National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Non-host Disease Resistance against Rice Blast by Programmed Cell Death in Arabidopsis
Speaker	: Reecha Mohapatra(520ls2005)
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Venue	: LS Seminar Hall
Date and Time	: 12 Feb 2025 (16:00 hrs)
Abstract	: A significant rice disease known as "rice blast" can reduce crop yield by up to 30%, which has an impact on world food security. Numerous investigations into finding the genes responsible for disease resistance in previously resistant cultivars failed to find a solution to eradicate the illness from the field. Nonetheless, certain plants found in nature are known to be non-hosts and are not afflicted by the rice blast pathogen. In opposition to a pathogen race, a non-host plant offers broad-spectrum disease resistance. The increasing effector repertoire actively participates in suppressing both effector- and pathogen-triggered immunity during non-host resistance (NHR). A coordinated process of communication and coordinated cell death is initiated between the infected single cell and nearby cells. The NHR pathway causes hypersensitive reactions such as oxidative bursts. Therefore, the focus of the current work is on pertinent Arabidopsis mutants that were examined and found to be homozygous using molecular markers. Thereafter, the plants were challenged with the rice blast fungus, and staining and microscopy were used to examine the infection dynamics. To assess the infection's severity, an ion leakage assay was conducted. Concurrently, by comparing the oxidative burst, ion leakage, and cell death studies, it may be possible to identify the active agents from the non-host, which will enable further research into the potential use of these agents against rice blast disease. In addition, the cell death pathway will be examined to determine whether it is relevant to the host. Keywords: rice blast, non-host resistance, programmed cell death, hypersensitive response