

Proceedings of North East Zone Regional Agri-Fair 2010-11 held in ICAR Research Complex, Umiam, Barapani.

North East Zone Regional Agri-Fair 2010-11 was held from 28th February to 2nd March, 2011 and organized by ICAR Research Complex, Umiam, Barapani, particularly to apprise the farming community and other stake holders in agriculture and allied sectors on “**Bio-diversity Conservation and Entrepreneurship Development**”. The objective of the fair is to showcase the various technologies developed by different universities/institutes/NGO’s highlighting the Bio-Diversity and its conservation thereby bio industries/agro-based entrepreneurship development is encouraged during the fair.

In his welcome address, Dr. S.V.Ngachan, Director, ICAR, Barapani, said by conducting such fair, we provide distinctive platform for promotion of biological diversity, encourage knowledge sharing among stakeholders, provide current facts, latest trends in entrepreneurship development and also exploit the potential of micro-enterprises and small-scale industries.

National Advisory Council Member and former Vice-Chancellor of NEHU Pramod Tandon stated that we have a multiplicity of life forms herein the Northeast and are ranked 17th in terms of mega diversity in the country. Besides, here in Northeast, we have 49,000 species of plants which amounts to a total of 12 percent of found plant species in the world. The diversity of flora in particular and fauna here cannot be found anywhere else in the world. He asserted that bio-diversity holds a key role especially in a place like India where 70-80 percent of people depend on plants for medicinal use. However, he said that even though India is rich in bio-diversity, it shares only 2.5 percent of the total percentage shared by countries of the world adding that it is important to preserve the flora and fauna of the country.

Director, Farm Information & Directorate of Extension, Dr. S.M.H Kazmi, said that such a fair would provide a much needed platform where farmers and scientists from various parts interact and benefit each other. Adding that such fair also provides an opportunity to the scientists to showcase their innovations.

In his Inaugural speech, Meghalaya Governor, Shri. Ranjit Shekhar Mooshahary urged agricultural scientists and farmers to come together and work synergistically for providing food security to the country. The Country has increased production to a very large extent, producing millions of tonnes of food grains every year, but unfortunately what we produce is not enough. Adaptability is the key to growth. In the North Eastern Region we have rain-fed areas, humid areas, alpine areas, so the technologies should suit all these including different climatic conditions.

Agriculture and allied sector departments and societies, farmers, NGO’s and entrepreneurs from all the North Eastern states participated in the fair.

Thematic Session:

Session 1: **Interaction with farmers on horticulture with special reference to production and post harvest technology**

The first thematic session was chaired by Dr. B.C. Deka, PS & Head, Horticulture; other experts present were Dr. R.K. Patel, Senior Scientist, Horticulture (Post Harvest Technology), Dr. H. Hazarika, PS & Head, Soil Science, Dr. Veerender Verma, Scientist, Horticulture, Dr. Nishant Deshmukh, Scientist, Horticulture, Dr. Pankaj, Scientist, Plant Pathology and Dr. Firke, Scientist, Entomology.

Questions and Answers:

- Question: **Off-season Pineapple cultivation**
Reply: Naphthalene acetic acid suggested for inducing inflorescence
- Question: **Organic cultivation of pineapple**
Reply: Apply FYM, cowdung and vermi-compost
- Question: **Coffee plantation and tomato cultivation in the area**
Reply: Spacing for coffee should be 30 X 45. By doing this yield will be increased and during the off-season it fetches good price. For tomato, planting of frost-proof variety Megha Tomato-3 is suggested
- Question: **Assam lemon fruit not available throughout the year, yield only once a year and small fruit**
Reply: In Ri-Bhoi flowering in February-March. The stress is due to temperature or irrigation. Go for paddy straw mulching and zinc-sulphate Zn (SO₄)₂ applications for inducing inflorescence. Apply FYM, animal dung and Zinc-sulphate (2.5g/lit water) for increasing the fruit size. Spray once/month, mulch so that loss of moisture is reduced
- Question: **Excess of chemical fertilizers like Diammonium Phosphate (DAP) has made the land barren, how to reclaim back its fertility. How to treat soft rot of ginger disease**
Reply: Copper Oxy-chloride (CuOCl₂) treatment, 3g/l water
- Question: **How to increase shelf life of ginger after harvesting**
Reply: Seed treatment with Bavistin or soak the rhizomes in luke warm water for 15-20 mins. Then take them out, dry it and store them
- Question: **Yellowing of ginger leaves**
Reply: It is soft rot of ginger, there are bio-organics developed by Agronomy Division for seed treatment
- Question: **How to have insect/pest free orange plantation**
Reply: This is caused by trunk borer. Kerosenized water to be poured in the hole.

OR

Pour small fishes in the hole and the ants will attack the larvae

OR

Monocrotophos in 1 lit of water, pour it in the hole

- Question: **Fruit drop in citrus**
Reply: It may be due to stilar rot, powdery mildew, hormonal imbalance or aphids. Apply 2,4-D 15mg/l + Benomyl OR Bavistin 0.1 % + Micronutrients in the month of May-June and Aug-Sep in a year
- Question: **Plantation of banana done for 6-7 years but in the last two years yellowing of leaves found**
Reply: Remove infected plants. If vector is available apply insecticide like Malathion, Endosulfan, Monocrotophos @ 1-2mg/l water. It may also be nutrient deficiency, for this apply sufficient manure
- Sikkim: Cauliflower black rot
Dr. Verma: Fungal growth on the curd due to moisture accumulation. Grow Pusa Meghna and Pusa Astha where the curd in this var. is formed in such a manner that moisture does not accumulate
- Sikkim: Cauliflower snail problem
Reply: Biological control by collection and destruction
- **Ukhrul: Yellowing of fruits in Citrus**
Reply: May be due to moisture, JD Manipur Centre will be visiting his orchard
- Meghalaya: Orange decline
Reply: Apply FYM twice a year March-April and Sep-Oct. Weeding and pruning should be done. Also apply Bordeaux mixture on the trunk
- Tripura: Flower drop in Putul plant
Reply: Retain male-female ratio in the plantation. Poor incidence of inflorescence may be due to drought. Fungicide drench may be given after seeing the plant
- Sikkim: Cauliflower
Reply: Indian cauliflower varieties high temperature tolerant variety like Pusa Meghna var should be cultivated. Good drainage should be made
- Tura: (Question in Bengali, not understood)
Reply: 200-400g/ha lime application

- Tripura: Grape cultivation
Reply: It is not suitable for cultivation in the area
- Ri-Bhoi: Mango plantation-varieties suitable
Reply: Amrapali may be planted in the kitchen garden as mango is not suitable for the region

How to make an optimum production of horticultural crops

- Tripura: Pineapple production done in more than 150 bigha land but there is no market for sale. They would like to go for value addition or processing
Reply: State Government has schemes for processing units and loans are given through Horticulture Mini Mission III
- Arunachal Pradesh: What are the effects of weedicides on vegetables? Merits and demerits especially about Round up
Reply: Round up kills all vegetables; it should be applied before sowing of crop. The half life of this is 14 days and after this the residual effect or toxicity gets over
- South Tripura: Brinjal seedlings died after transplanting and brown spots are seen on the roots
Dr. Ram Dutta: Allow less moisture to avoid rotting of roots. Trichoderma drenching should be done after 15-20 days
- Arunachal Pradesh: In King chilly (known as Mithun mircha) leaves are seen to reduce in size, yellowing and drying up with no fruiting
Dr. R. Dutta: It is viral infection. Insecticides for white fleas which is the vector for virus must be sprayed on the crops.

Dr. Premjit: Systemic insecticides may be used but it is banned in the states of Sikkim and Arunachal Pradesh. For this bio-insecticides may be used by drying in shade and grinding of plants like *Lantana camara* and *Melia azadirachta*, 40-50 g powder/l water for aphid and thrips can be used. Cattle urine may also be used by adding 250 g leaves in one litre of the urine stored in earthen pots for two weeks, this solution may be diluted in water and sprayed, it is found effective.

- Arunachal Pradesh: In Horticultural sector, orange plantation, the previous year fruiting was very high but reduced/no fruiting is found in the current year
Dr. Patel: Artificial fruit drop is induced to maintain the ratio of fruit production in the consecutive years.
- Arunachal Pradesh: Insect infestation on orange
Dr. Patel: Trunk borer problem identified. In the month of November-December collection of grubs should be done and Bordeaux paste should be applied. During the egg laying season (May), Carbaryl and Bordeaux paste should be applied. In the month of

June-July, cotton stub dipped in kerosene should be inserted in the trunk hole and cover it with mud paste.

- Arunachal Pradesh: Lichen growth on orange plant
Dr. Patel: To control lichen growth apply copper sulphate and lime on the trunk
- Sikkim: Destroying of crops like potato, radish before harvest by red ants, KVK had suggested neem cake but not effective
Dr. Premjit: *Jatropha gossypifolia* (acts like leuran and Malathion) dried in shade and grind to powder form (cover the face while handling as it is used as fish poison also) and apply on the soil to control red ants
Dr. Rathi: Proper aeration of soil is also important
- Nagaland: When banana sucker is transplanted the pseudostem is found to be cut
Dr. Rachna Pande: It is due to pseudostem borer, apply neem seed kernel extract as repellent
- Manipur (Imphal West): In system of rice intensification (SRI), 30% bad seeds were found. Varieties- IR-64 and PAC-807. Has it been released by the State Government, if so why have they released it before testing the suitability of the variety in the state
Dr. Premjit: IR-64 is not for release by the State Governments, but released by the Centre or Institute producing the variety. In order to assess the productivity and yield, comparison can be done by SRI and non-SRI planting. It is not suitable to plant any variety prior to testing of any released variety. There are V biotypes in India but Manipur falls under Biotype VI which is reported in the International Newsletter. CAU-RI and Tmapha phou are some of the varieties suitable for Manipur. Soil in Manipur is suitable for glutinous variety of rice, others may be of high yield but nit glutinous which is not acceptable to the area. At present it cannot be said that which variety can perform better with SRI in Manipur.
- Manipur: Since the State Government is providing paddy seeds through schemes, the farmers will accept it happily but since this is not yet tried in the local conditions and 30% loss is found by adopting the seeds, not sure of certification. This will affect the economy as a whole.
Reply: This may be approached to the State Government

Another solution suggested by Dr. Ramakrishna is to soak the seeds in brine i.e., 3 kg salt dissolved in 1 litre of water, the bad seeds will float on the surface

- Meghalaya: All vegetables-cabbage, cauliflower, chilly and mustard are seen with black rot.
Dr. R. Dutta: This is due to damping-off. In order to check this problem copper fungicides should be used. Drenching should be done with streptomycin for black rot and copper-oxy-chloride for damping-off and reduce the moisture level

- Sikkim: Control of insect-pest
Dr. Premjit: Vocational training is given for vermicompost and bio-control and NGOs are given fund for bio-control laboratory

Researchable issues:

1. Training need analysis for promotion and conservation of underutilized Horticulture crops
2. Production system analysis involving different fruits and vegetables for nutritional security
3. Value addition and supply chain management in different fruit crops and vegetables
4. Synergetic model development for promotion of horticultural crops for livelihood security

Session II: Pig, Poultry and Fishery production

Thematic session on Animal Science and Fisheries was held in the afternoon of the 28th of February 11 at 2:30 PM during the Regional Agriculture Fair 2010-11 from 28th February to 2nd March 2011 at ICAR (RC) Umiam, Meghalaya. The session was participated by Dr. R. K. Bardoloi, PS & Head, Animal Production (Chairman), Dr. S. K. Das, PS & Head, Division of Fishery, Dr. Suresh Kumar, Principal Scientist, Animal Production, Dr. R. Laha, S. Scientist & I/c Animal Parasitology, Dr. I. Shakuntala, Senior Scientist, Animal Health, Dr. Sunil Doley, Senior Scientist, Poultry Science, Dr. Pramod Singh, Senior Scientist, Animal Nutrition, Dr. M. H. Khan, Scientist, Animal Production, Dr. Z. B. Dubbal, Scientist, Animal Health, Dr. Sulip Majhi, Scientist, Division of Fishery, Dr. Rantu Basumatary, Scientist, Animal production, Dr. K. Murmu, Scientist, Division of Fishery, Dr. Meena Das, Scientist, Animal Parasitology, Dr. P. K. Bharti, Scientist, Animal Production, Dr. Rajkumari Sanjukta, Scientist, Animal Health

The interactive session with the farmers started with the welcome address by the chairman, Dr. R. K. Bardoloi, PS & Head, Animal Production, in which he emphasized the role of animal husbandry and fishery for livelihood security and socio-economic upliftment of the poor and marginal farmers in the North-Eastern Hill region of India. Dr. Meena Das, Scientist, Division of Veterinary Parasitology worked as a member of Thematic Session committee. More than 100 numbers of farmers from Ri-Bhoi, East Khasi Hill, Garo Hills, Tripura and Sikkim participated in the interactive session. The farmers were highly enthusiastic and were very much eager to know about the latest developments in animal husbandry especially pig and poultry as well as fish production. Altogether 25 questions were asked by the farmers during 2 ½ hour long interactive session. Majority of the questions asked by the farmers were related to fish and poultry production. In fish production, most of the question raised by the farmers were related to the size of the pond in relation to number of fingerlings, what kind of fish to be incorporated for increased productivity, what kind of fish feeds available in the market and preservation technology for fish. Dr. S. K. Das, Dr. Sulip Majhi and Dr. K. Murmu discussed the problems with the farmers, explained in details and satisfied all the queries of the farmers.

In poultry production majority of the questions were related to managerial problems and incidence of diseases and parasitic infestation for example symptoms of bird flu, coughing in the chicken, mite infestation in birds, swelling, discharge from the eyes and nostril. Dr. Dr. Sunil Doley advised the treatments of the birds and also asked the farmers for better managerial

practices to reduce the incidence of diseases. Farmer of Mawkyrdep enquired about the treatment and control of broody hen infested with external parasites. Dr. Laha suspected that it may be due to mites infestation and advised the treatment and control measures to solve the problem.

Dr. Dubal and Dr. Sanjukta prescribed some antibiotic like sulfa drug or amoxycillin and vitamins and/or call for Veterinarian for treatment of coughing in piglets. They also suggested taking care of the health management aspects like hygiene and general cleanliness of the farm and micro-environment like ventilation. . Dr. Dubal explained the symptoms of Bird flu and suggested that, if such types of symptoms or any kind of mortality in the bird population are noted then they should not handle directly but rather immediately inform the respective Veterinary Officer/ Regional Disease Diagnosis laboratory or higher health authority for further investigation and necessary action.

Farmer of Umroi asked about the treatment of pigs having symptoms of rashes, itching all over the body. Dr. R. Laha clarifies regarding the diseases and as per symptoms it was suspected to be due to Sarcoptic mange infestation. He advised the treatment and suggested the farmer to go through one folder related to sarcoptic mange infestation in pigs available in the exhibition stall. Dr. Suresh Kumar explained in detail about the care and management of pregnant sow just before and after the farrowing in a reply of the question asked by the farmer from Tripura.

Meeting ended with thanks from Dr. R. K. Bardoloi to all the farmers for their lively presence and scientists for their participation in the interactive session.

Question and Answers

- Umroi: Size of pond or lake required for 500 fish capacity
Dr. S.K. Das: 500 m² pond for Indian carps, catla and rohu

40x30x30 is the convenient size. Exotic silver/grass/common carps. Stock exotic along with Indian carps to get good yield as exotic carps yield is good
- Assam: How much feed will be required for 8000m² or 0.8 ha
Reply: Rear fishes of good market value like Rohu and Catla. Exotic might not fetch good price as the Indian carp. Fingerlings should be 5-10 cm long. Periodic liming and fertilizing with rice bran and oil mixture is required

Good pond with no seepage, liming, manure, green pond, fingerling, start feeding daily
- Myllem: Itchy rashes on the body of pigs concentrated on belly and stomach
Reply: It may be bacterial, parasitic or sarcoptic. Consult local veterinarian for it, one dose injection may cure the rashes. Change the daily routine.
- Manipur: How to collect ornamental fish
Reply: Danube and Rajbora. Visit website: Mpeda

- Umroi: Local poultry with red itchy eyes and dies after three days. Out of 20 birds (2-3 weeks old) 2-3 died after three days. White faeces with blood
Reply: Bacterial infection is the possible cause or most probably coccidiosis. Vaccinate all the birds at birth for Ranikhet disease atleast on the 8th day-first dose should be given followed by the second dose after 28 days
- Manipur: Smoking clean technology
Reply: Visit ICAR Lamphelpat and see the smoking clean
- Tripura: What are the symptoms of bird flu?
Reply: It is a viral disease with swollen head, sinuses reddish, immediate mortality in flocks like epidemic, nasal secretion, conjunctivitis also seen.

R.K. Sanjukta: Do not handle the birds if the birds are dying and keep away from them but inform the Regional Diagnostic laboratory, they will come and collect the samples by themselves on informing to test the suspected disease
- Meghalaya (Mawkyrdep): How to cure cough of young chicks?
It may be due to cold or pneumonia. It should be observed during the first three weeks and if mortality rate is high then send the samples to ICAR laboratory to determine the cause
- Meghalaya: Eggs laid are found to be spoilt, never hatch
Dr. S. Doley and Meena Das: Dusting the surroundings with Malathion was suggested, put 1ml/l water and dip the bird in the solution. The cause may be because of mites which irritate the birds and does not allow them to incubate continuously and hence the spoilt eggs. It was advised to clean the ground, room, and nest properly before making the hen sit
- Meghalaya: Suggestion required on awareness of pregnancy in pigs- Do's and Don'ts
Dr. R.K. Bardoloi: Pig delivers after three months, three weeks and three days. Vaccination should be done for Foot and Mouth Disease (FMD) and Swine fever after six months and the booster dose after one month
- Meghalaya: How to prevent cannibalism in Chicks
Reply: Debeaking of chicks should be done 1/3rd of upper portion and 1/2 of the lower beak is to be cut especially during the first week of hatching. It may also be due to overcrowding or mineral deficiency
- Meghalaya: Twisting of chicken fits-like, move like drunkards. 3 chicks are dead 7-8 months old
Reply: Supplement with mineral mixture with vitamin mixture i.e., poultry mineral mixture with MB plex

- Meghalaya: Occasional swine cough followed by loss of appetite for 2 years now and thinning of pig
Reply: C4taxin, mineral, vitamin injection and feed supplement is the cure

Researchable issues:

1. ITK related to Animal Husbandry in terms of breeding, feeding, heeding and healthcare management- Documentation and validation
2. Bird flu and Swine flu management

Session III: Buyer-Seller meet on medicinal plants

On 1st March, 2011 Buyers Sellers Meet on Medicinal and Aromatic Plants was held at ICAR Research Complex for NEH Region, Umiam. The meet was organized under the chairmanship of Dr. S K Verma, Senior Scientists, NBPGR. The session was coordinated by Dr K P Mohapatra, Senior Scientist, Division of Agro-forestry, ICAR, Umiam. Other experts present during the session were Dr S. Rathi, Dr. A K Mishra from NBPGR and Mr Puran Chandra, Scientist, Agro-forestry. About 100 farmers/growers from different villages of the North East States participated in the meet. Mr Anand, a representative of Vista Agritech, who deals with the marketing of Medicinal and Aromatic Plants in Meghalaya was also present during the meet. Other entrepreneurs present during the meet were Ms. Alamlala from Dimapur and Mr. Deepak Das from Guwahati. A variety of questions were raised from the farmers of Tripura, Nagaland, Meghalaya and Manipur.

Mr. Anand said that the “National Mission on Medicinal Plants” and AYUSH presently encourage the plantation of *Acorus calamus*, *Piper nigrum*, *Cinnamum tamala*, *Alpinia galangal*, *Kaempferia*, *Vetiveria*, lemon grass and some plants which are not native of this region like *Gloriosa superba*. He also told the farmers that they should not go just for small scale plantation but he is ready to buy these plants in huge quantity in a sustainable way. He also assured the farmers that he can provide the seeds of these plants for plantation and later buy them back from the farmers.

Dr K P Mohapatra, Senior Scientist, Division of Agro-forestry, asked the farmers which type of planting materials are used by them (farmers). The farmers answered that they got the materials from forest (wild) and no organic manure were used during the cultivation.

Dr. S K Verma, scientists, NBPGR discussed with the farmers on the cultivation practices like spacing between the plants, area required and importance of good planting material. A farmer from Tripura asked which types of medicinal plants are suitable for growing in Tripura and also the market availability for the crops. Dr. S.K. Verma, scientists, NBPGR said plants like *Gloriosa superba*, *Ravolfia serpentina*, *Curcuma caesia*, *Tinospora cordifolia*, *Saraca asoka* can be grown in Tripura. Mr Anand also suggested that plants like *Cinnamum tamala*, *Pamorasa* and *Acorus calamus* will be suitable for growing in Tripura. He also said that Vista Agritech Company is willing to take up the marketing for the crops.

Ms. Alamlala from Dimapur is successfully preparing *Aloe vera* soap. She enquired the farmers to grow *Aloe vera* and have also asked to ICAR for good planting material. She also has expressed her desire to expand her business for which she required training for finishing products and market linkage. Dr K P Mohapatra, Senior Scientist, Division of Agro-forestry has advised

her to engage the packaging to some companies who are dealing in packaging. He also told that market linkage can be done in collaboration with some other well known companies. He also has advised to approach for financial assistance to NABARD, SIDBI.

Trader from Guwahati wanted to have an assured supply of lemon grass for essential oil extraction. Farmers from Tripura have collected the seeds of *Withania somnifera* (Ashwagandha) from ICAR, Research Complex for NEH Region, Umiam for growing in Tripura.

Researchable issues:

1. Backward and forward linkage analysis in medicinal plant production
2. Recipe making and sensory analysis from medicinal plants for increasing the benefit cost ratio of the medicinal plants

Session IV: Biodiversity and Conservation and Protection of Plant Varieties and Farmers' Rights Act of India

In North – East region farmers continue to grow the traditional varieties (landraces) of different crops in the upland area. These landraces are generally associated with farmers' local need and culture. For the crop improvement programme these landraces may act as a source of useful genes or characters. In present scenario there is an increased demand for the conservation of these traditional landraces for the sustainable development of agriculture. Therefore, there is an urgent need to create awareness among farmers about the importance of conservation of crop genetic resources in the form ancestral varieties or landraces. For this prospective, on the second day of North Eastern Zone Regional Agri-Fair a session with the theme "Biodiversity and Conservation and Protection of Plant Varieties and Farmers' Rights Act of India" was organized. This session provide an ideal opportunity to farmers for a face to face interaction with the resource persons from ICAR. The session was chaired by Dr. S.K. Verma, Incharge, NBPGR Shillong. Others present were Dr. A. Pattanaik- Co- Chairperson, Dr. Mayank Rai, Associate Professor (CPGS), Dr. A.K. Mishra, Scientist, NBPGR and Dr. Rathi, Scientist, NBPGR.

In this session our resource persons discussed the different provisions of PPVFRA and Geographical Indications registration for their effective implementation.

The Protection of Plant Varieties and Farmers' Rights Act was passed by the Indian Government in 2001. After India became signatory to the Trade Related Aspects of Intellectual Property Rights Agreement (TRIPs) in 1994, a legislation was required to be formulated. Article 27.3 (b) of this agreement requires the member countries to provide for protection of plant varieties either by a patent or by an effective sui generis system or by any combination thereof. Thus, the member countries had the choice to frame legislations that suit their own system and India exercised this option. The earlier Indian Patent Act, 1970 excluded agriculture and horticultural methods of production from patentability. The sui generis system for protection of plant varieties was developed integrating the rights of breeders, farmers and village communities, and taking care of the concerns for equitable sharing of benefits.

In the present session our resource persons inform the following points to the farmers:

- How to register a farmers variety; as many farmers found that it has been a tough task to fill the required form for the registration of a variety. They were also informed that there would be no fee for the registration of a farmers variety.
- The privilege of farmers and their right to protect varieties developed or conserved by them. A/c to PPV and FR Act Farmers can save, use, sow, re-sow, exchange, share and sell farm produce of a protected variety except sale under a commercial marketing arrangement (branded seeds).
- The farmers have also been provided protection of innocent infringement when, at the time of infringement, a farmer is not aware of the existence of breeder rights.
- A farmer who is engaged in the conservation of genetic resources of landraces and wild relatives of economic plants and their improvement through selection and preservation, shall be entitled in the prescribed manner for recognition and reward from the Gene Fund, provided the material so selected and preserved has been used as donor of genes in varieties registrable under the Act.
- The expected performance of a variety is to be disclosed to the farmers at the time of sale of seed/propagating material. A farmer or a group of farmers or an organization of farmers can claim compensation according to the Act, if a variety or the propagating material fails to give the expected performance under given conditions, as claimed by the breeder of the variety.
- The rights of the communities as defined in the PPVFR Act, provide for compensation for the contribution of communities in the evolution of new varieties in quantum to be determined by the PPVFR Authority.
- About the sharing of benefits accruing to a breeder from a variety developed from indigenously derived crop genetic resources or farmers traditional cultivars.

Geographical Indications registration gives to the registered proprietor and its authorised users, the legal right to the exclusive use of the GI and also the right to obtain relief in case of its infringement. Exclusion of unauthorized persons from misusing GI would ensure that genuine products of the rightful producers are marketed. A Geographical Indications Registry with all India jurisdictions operates in Chennai, as per the Geographical Indication of Goods (Registration and Protection) Act 1999. Under the Act, agricultural, natural or manufactured goods originating or manufactured in the territory of a country, or a region or locality in that territory, where a given quality, reputation or other characteristic of such goods is essentially attributable to its geographical origin and in cases where such goods are manufactured goods, one of the activities of either production or of processing or preparation of the goods concerned takes place in such territory, region or locality, are registrable as Geographical Indications. Whether a particular product is registrable or not is determined by the Registrar of Geographical Indications, on receipt of the application. In India 28 products are registered as geographical indications but none of them is from North-east region. In this session our resource persons suggested that Naga chili, Chakhao (black Manipuri rice) and Kasoundi from Tripura can be registered under GI.

Questions and Answers:

- Manipur: What does the Acts/rules convey? What is the role of ICAR in PPVFR

Reply: Govt. of India has World Trade Organization signed where the varieties can be protected. For farmers in order to register a unique variety it is done free of cost and commercial benefit is given to the farmer or owner from sale of his varieties. In the variety if the constituent content is not available in other varieties then only the farmer can register his product. For example, to protect commercial rights, planting of Naga chilly in London where the chilly has been registered as the Geographical Indicator (GI) in Nagaland, India is not permitted.

- Tripura: One has purchased patented seeds but if it does not perform well what can be done?
Dr. A.K. Mishra: One has to fill up a form to claim and at the same time must have evidence
- Umroi: Khasi fruits sohphlang and sohiong are not found in other places is unique to the area so how can one go for registration
Dr. A.K. Mishra: Fill up application for GI, Guwahati is the centre. Contacts will be provided later
- Tripura: An NGO is producing betel nuts and coconut grown in the state but they would like to sell it outside the state. Please suggest what to do?
Reply: ICAR can only direct the farmers but the works are to be carried out by the NGO
- Tripura: Can any crop be intercropped with rubber?
Reply: Plant the trees with a spacing of 8 x 8 m and in the shade turmeric and ginger can be grown but other crops are difficult
- Sikkim: Would like to know something regarding bio-diesel
Dr. Pattanayak: Jatropha can be used as bio-diesel but it has to be in addition with diesel in some quantity
- Tripura: When the potato and tomato production is excess they produce chips and sauce, can they register?
Reply: They can surely register their products without any doubt but they have to follow a proper procedure
- The list of patented plants were read out to the farmers
- Tripura: Fruit drop in coconut is found
Reply: At present there is no coconut expert available. Please refer to State
- Tripura: Would like to know about processing of pineapple and seedling and fish scheme
Reply: The relevant scientist may be asked
- Meghalaya: Can NGO register unique product? What role can be played by an NGO?

Reply: Any part of farming community, NGO, ICAR can register a unique product on behalf of the farmer; for farmer it is done free of cost but it is done by NGO, they will be charged

Field Visit:

A field visit was also organized as part of the North East Zone Regional Agri-fair 2010-11. Visits were made to the Horticulture, Animal Production, Agronomy and Fishery farms of this Institute. A total of 120 farmers were present. The farmers were accompanied by the following SMS, Mr. Utpal Barua, SMS Hort., KVK Ri-Bhoi, Meghalaya, Dr.P.J.Sarma, SMS Hort, KVK West Siang, Arunachal Pradesh, Dr. S.Singh, SMS Hort. KVK Hailakandi, Assam, Ms. Sagarika Bora, Programme Asstt. KVK Tura, Meghalaya, Mr. Saurabh Sarma, Programme Asstt. KVK Dimapur, Nagaland and SMS Animal Science, KVK Dimapur, Nagaland.

Horticulture Division: Mr. R.S.Patel, Research Associate, assisted the farmers in the farm visit. He briefed about the activities of horticulture division, importance of polyhouse cultivation, budding and grafting of guava, khasi mandarin, peach, etc. Cultivation of gerbera in the low cost polyhouses were also explained.

Animal Production Division: Dr. D. Singh, Principal Scientist and Mr. R. Basumatary, Scientist explained the farmers about the scientific rearing practices of pig, poultry, rabbit and goat.

Agronomy Division: Dr. D.P.Patel, Senior Scientist explained about the cultivation method of pea, wheat and other crops. The importance of crop diversification was explained along with the method of crop cultivation in raised and sunken bed.

Fishery Division: Dr. Murmu Khuntia, Scientist explained about the fish production method in scientific way. He also emphasized about the breeding of traditional as well as ornamental fishes in artificial breeding environment and their feeding practices.

Feedback: The farmers were overwhelmed to know about the budding and grafting techniques as well as the technology of low cost polyhouse. They have shown interest on pig and rabbit rearing. The raised and sunken method of cultivation practices could generate great interest on the farmers about the cultivation of rabi crops without facing much difficulty about water supply. The farmers of Tripura showed great interest on fishery and its feeding practices.

Researchable issues:

1. Technological issues related to conservation agriculture
2. Low cost mechanization suitable for the fragmented holdings
3. Analysis of farmers innovation for secondary agricultural operations

About Stalls

State: Nagaland

Organisation: NRC on Mithun

Products/Technology Exhibited:

- Mithun-mix (Area specific mineral mixture for Mithun)
- Feed block for mithun
- Mithun leather products
- Mithun milk products
- Mithun meat products

Name of the participants: 1. Dr. Naresh Prasad- Scientist
2. Dr. Vidya Singh- Scientist

State: Tripura

Organisation: ICAR RC for NEHR

Products/Technology Exhibited:

- High yielding varieties of rice, maize, mustard, sesame and pulses
- Improved varieties of papaya and tuber crops were also displayed

Name of the participants:

1. Dr. M.Dutta- Joint Director
2. Dr. B.L. Meena- Scientist

State: Arunachal Pradesh

Organisation: KVK, West Siang, ICAR AP centre

Products/Technology Exhibited:

- Taktir squash
- Ginger lime beverage
- Pickles of ginger, vegetable mix and bamboo
- Dried ginger
- Sago and potato papad
- Guava jam

- Different varieties of groundnut, greengram, blackgram and peas

Name of the participants:

1. Dr. Pranabjyoti Sarma- SMS (Horticulture)
2. Mr. A. Kiran Kumar Singh-SMS (Agronomy)
3. Mrs. Bharati Saloi- Programme Assistant (Home Science)

State: Assam

Organisation: National Seeds Corporation Ltd. Guwahati.

Products/Exhibits:

- Seeds of improved varieties of different crops

Name of the participants:

1. Mr. G. Baruah- Administrative Officer
2. Mr. K. Kalita- Administrative Assistant

State: Meghalaya

Organisation: Shillong Agri-Horticultural Society.

Products/Technology Exhibited:

- Cut flowers
- Foliage plants
- Flower seedlings

Name of the participants:

1. Shri. John Mussar- President
2. Shri. Andrew Dahar- General Secretary
3. Shri. Barry Syien- Executive member

State: Meghalaya

Organisation: Central Potato Research Station, Shillong

Products/Technology Exhibited:

- Live samples of potato varieties

- Tissue culture
- True potato seeds
- Technical bulletins
- Pests and disease control technologies in potato
- Processing technologies

Name of the participants:

1. Dr. T.K. Bag- Head
2. Dr. Sanjay Yadav- Scientist
3. Dr. K. Suraj Singh- Research Associate

State: Tripura

Organisation: KVK, South Tripura

Products/Technology Exhibited:

- Indigenous recipe named GUDAK.
It is made from fermented fish with green pea and French bean, onion, chilli and salt.

Name of the participants:

1. Dr. A.K. Singh- Programme Co-ordinator
2. Ms. Ingita Gohain- SMS (Home Science)
3. Dr. Rahul Singh- SMS (Extension Education)

State: Nagaland

Organisation: KVK, Dimapur

Products/Technology Exhibited:

- Seed materials of different agricultural and horticultural crops
- Aloe vera soap, oil and gel

Suggestions:

Name of the participants:

1. Dr. Ebibeni Ngullie- SMS (Animal Science)
2. Ms. Kolom Rabi- SMS (Plant Breeding)
3. Mr. Sourabh – Programme Assistant(Plant Protection)
4. Ten farmers

State: Nagaland

Organisation: KVK, Wokha

Products/Technology Exhibited:

- Local rice germplasm
- Pickle made from bamboo shoot, colocassia, pumpkin
- Fermented bamboo juice

Name of the participants:

1. Ms. Jessica Dohtdong- Programme Assistant
2. Mhalo Tungoe- SMS (Extension)

State: Sikkim

Organisation: NRC on Orchids

Products/Technology Exhibited:

- New hybrids
- Slow release fertilizers
- Technical know how for multiplication of cultivars through back bulb
- Scientific methods of cultivation of lily and Gladiolus

Name of the participants:

1. Dr. N.K. Meena- Sr. Scientist (Entomology)
2. Dr. R.P. Pant- Sr. Scientist(Pathology)
3. Mr. Manoj Adhikari- Technical
4. Mr. Dipak Khatri- Technical

State: Assam

Organisation: NRC on Pig

Products/Technology Exhibited:

- Technology for scientific pig rearing
- Value added pork products
- Technology for Artificial Insemination in pigs

Name of the participants:

1. Dr. R. Thomas- Scientist
2. Dr.Samprity Baruah- Research Associate
3. Shri. Rana Pratap – Technical Staff
4. Shri. Utpal- Office Staff

State: Assam

Organisation: Resource Development Institution, Guwahati.

Products/Technology Exhibited:

- Vermicompost

Name of the participants: S.N. Deb- Project Co-ordinator

State: Meghalaya

Organisation: Department of Agriculture

Products/Technology Exhibited:

- Indigenous fruits, paddy, tubers, maize and vegetables

Name of the participants:

1. Shri. T. Diengugan- ADO
2. Shri. D.H. Synneam- ADO
3. Shri. R.H. Dkhal- ADO
4. Shri. A. Dkhal- Asst. Director
5. Shri. B. Syiem- Agri. Information officer

State: Assam

Organisation: National Horticulture Board, Guwahati.

Products/Technology Exhibited:

- Different fruit products and packed fruits

Name of the participants:

1. Mrs. N.B. Mahanta- Horticulture Officer, Guwahati.

2. Mr. G. Teroz- Messenger
3. Mr. Ramen Das- CPG

State: Meghalaya

Organisation: Ri-Bhoi Strawberry Growers' Association

Products/Technology Exhibited:

- Strawberry fruit and wine

Name of the participants:

1. Mr. K.M. Syiem- President
2. Mr. D. Kyogkhai- General Secretary
3. Mr. B. Nongrum- Member

State: Meghalaya

Organisation: KVK, Tura

Products/Technology Exhibited:

- Innovative techniques of bee keeping
- Honey and honey bee based products
- Ber sweet pickles
- Banana fibre products

Name of the participants:

1. Tarun Kr. Das- SMS (Agril. Extension)
2. Dr. Sagorika Borah- Programme Assistant(Animal Science)
3. Eight farmers

State: Meghalaya

Organisation: RRTC, Umran.

Products/Technology Exhibited:

- Pickles
- Spices
- Drinks
- Vegetables and flowers
- Vermi-compost

Name of the participants:

1. Mrs. L. Papang- Labourer
2. Mr. Nongspung- Labourer
3. Mr. Kulemser- Field Supervisor
4. Mr. Nipen- Labourer

State: Meghalaya

Organisation: Zopar Exports Pvt. Ltd, Shillong.

Products/Technology Exhibited:

- Cut flowers & Strawberry

Name of the farmers:

1. Aman Patel- Marketing Rep
2. Yonne Sohtun- Manager

State: Sikkim

Organisation: ICAR Centre

Products/Technology Exhibited:

- Compact feedblock
- Enriched vermicompost
- Dalle Khoksani
- Ginger Bhaise cultivar
- Seeds of improved and High yielding varieties of maize, rajma, ricebean and mustard

Name of the participants:

1. Chandan Kapoor- Scientist

State: Meghalaya

Organisation: MRDS, Baghmara

Products/Technology Exhibited:

- Technology products and processed products

Name of the participants:

1. Hitler R. Sangma- Technical Supervisor
2. A. Sangma- Technical Supervisor
3. Three farmers

State: Rajasthan

Organisation: NRC on Seed spices

Products/Technology Exhibited:

- Technology on scientific cultivation of seed spices
- Value added seed spices

Name of the participants: Dr. J.K. Ranjan- Sr. Scientist

State: Assam

Organisation: Directorate of Marketing and Inspection, Guwahati.

Products/Technology Exhibited:

- Publications
- Food products certified under AGMARK
- Various schemes

Name of the participants:

1. Mr. Tapas Kumar Ray- Asst. Marketing Advisor
2. Tapas Bhattacharjee- Marketing Officer
3. Gautam Chakraborty- Marketing Officer

State: Arunachal Pradesh

Organisation: NRC on Yak, Dirang.

Products/Technology Exhibited:

- Yak meat
- Yak milk
- Yak based woollen products

Name of the participants:

1. Mr. Phunchu Namje- Technical Officer
2. Dr. Ashish Saikia- Technical Officer

State: Meghalaya

Organisation: Kyntiew Shaphrang SHG

Products/Technology Exhibited:

- Organic Tomato
- Honey bee
- Salad
- Arecaunut
- Black pepper

Name of the participants:

1. Shri. McDonald Khyllip- Secretary
2. Shri. Michael- Member
3. Shri. Hally War- Member
4. Shri. Anisimos- Vice-President

State: Meghalaya

Organisation: Fruit Preservation centre, Dept of Horticulture

Products/Technology Exhibited:

- Preserved Fruits and vegetable products

Name of the participants:

1. Mr. P.Lyngdoh- Supervisor
2. Mr. B. Bamon- Marketing Representative

State: Meghalaya

Organisation: Dept of Soil and Water Conservation

Products/Technology Exhibited:

- Soil samples
- Fertilizers
- Augurs

Name of the participants:

1. Five farmers

State: Meghalaya

Organisation: Mawkriah Nursery

Products/Technology Exhibited:

- Cut flowers

Name of the participants:

1. Ms. Yearlin Wajri
2. Ms. Bhalinda Wajri
3. Ms. Bitulda Wajri
4. Ms. Babythalam Wajri
5. Ms. Mial Wajri

State: Manipur

Organisation: Central Agricultural University

Products/Technology Exhibited:

- Processed vegetables and fruits
- Pickles
- Handicrafts, toys
- Bamboo based products
- Literatures
- Indigenous recipe

Name of the participants:

1. Dr. M. Premjit Singh- Director of Extension
2. Six staffs

State: Delhi

Organisation: Directorate of Extension

Products/Technology Exhibited:

- Digital prints
- Programmes and schemes of MoA

Name of the participants:

1. Dr. S.M.H. Kazmi- Director (FI)
2. Shri. Shiv Narain- Assistant
3. Shri. N.C. Poral- Carpenter

State: Meghalaya

Organisation: NBPGR, Umiam.

Products/Technology Exhibited:

- Variability in maize, paddy, ricebean and buckwheat
- Live samples of some important medicinal plants

Name of the participants:

1. Dr. S.K. Verma- PS & OIC
2. Dr. A.K. Mishra- PS
3. Dr. R.S. Rathi- SS
4. Dr. S. Roy- Scientist

State: Manipur centre

Organisation: ICAR, Imphal

Products/Technology Exhibited:

- Live materials of several important crops and local vegetables
- Indigenous recipe made from locally available crops
- Literatures

Name of the participants:

1. Ms. N.G. Sanatomba Devi- SMS
2. Ms. Linda Monsang- SMS
3. Dr. Prabhabati- SMS
4. Ms. Ghairung Karmi- SMS
5. Dr. S. Rama Devi- SMS
6. Dr. R.K. Roshan- SMS
7. Mr. P.A. Ramsen- SMS
8. Mr. Lunghong- Programme Asst
9. Mr. Yuini Raising- Programme Asst

Feedback:

- Planning and organisation of the event was excellent
- Farmers' participation and their willingness to get training on various technologies that were exhibited in the fair show the worthiness of the kind of products in farmers' point of view.
- Logistics were commendable.
- All the materials, products and technologies were in varieties and got the newness in it
- Staff of ICAR institute were so helpful
- All the exhibits were so informative and useful
- Facilitated the popularization of the technologies
- Random placement of the stalls for different institutes were commendable
- Good platform for showcasing the technology products
- Effective instrument for creating awareness on bio-diversity conservation
- Purposeful event
- Interactive thematic sessions commendable
- Focus towards local communities appreciable

Suggestions:

- Larger participation of the private sector to be encouraged

- Some more stalls are needed for our institute and can be displayed division wise.
- Timing of the programmes should be followed properly.
- Different stalls should be allotted for sale especially
- Should be held regularly every year to update the technologies for various stakeholders
- It should be accompanied by some seminars for creating a strong impact at the field level.
- Live demonstrations can be added and more live materials should be encouraged
- Separate stall for farmers' innovations needed

Valedictory Function:

The three day North East Zone Regional Agri-Fair 2010-11 organised by ICAR Research Complex, Umiam came to a concluded on the 2nd of March 2011.

Speaking during the Valedictory function, Dr. Premjit Singh, Director of Extension, Central Agricultural, University, Imphal stated that such fair provides a platform where success stories, implementable technology are highlighted which benefits the farmers and entrepreneurs. Dr. Singh emphasizing the need of such fair said that, proper documentation of the various interactive sessions is very important and thrust areas should be identified so that it can be added to the research project in institutes/universities. He laid stress on demand driven technologies to be developed.

In his address, Dr. S.P. Ghosh, Ex. DDG Horticulture, ICAR & Senior Consultant DBT, New Delhi emphasized on the importance of agriculture in the north east and said that we are now moving from primary agriculture towards secondary agriculture or value added agriculture. North East is considered as one of the 14 biodiversity hot spots in the world, with 4 eco-region in the north east and many rare flora and fauna. He suggested identifying few entrepreneurs who can market the product better as proper marketing has not yet been developed in the region.

In his presidential address, the Chief Guest of the occasion Mr. U.K. Sangma, Secretary, North Eastern Council said that North East as a region is still facing food insecurity. ICAR has a major role to play to solve this problem. He said that Agri-Horticultural Crops should be encouraged with scientific inputs. He said that proper monitoring and valuation of the research projects should be done. Mr. Sangma laid stressed on piggery development as North East is the largest consumer of pork but the supply is insufficient. He said that due to economic reasons the region could not become self-sufficient. Concerted efforts are needed to develop ways and means to balance the demand and supply.

Earlier, while delivering his welcome address, Dr. S. V. Ngachan, Director of ICAR Research Complex for NEH Region said that the farmers of the region is making us proud by bringing about value additions in the agricultural products which were so far utilized in its raw form. "IT has improved and we are now able to reach the unreached. The region is forging towards food security and ICAR would not lag behind in providing necessary technological backstopping", he said. Dr. Ngachan said ICAR is making all out efforts to generate awareness among the farmers about PPV and Farmers' rights. He called upon all the stake holders to rise and take pledge to work together for food security. The region is rich in diversity; therefore,

there is no reason why it should remain weak. We travelled long distances and I am sure we will complete the journey”, he said.

The Chief Guest during the occasion also distributed the awards to the most innovative farmers of each state of the NE region. The first prize for Governmental organization was awarded to Department of Agriculture & Horticulture, Government of Meghalaya and the First prize in the non-governmental sector was awarded to Shillong Agri-Horticultural Society.

Prizes for the best stall:

State-wise best innovative-

- Assam: Sanju Das, Hailakandi (Betelvine+arecanut intercropping)
- Arunachal Pradesh: Khade Ate, West Siang (Multiple cropping of ginger)
- Manipur: Thoime Lolle, Ukhrul (Lemon plantation and fruit processing)
- Meghalaya: Bilma Tamung, Kyrdem, Ri-Bhoi (Entrepreneurship development through bamboo and banana production)
- Nagaland: Achong Misau, Diampur (Intercropping and highland paddy)
- Sikkim: Mrs. Kesang Lepcha (organic farming of vegetables and poultry)
- Tripura: Mr. Parmanando Singh (Mini Diary, producing 200 l/day and supplying to Tripura Milk Union)

Government Organizers Best stall prize-

- 1st prize-Department of Agriculture, Govt. of Meghalaya
- 2nd prize-Central Agricultural University, Imphal
- 3rd prize-Assam Agricultural University, Jorhat

Non-government organizers sector:

- 1st prize-Shillong Agri-Horticultural Society
- 2nd prize-Agri-preneurs SHG, Ri-Bhoi District
- 3rd prize-SHG promoted by soil and water conservation, Govt. of Meghalaya