



**INSTITUTE OF FOREST PRODUCTIVITY,
RANCHI
MONTHLY SEMINAR REPORT
November 23rd, 2020.**



As part of monthly seminar series, a research seminar on the theme, “Tree Improvement programme (Conservation of Forest Genetic Resources)” was organized on 23rd November 2020 at the Institute of Forest Productivity, Ranchi through virtual platform. Dr. Nitin Kulkarni, Director, IFP, Ranchi presided over the seminar. There were two speakers; Dr. Yogeshwar Mishra, Scientist-F & GCR who spoke on “*Improvement of teak in India*” and Dr. Shashi Bhushan Choudhary, Principal Scientist & Head, NBPGR, Palandu, Ranchi who spoke on the topic - “*Diversity Analysis and Georeferencing of agromorphological traits in Jack Fruit*”. The webinar was marked by participation of Dr. Jose T. Mathew, *IFS*, PCCF (RMD) and Dr. Sangeeta Dubey, *IFS*, APCCF (Research) West Bengal, Dr. H. S. Gupta, PCCF Research (Retd), Jharkhand, Dr. Sanjeeta Gupta, APCCF (Research), Chhattisgarh, APCCF (WP) & Director, Hariyali Mission, Bihar and DFOs of three Forest Divisions of Bihar. Besides participants from HFRI, Shimla specially, Dr. Nilesh Yadav, Scientist-E and Dr. P. S. Negi, Scientist-C and officers/ scientists/ research staff of IFP and all its centres also attended the webinar. The presentations were followed by very good discussion on the theme with prospects of future inter-institutional collaborations.

- THEME** : Tree Improvement programme (Conservation of Forest Genetic Resources)
TOPIC : Improvement of teak in India
Speaker : Dr. Yogeshwar Mishra, Scientist-F & GCR, IFP, Ranchi, Jharkhand

During the talk Dr. Yogeshwar Mishra underlined the status of import of teak wood by India on which a huge foreign currency is being exhausted annually. To save this foreign exchequer, there is need to start the concentrated efforts to enhance the productivity of Teak. While significant efforts are being put in place to increase the productivity, in spite of this we are not able to achieve the targets of teak wood production. Dr. Mishra discussed about the attempts made by TFRI, Jabalpur towards genetic improvements in collaboration with SFD, Maharashtra, Odisha and Chhattisgarh and established CSO and other scientific plantations to meet the colossal demand of quality planting material (QPM). He informed about the total areas of Clonal Seed Orchards (CSO), Seedling Seed Orchards (SSO) and Seed Production Areas (SPA) established by different institutes of ICFRE and their status of seed production to different stakeholders. Dr. Mishra elaborately discussed about the process of developing CSO, SSO and SPA and that how these scientific plantations can be managed for enhanced seed production. He mentioned about the role of National Teak Germplasm Bank (NTGB), Chandrapur (Maharashtra) in assembling the germplasm across the country and how this important source can be utilized in developing and planning further breeding programmes. He was of the opinion that the Teak tree

improvement programme needed to be continued vigorously further. So far, less than 10% of the quality planting material is available from the improved sources. Even there is need to establish 2nd and higher generation of seed orchards in order to capture further gains leading to higher economic benefits to the agro-forestry farmers as well as Forest Corporations. He urged that expansion of a clone/gene bank should be done establishing clonal trials across India. He also emphasized that the efforts for formulating networking research projects with other institutions should be explored as IFP Ranchi has started collaborative research projects with Indian Institute of Agriculture Biotechnology (IIAB), Ranchi on Wild Edible Fruit as AICRP.

After presentation by Dr. Mishra, Dr. Sanjeeta Gupta, APCCF, Chhattisgarh said that there was a need to seriously assess the quality of teak that is being grown. She also added that trainings were needed on genetic improvement programme of teak and development of CSOs and SSOs. Dr. H. S. Gupta, PCCF Research (Retd), Jharkhand said that despite production of teak in our country we import hugely, so there is a need to be self sufficient. He informed that good research works were being carried out in the States of Maharashtra and Andhra Pradesh and KFRI, Peechi has launched TEAKNET.

THEME - Tree Improvement programme (Conservation of Forest Genetic Resources)
TOPIC - Diversity Analysis and Georeferencing of agromorphological traits in Jack Fruit
Speaker : Dr. Shashi Bhushan Choudhary, Principal Scientist & Head, NBPGR, Palandu, Ranchi, Jharkhand

The second presentation was made by Dr. Shashi Bhushan Choudhary. He made a detailed power point presentation on the topic whose outline is as given below:

- Conserving the underutilized
- Jackfruit: an underutilized resource
- Grouping of accessions based on agro-ecological conditions
- Diversity spectrum of qualitative and quantitative traits
- Biochemical evaluation of jackfruit accessions
- Geo-referencing of agro-morphological diversity
- Morphological markers and their characteristics
- Nei's genetic distance between sub-populations of jackfruit
- Distribution of rare alleles in sub-populations
- Polymorphic EST-SSR markers used for genotyping of Jackfruit
- Population structure analysis using EST-SSR markers
- Conclusion

Dr. Choudhary discussed on various aspects of diversity analysis of jackfruit, which is an underutilized resource. He discussed the grouping of a total of 110 accessions of jackfruit found in Jharkhand, Bihar and Odisha based on agro-ecological conditions of these States. He also

spoke on the diversity analysis of both qualitative and quantitative traits, alongwith biochemical evaluation of superior accessions of jackfruit. He discussed on the geo-referenced agromorphological diversity of jackfruit in these States. Speaking on the morphological markers and their characteristics he talked about Nei's genetic distance between sub-populations of jackfruit and distribution of rare alleles in sub-populations. He concluded that accessions from South Eastern plateau zone and Central North Eastern plateau zone were found with rare and unique traits. Majority of the accessions from Jharkhand and Odisha were found to be vegetable type and few accessions from Bihar and Western plateau of Jharkhand were found to be of fruit type.

The seminar ended with critical discussion on the presentation and formulation of future collaborative strategies and inter-institutional networking under the chairmanship of Dr. Nitin Kulkarni, Director, Institute of Forest Productivity, Ranchi.

Expected outcome of the seminar:

1. Identification of research needs:

- The Teak tree improvement programs need to be vigorously continued further. So far less than 10% of the quality planting material is available from the improved sources. With the start of Green India mission the demand for quality planting material is going to be doubled. In view of this, efforts should be made to continue the long generation trials on teak.
- The practices agro-forestry should be encouraged to establish 2nd and higher generation of seed orchards in order to capture further gains leading to higher economic benefits to the farmers and Forest Corporations.
- Capturing hybrid vigor through hybridization in teak is another area of potential genetic gains, so far it has been deployed on limited scale only in India.
- Natural resistance of plus trees to insects pests like skeletoniser and defoliator in prone areas should be investigated.

2. Formulation of future strategies/road map

- Selection and registration of plus trees of teak to preserve the germplasm as National depository.
- Expansion of a clone/gene bank should be done by establishing clonal trials across India.
- Management of scientific plantation should be given priority so that these plantations could meet the demand of quality seed in future.
- One parent – progeny trials of plus trees for estimating genetic parameters, parent-offspring and juvenile-adult correlations.
- Investigation on possibilities of inducing early and augmented flowering in the orchards should be tried so that early detection of flowering clones/progenies can be done.
- Assessment of plus trees for different wood properties using non-destructive core sampling must be conducted to ensure quality teak timber.
- Investigation on the identity and behaviour of teak pollinators to increase seed production.

3. Networking research options & opportunities

- The effort for formulating networking research projects with Indian Institute of Agriculture Biotechnology (IIAB), Ranchi is already in process. The collaborative research projects have been initiated with IIAB as the AICRP component on Wild Edible Fruit.
- The pan India picture in terms of diversity analysis has been accomplished with Teak, therefore, there is a need to start the collaborative research projects on similar lines with other forest tree species in collaboration with State Forest Departments and IIAB, Ranchi or IINRG, Ranchi.



Glimpses of the Seminar



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