during 2017-18. His *Cannabis sativa* crops were demolished and Mosambi plants were planted in that plot. Debarma has introduced zero tillage in bitter melon cultivation with paddy straw as mulch material at North Pulinpur ADC, with critical input support of KVK-Khowai. Similarly, after kharif, paddy fallow land is now successfully utilized by introduction of second crops like maize. With adoption of pond-based farming system along with various climate smart technologies the cropping intensity of his farm increased from 100% to 300%. His annual Income increased from Rs. 60000.00 to Rs. 150,000.00 within a very short period of time. He is now a motivator for all the small and marginal farmers of the village as well as farmers of the nearby villages of the district. Based on the inspirational work of Charan Debarma, he has been awarded with prestigious ICAR Pandit Deen Dayal Upadhyay Antyodaya Award. He was also

awarded with Smart Farmer award by CRIDA, Hyderabad and Best Farmer of the year award.

Brucellosis-Public Awareness

Samir Das, AAP Milton, Rahul Katiyar, I Shakuntala, Rajkumari Sanjukta, S Ghatak, Anjoo Yumnam and Arnab Sen

Brucellosis is caused by bacteria called *Brucella* sp. It causes abortion like problem in animals, cattle, goat etc and is zoonotic i.e., can infect human being. Brucellosis symptoms in animals are abortion in last trimester in cow i.e., after 5th month of pregnancy there is abortion and other reproductive problem in farm like infertility, orchitis (inflammation of testis). In human, there could be undulant fever (means fever rising and coming down, again rising). There is sweating in night, there is arthritis and back pain in human. In males, there could be swelling and pain in testis called orchitis and they can become infertile i.e., they may not be able to produce children. Basically in human the farmers, handler of animals who handles abortions, dead foetus of cows are at risk. The brucella bacteria can directly enter inside human body through skin and cause infection. The veterinarian can get infection while handling abortion or gynaecological problem barehanded. The lab worker and the general public who consumes raw milk area at risk. There is believes in some section that raw milk is good for health like wrestlers, bodybuilders etc and in some religious occasion raw milk is used for preparation of raw milk based food or religious offerings. In our country around 5% cow are infected with brucella means out of 100 cow 5 are positive and can spread disease to human and human cases are also reported from country mainly in veterinarians and farm workers. Brucella can be diagnosed in laboratory through milk ring test on milk, on serum by RBPT, ELISA and other tests of bacterial isolation and molecular test.

Our main motto of this newsletter/vedio (which we have launched through KIRAN website/youtube/whatsapp) is to spread awareness to general public that how can they prevent this disease in their animals and in their family. Brucella bacteria get killed by heat

and when you boil or pasteurised the milk than the bacteria get killed. We need to boil the milk in the same container in which the milk is collected. We also want to draw the attention of general public that never ever consume raw milk. Please avoid cross contamination of raw milk with other food items in kitchen. Many time unknowingly we cross contaminated our kitchen by raw milk carrying pathogens e.g., when we sieve the raw milk and then wash this sieve in sink than we contaminate the whole sink with the pathogen and spread the pathogen to other utensil kept at the sink and similarly if we use this same sieve for fruit/vegetable juice sieving than this will carry the pathogen. We should not use different vessel to collect raw milk and different vessel to boil the milk. Here also many time we collect raw milk in plastic container and then transfer to another steel container for heating but the plastic container we just wash and in this process also we contaminate the sink.

A common question is being asked that whether we can consume tetrapack milk or milk packet from market? Yes, we can if it is labelled pasteurized or sterilized. Most of the good branded company supply pasteurized milk but some small company can sell raw milk in packet so please check its label.

Veterinarians are prone to infection so while handling abortion they need to wear protective clothing like long gloves, gumboots, spectacles etc. The farmers also should use gloves while disposing the abortion material. The farm area where the abortion had occurred should be disinfected with phenolic disinfectant or hypochlorite solution. We must disinfectant the implement used for handling abortion also. We need to dispose the aborted material properly otherwise it will spread infection all over. The best way to dispose is to cloth the abortion material wearing gloves and protective clothing and then put it in leak proof bag and then burn it or put in deep burial.

Brucella is very difficult to get rid from farm and treatment is not practiced. So, slowly the brucella infected cow can go on infecting other cows and thus whole herd will become brucella positive. So it is advised to stop the entry of the first brucella case. The best way of it is to avoid purchasing of new cows from unknown source and it will be best to test the animal for brucellosis before giving entry it to the whole non-immune/naïve herd. Even when there is no facility for brucella testing at purchase time than follow the quarantine principle and keep newly purchased animal in separate shed for 21 days and then test it or observe for infection. But brucellosis symptom use to come during 3rd trimester only in pregnant cows. Hence, in non-pregnant animals it will be difficult to judge unless laboratory tested. Farmer should not sell their infected suspected cow to others as it will create a new foci of infection.

One of the effective way to raise brucella free herd is to vaccinate female calve at 6 month (4 to 8 month range) with brucella vaccine, company like Indian immunolgicals are having the vaccine in the country and government of India had launched free brucella vaccine this year (2019) onwards. We need to educate and

give mass awareness to public for brucellosis and this newsletter and vedio is one of the attempt for it.

CLIMATE CHANGE IN NORTH-EASTERN INDIA: A SPATIO-TEMPORAL PERSPECTIVE

D. Chakraborty, S. Saha, B. K. Sathy, N. Uttam Singh, S. K. Das, P. Romen Sharma, A. Nomita Chanu, P.S. Rolling Anal, and D. Daschauthuri

Climate is the most important determining factor governing the distribution of different types of life on earth. Agriculture is very closely dependent on the natural resources especially climate. Each and every operation of agriculture in general and crop production in particular is very snugly related to climate. Moreover in the recent era, the phenomenon of climate change has become more imminent than ever before as indicated by unabated increase in aberrations of different weather parameters (especially rainfall and temperature). It is also pertinent to note that, though the phenomenon of climate change is global but its nature, extent and intensity being localized, needs quantification at a proper scale. The dynamics of change in different climatic parameters play a crucial role in deciding the net cumulative influence of climate change on the agricultural production of a

spatial variability overall range of increase in Tmean was 0.2°C to 1.2°C per decade across the region. These changes are quite high as compared to the increase in global average temperature which was 0.85°C during 1880–2012 (IPCC 2013). Significant rise in Tmean during winter was experienced by five out of seven places indicating that winter months are invariably getting warmer over the region. The maximum change in Tmean was seen over Basar and Gangtok, where during all the seasons the rate of increase was statistically significant. This was followed by Imphal and Umiam stations where Tmean has increased in three and two seasons respectively. The results clearly show that the rate of change in Tmean was quite higher for comparatively northern locations i.e. at higher latitudes or those places which are climatologically cooler. It is also seen that for Imphal and Umiam, the Tmean has significantly changed during monsoon months, indicating the interplay of monsoon rainfall during these times. Many a times, increased variability of rainfall in the monsoon or post-monsoon months force the changes on the temperature. Hence, all these changes are bound to have profound impact on the ecosystem in general and agriculture being highly dependent on climate is projected to be badly hit unless proper adaptation measures are initiated before it's already irreversible.

Table 1: Trends in the mean temperature (Tmean) at different locations of north-eastern India.

Year	Basar, Arunachal Pradesh	Gangtok, Sikkim	Jhamapani, Nagaland	Umiam, Meghalaya	Imphal, Manipur	Kolasib, Mizoram	Kailashahar, Tripura
Winter	3.4*** (0.7)	1.9* (0.4)	0.1 (0.2)	2.1** (0.5)	4.0*** (0.3)	3.2*** (0.6)	1.1 (0.1)
Pre-Monsoon	3.7*** (1.0)	4.2*** (0.5)	0.0 (0.0)	1.3 (0.3)	1.6 (0.1)	1.4 (0.3)	1.3 (0.1)
Monsoon	3.9*** (1.2)	3.3*** (0.3)	-0.2 (0.1)	1.7* (0.2)	3.8*** (0.2)	0.3 (0.1)	1.4 (0.1)
Post-monsoon	2.7** (0.9)	1.6* (0.2)	0.0 (0.0)	1.2 (0.2)	3.8*** (0.3)	0.1 (0.0)	0.2** (0.2)
Annual	4.0*** (1.0)	3.8*** (0.4)	0.2 (0.0)	2.3*** (0.2)	4.2*** (0.2)	1.7* (0.2)	2.6*** (0.1)

[Note: ***, ** and * denote trends at 1%, 5% and 10% significance level, respectively. Values indicate Mann Kendall's Z statistics and in the parentheses Sen's Slope represent the rate of change (°C) per decade].

region, surface hydrology etc.

Climate change has also engulfed the north-eastern region of India which is highly rich in natural resources and known for its beautiful climate. The region comes under high rainfall receiving zones of the country and one of the prominent biodiversity hot spots. But hitherto, it has sometimes witnessed unprecedented drought like situation and faced extraordinary heat-waves like condition. It is said that presently global climate is experiencing more extremes than ever before and these are predicted to increase further in the near future. Likewise, extreme temperatures are also occurring more frequently over the globe as well as over India and in the north eastern part of it. There has been unparalleled increase in temperature during the last three decades over north-eastern region, the trends in mean temperature (Tmean) which is generally a pretty conservative phenomenon, sums up it all. The Tmean has increased over most of the places almost throughout the year. Despite

NATIONAL WORKSHOP ON ADVANCE RESEARCH METHODOLOGY FOR SOCIAL SCIENCES

A workshop on advance research methodology for social sciences will be organised during 2 to 7 December, 2019 at ICAR Research Complex for NEH Region, Umiam, Meghalaya. Last date for nomination is 15 November, 2019. For detail please visit <http://kiran.nic.in/> or <http://www.icarneh.ernet.in/>

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