

Department of Microbiology

Report of the Event

Virtual Workshop on Biofertilizer production and maintenance

November 17th, 2020

Participants: 100

Virtual Workshop on Biofertilizer production and maintenance – A Potential Strategy for cultivation of soil beneficial microorganism, making as a commercial product in order enhance the agriculture and to create livelihood for the people, which was successfully organized by Department of Microbiology, Karpagam Academy of Higher Education with participation of UG and PG students of Microbiology on 17th November, 2020. The Department of microbiology has plays significant role in organizing workshops such academic activities.

Resource Person was Dr.R.Dinesh Kumar., Assistant Professor, Department of Microbiology, KAHE having expertise in the different relevant areas related to the programme delivered introduction on biofertilizers and its impact. There were nearly about **100** number of participants for this programme and all participants were successfully completed the programme. The programme progressed with opening remarks for the live at 2.00pm by Dr. R.Usha, Prof and Head, Department of Microbiology, followed by welcome address has been given by Dr. M. Duraimurugan, Assistant Professor Department of Microbiology.

Biofertilizers are the substance that contains microorganism's living or latent cells. Biofertilizers increase the nutrients of host plants when applied to their seeds, plant surface or soil by colonizing the rhizosphere of the plant. Biofertilizers are more cost-effective as compared to chemical fertilizers. Over the years, chemical fertilizers have helped farmers increase crop production to meet the increasing demand. However, the overuse of these fertilizers is harmful because they cause air and water pollution; and also deplete minerals from the soil. Therefore, there is a need to now switch to organic farming which involves the use of 'Biofertilizers'.

Symbiotic Nitrogen-Fixing Bacteria:

Rhizobium is one of the vital symbiotic nitrogen-fixing bacteria. Here bacteria seek shelter and obtain food from plants. In return, they help by providing fixed nitrogen to the plants.

Loose Association of Nitrogen-Fixing Bacteria:

Azospirillum is a nitrogen-fixing bacteria that live around the roots of higher plants but do not develop an intimate relationship with plants. It is often termed as rhizosphere association as this bacteria collect plant exudate and the same is used as a food by them. This process is termed as associative mutualism.

Symbiotic Nitrogen-Fixing Cyanobacteria:

Blue-Green algae or Cyanobacteria form the symbiotic association with several plants. Liverworts, cycad roots, fern, and lichens are some of the Nitrogen-fixing cyanobacteria. Anabaena is found at the leaf cavities of the fern. It is responsible for nitrogen fixation. The fern plants decay and release the same for utilization of the rice plants. Azolla pinnate is a fern that resides in rice fields but they do not regulate the growth of the plant.

Free-Living Nitrogen-Fixing Bacteria:

They are free-living soil bacteria which perform nitrogen fixation. They are saprotrophic anaerobes such as *Clostridium beijerinckii*, *Azotobacter*, etc.

Among all the types of biofertilizers, *Rhizobium* and *Azospirillum* are most widely used.

Azotobacter:

It protects the roots from pathogens present in the soil and plays a crucial role in fixing the atmospheric nitrogen. Nitrogen is a very important nutrient for the plant and about 78% of the total atmosphere comprises of nitrogen.

Importance of Biofertilizers

Biofertilizers are important for the following reasons:

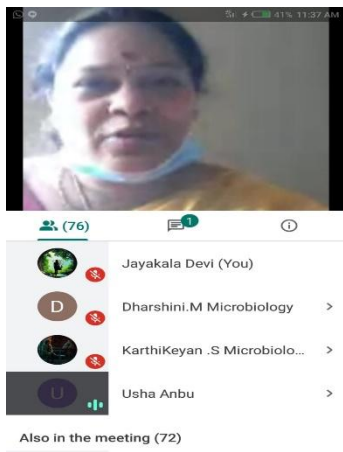
- Biofertilizers improve soil texture and yield of plants.
- They do not allow pathogens to flourish.
- They are eco-friendly and cost-effective.
- Biofertilizers protect the environment from pollutants since they are natural fertilizers.
- They destroy many harmful substances present in the soil that can cause plant diseases.
- Biofertilizers are proved to be effective even under semi-arid conditions.
- Applications of Biofertilizers

- Following are the important applications of biofertilizers:
- Seedling root dip
- This method is applicable to rice crops. The seedlings are planted in the bed of water for 8-10 hours.
- Seed Treatment:
- The seeds are dipped in the mixture of nitrogen and phosphorus fertilizers. These seeds are then dried and sown as soon as possible.
- Soil Treatment:
- The biofertilizers along with the compost fertilizers are mixed and kept for one night. This mixture is then spread on the soil where the seeds have to be sown.

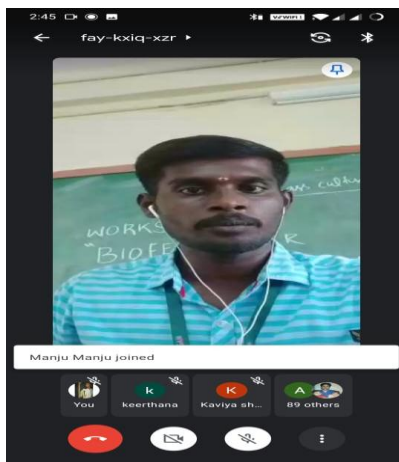
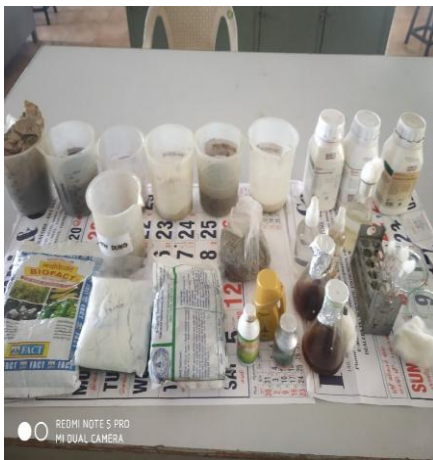
They are free-living soil bacteria which perform nitrogen fixation. They are saprotrophic anaerobes such as *Clostridium beijerinckii*, *Azotobacter*, etc. Production and maintenance were demonstrated.

In the end, Dr. N.Sharmila Devi, Assistant Professor, handled questioning session and conveyed to resource persons put forth by the external participants. Dr. M.Duraimurugan, Assistant Professor gave the vote of thanks and concluded the one-day virtual workshop. This programme has reached our students to improve their current knowledge and supportive information to become entrepreneur in future.

PHOTOS OF THE EVENT:



Welcome Address



Technique Demonstration

Delivering Lecture



Discussion

Vote of Thanks