

Plant Pathology Seminar Series

Bacterial Ice Nucleation

Purnima Puri

M.S. Student

Abstract

Did you know plant pathogens can facilitate ice formation? Pure water freezes at about -38°C , but in the presence of agents like dust particles or microorganisms, this process occurs at temperatures as high as -2°C (Lukas et al. 2022). Certain bacteria, like *Pseudomonas syringae*, possess specialized Ice Nucleation Proteins (INPs) facilitating ice crystal formation at temperatures above freezing point (Lindow et al. 1982). Interestingly, when these bacteria colonize plant surfaces, they can initiate ice formation in the plant tissues resulting in frost injury. This frost-induced stress can lead to significant damage and a subsequent reduction in crop yields (Anderson et al. 1982). Understanding this mechanism is thus crucial for enhancing agricultural productivity. The aim of this seminar is to provide insights into the process of bacterial ice nucleation, mechanics behind ice nucleation, and its impact as well as applications across various domains.



Fig: Ice crystal formation at the edges of potato leaf

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References

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