Proceeding of the Institute level monthly research seminar held on 10.1.2020 in Institute of Forest Genetics and Tree Breeding, Coimbatore

As per the directions of ICFRE the monthly seminars are being conducted in IFGTB, Coimbatore. In the series of monthly seminar a topic on 'Growth promoting actinobacteria in forest tree crops' was conducted on 10.1.2020 at IFGTB under the theme ''Managing forests and forest products for livelihood support and economic growth'. Dr. A. Karthikeyan Scientist F briefed about the seminar. Dr. S. Murugesan, Director during his inaugural speech mentioned about the efficiency of biofertiizers and their real effect in the field particularly the actinobacteria like Frankia as increased the soil fertility as well as growth improvement. Dr. A. Karthikeyan, Scientist F delivered a talk on Influence of *Frankia* and *Micromonospora* in Casuarinas. In his elaborative presentation he showed the effect of *Frankia* in growth improvement and Nitrogen fixation in *Casuarina equisetifola* and *C. junghuhniana*. Also showed how the bacterial wilt was controlled in CH5 clones of Casuarinas by application of *Micromonospora.* Dr. B. Nagarajan, Scientist G and Dr. A. Nicodemus, Scientist F were commented the effect of *Frankia* and *Micromonospoara* field applications at Andamans and Pondicherry. Dr. B. Nagarajan also queried about the predisposing that causing disease in Casuarinas. Dr. Karthikeyan replied that excess water irrigation and wet site conditions are the common predisposing factors for diseases. Dr. Nicodemus added that the *Micromonospora* treated bacterial wilt disease in Casuarinas was recovered at Tindivanam. He also said that the clones of casuarinas may be inoculated with *Micromonospora* in future.

Dr. L. Karthik, Asst Professor from Sakthi Institute of Engineering and Technology Coimbatore delivered speech on Actinobacteria from Microbiology to Synthetic Biology'. He shared his knowledge on production of Sterptomycin antibiotic from the actionobacteria S*treptomyces avermitilis*. He also showed the CASPER/Cas 9 technique presentation in video as well as in PPT. All the participants were highly interacted and appreciated the presentation. DR. Mathish Scientist F and Dr. R. Anandalakshmi Scientist F have asked the gene editing and RNA technology in CASPER. He replied the gene editing by bacteriophage with examples of human diseases. He also showed the development of kit to diagnose the identification of possible chances of diseases in plants and soil.

The progressive Farmer Sh. P. Sakthivel, Proprietor of Santhi Clonal nursery, Cuddalore and licensee of IFGTB Casuarina clones shared his experience on application of *Frankia* and *Micromonospora* in Casuarina clones in nursery as well as field. He showed the root nodule formation in casuarinas rooted stem cuttings, production and application of *Frankia* with IFGTB guidance and control of bacterial wilt in Casuarina by application of *Micromonospora*. He very much appreciated the efforts of IFGTB in Casuarina research and said that due to application of *Micromonospora* the bacterial wilt in CH5 clones were totally recovered. He also added that the farmers are interested to plant more Casuarinas in coastal region of Tamilnadu due to the fast growth IFGTB Casuarina clones.

Mr. C. Malaimuthu, Asst. Manager, Tamilnadu Paper and Newsprint Ltd (TNPL). Karur shared the experience of *Frankia a*nd *Micromonospora* applications obtained from IFGTB in TNPL nurseries. Further he addressed the efficiency of *Micromonospora* against bacterial wilt disease in farmer's fields.

Director IFGTB suggested for conducting separate discussion on CASPER/CAS9 to update latest techniques and applications in Forestry.

Outcome of the Seminar

A. Identification of research needs

- Identification of novel actionmycetes for biocontrol and biofertilization activities in forest tree crops
- Standardization of field applications of beneficial actinomycetes

B. Formulation of future strategies/road map:

- Development of kit for diagnosing the diseases in forest tree crop using COT – SNELOR Technique
- Development antibiotics from actinomycetes for tree diseases
- Imparting training on CAS9/CAS12 technologies.

C. Networking Research options identified:

Engineering Institutes (SIET) for developing diagnosis kits, Paper based industries for application of actinomycetes (TNPL)

D. Future research Directions discussed for implementation and opportunities for funding.

It was discussed for funding opportunities from International Genetically engineered medicine (iGEM foundation, Boston for developing kits, CASPER techniques, Antibiotics and also students visit for training.

Dr. A. Karthikeyan delivered vote of thanks. Totally 118 participants were took part in this seminar including, Forest officers, Scientists, CTO, ACTOs, STO and other Technical staff. The faculty and students from Tamilnadu Agricultural University, Avinashlingam University, GRD College of Arts and Science, Sri Krishna college of Arts and Science and PSG College of Arts and Science, Coimbatore were also participated.

Inaugural Address in the Seminar by Dr. S. Murugesan, Director

Lecture on 'Influence of *Frankia* and *Micromonospora* in Casuarinas' by Dr. A. Karthikeyan

Lecture on Actinobacteria from Microbiology to Synthetic Biology by Dr. L. Karthik

Sharing Experience on application of *Frankia* in Casuarinas by Mr. P. Sakthivel a Progressive Farmer

Sharing experience on application of *Frankia* and *Micromonospora* in TNPL nurseries by Mr. C. Malaimuthu, Asst. Manager, TNPL.

Participants in the Seminar.