

PEARL MILLET SCIENTISTS SEQUENCE THE DOWNY MILDEW PATHOGEN

After pearl millet genome sequence, it's now turn for the pearl millet downy mildew pathogen!

ICRISAT, in partnership with the Project Coordinating Unit, ICAR-AICRP on Pearl Millet, Jodhpur, University of Mysore and other organizations, has sequenced the genome of *Sclerospora graminicola*—the pearl millet downy mildew (DM) pathogen. **This is the first report on DM pathogen whole-sequencing worldwide.**

The DM pathogen is the greatest biotic production constraints of pearl millet in Asia and Africa, and is known for the rapid shifts in its virulence spectrum on both spatial and temporal fronts, leading to huge economic losses. The DM pathogen is not just aggressive but also smart! It defeats all the deployed resistance genes typically in a span of less than four years, especially in the genetically uniform single-cross hybrids. This is mediated by rapid sexual recombination cycles in the pathogen which is prevalent in almost all pearl millet growing zones globally. The enormous spatial and temporal variability in this pathogen gives rise to mammoth number of pathotype-isolates. Finding durable resistance genes for DM has been a matter of great challenge to the pearl millet community.

This genome sequence work is expected to provide greater insights in the molecular host-plant resistance (HPR) fronts. In association with the national partners, it is now possible to look into the interaction of R genes (with pearl millet genome sequence in hand, it will be fairly easy to dig into the resistance genes from the array of downy mildew resistance QTLs that have been mapped against different pathotype-isolates) from the host with that of the *Avr* gene battery of the pathogen, and its effector machinery. Therefore, the genome sequence will help scientists understand the pathogen better, and will facilitate identification and deployment of durable resistance genes.

Speaking on the occasion, after the publication went online on 17 October 2017 in the Biotechnology Reports Journal <https://doi.org/10.1016/j.btre.2017.07.006>, Dr. C. Tara Satyavathi, Project Coordinator, ICAR-All India Coordinated Research Project on Pearl Millet and one of the co-authors of the paper, said that the genome sequence will offer opportunities to breed cultivars with better downy mildew resistance <https://drive.google.com/file/d/0B5nZUaYVjBpnZkIVZkY5TVpzdm8/view?usp=drivesdk>