



## Journal Club Pesentation Department of Agriculture, IIAST, Integral University, Lucknow

The Department of Agriculture, Integral Institute of Agricultural Science and Technology (IIAST) organized the Journal Club for the month of March to provide valuable insights into the latest trends and advancements in agricultural research, both in the field and laboratory.

The Journals Club was held on 17<sup>th</sup> of March 2025 in the Seminar Hall of the Department of Agriculture. Mr. Sachin Singh Tomar, Research scholar (Soil Science), Department of Agriculture, IIAST, continued the same accord by providing a presentation. He presented a research paper entitled "Plant growth promoting *Bacillus*-based bio formulations improve wheat rhizosphere biological activity, nutrient uptake and growthmof the plant" published in Springer Nature in Journal Acta Physiologiae Plantarum (Impact factor: 2.4) in 2021. The paper was discussed thoroughly, and it was explained that Rhizospheric bacteria possess the potential to colonize the root zone of plants and stimulate their growth through different mechanisms. The present study explored the competency of plant growth promoting *rhizobacteria based bioformulations (bf)* formed from *Bacillus pumilus* (BP-*bf*), *Bacillus simplex* (BS-*bf*) and *Bacillus megaterium* (BM-*bf)* on the growth, yield and nutrient status of two wheat genotypes (*Raj 3765* and *DBW 90*). In vitro studies demonstrated that biopriming with *bf* significantly improves the vigor index and germination of seedlings whereas results varied with different bacterial bioformulations.

A pot experiment for further validation of results was conducted in factorial design with these treatments: T1: control of *DBW 90*; T2: control of *Raj 3765*; T3: *DBW 90* bioprimed with BP-*bf*; T4: *Raj 3765* bioprimed with BP-*bf*; T5: *DBW 90* bioprimed with BS-*bf*; T6: *Raj 3765* bioprimed with BS-*bf*; T7: *DBW 90* bioprimed with BM-*bf*; T8: *Raj 3765* bioprimed with BM-*bf*. Results demonstrated that *bf* applied treatments exhibited significant ( $P \le 0.01$ ) improved growth and yield over control. The grain yield ranged 3.48 to 6.61 g/pot in *bf* applied treatments and significantly ( $P \le 0.01$ ) increased straw weight was also obtained in these treatments. Amongst all bioformulations, BM-*bf* triggered the highest growth and yields in both the wheat genotypes. Results also demonstrated that these bioformulations induced the nutrient uptake in both wheat genotypes. Wheat rhizospheric biological activity was also boosted by the application of these bioformulations as significantly ( $P \le 0.001$ ) enhanced bacterial colonization and microbial enzymatic activities were found. The study advocates the ability of these plant growth promoting *Bacillus* based bioformulations to improve the growth, quality and productivity of different wheat genotypes.

The presentation was concluded with the vote of thanks by Dr. Suhail Ahmad Khan, Assistant Professor, IIAST. The program was successfully coordinated by Dr. Faria Fatima, Associate



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Professor, IIAST, Dr. Suhail Ahmad Khan and Dr, Muzeev Ahmad, Assistant professor, IIAST, Coordinators, Journal Club. The entire event was conducted under the expert guidance of Professor (Dr.) Mohd Haris Siddiqui, Dean, Faculty of Agricultural Science and Technology and Prof. Saba Siddiqui, Head, Department of Agriculture, IIAST.

## Glimpses





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