Assessment of Agro Biodiversity through the foldscope

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The study on Agrobiodiversity is important in the present context of Climate change as it helps to develop genotypes which are resilience to climate change. This helps to design climate smart plants. Agrobiodiversity includes the variability among living organisms contributing to food and Agriculture. This includes diversity within species, between species and of ecosystems. Foldscope is the low cost paper microscope which is durable, portable with magnification of 140X and 2 micron resolution. This is invented by Manu Prakash and Jim Cybulski from Stanford University, USA. The Foldscope can be used to study and understand biodiversity in crop plants, microbes and insects. This also helps in educating students and to design research strategies to meet desired goals.

In the present experiment we are trying to study the variability present in cereals, pulses, oilseeds and commercial crops for various parameters like Seed morphology, Seedling characters (root, shoot, pigmentation), Leaf characters (Leaf serration, Leaf sheath), Flower characters (Calyx, Corolla, Androecium, Gynoecium) and special features. The variability is an important part of genetic resources, which enables breeders to exploit it for interested trait and in desired direction for crop improvement all over the world. Presently, we are carrying out investigations on rice varieties for their root hair characteristics and quantified it using Foldscope. The observations were recorded for root hair length and density/mm2 for different rice varieties revealed existence of variability which can be utilised to study nutrient and water use efficiency. Similarly, other crop parameters will be studied. The variability is also being studied in microbes, disease causing pathogens and in insects for various parameters like insect morphology, anatomy, taxonomy, insect resistant and susceptible plants. It would be a significant contribution if we utilise the variability assessed through Foldscope in crop improvement, to study plant microbe interaction and to obtain insect resistant plants, which will help in better food and better Agriculture in the changing climate scenario.

Speaker Biography

Jayateertha R Diwan is currently working as Assistant Professor of Genetics and Plant Breeding at the University of Agricultural Sciences, Raichur, Karnataka, India. He has completed his Master's in Agriculture in Genetics and Plant Breeding from the University of Agricultural Sciences, Dharwad, INDIA. He worked as Scientist- Project Lead at the Barwale Foundation, Hyderabad and presently serving as Assistant Professor (Sr. Scale) at the University. He is awarded or honoured by National Merit Scholarship and Council of Scientific and Industrial Research (CSIR), Senior Research Fellowship. He is presently handling Department of Biotechnology (DBT), Govt. of India sponsored project and he also participated in International conferences.

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