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► To cite this version:

Cindy E. Morris, Caroline Monteil, Odile Berge. Novel understanding of the water cycle as a link between unsuspected habitats of airborne pathogens -what consequences for plant disease management?. 10. International Congress of Plant Pathology (ICPP), Aug 2013, Pekin, China. 620 p. hal-02746910

HAL Id: hal-02746910

<https://hal.inrae.fr/hal-02746910v1>

Submitted on 3 Jun 2020

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O01.004 Novel understanding of the water cycle as a link between unsuspected habitats of airborne pathogens -what consequences for plant disease management?

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Recent research on the ecology of the phytopathogenic bacterium *Pseudomonas syringae* has revealed that its life history is intimately linked to the water cycle. As a consequence, the current vision of its ecology is moving away from that of a ubiquitous epiphytic plant pathogen to one of a multifaceted bacterium *sans frontières* in fresh water and other ecosystems linked to the water cycle. Its life history involves adaptation to ubiquity that is facilitated by dissemination via the water cycle and includes an important aspect of atmospheric transport as well as infiltration through soil. This new vision of its life history also integrates spatial and temporal scales spanning billions of years and traversing catchment basins, continents, and the planet and confronts the implication of roles that are potentially conflicting for agriculture (as a plant pathogen and as an actor in processes leading to rain and snowfall). Overall, it sets the stage for the integration of more comprehensive contexts of ecology and evolutionary history into comparative genomic analyses to elucidate how *P. syringae* subverts attack and defense responses of the cohabitants of the diverse environments it occupies. In practical terms this new ecological perspective has also yielded insight into epidemiological phenomena linked to disease emergence. This latter point will be explored in particular in this presentation and its pertinence for other plant pathogens will be discussed.

2012中国国际影响力优秀学术期刊

中国科技核心期刊

《CAJ-CD规范》执行优秀期刊

ISSN 0412-0914
CN11-2184/S

植物病理学报

ACTA PHYTOPATHOLOGICA SINICA

ZHI WU BING LI XUE BAO

VOL.43 NO. **增刊** 2013

Supplement



ICPP 2013
August 25–30,
Beijing, China

Bio-security, Food Safety and Plant Pathology

ABSTRACTS

**10th International
Congress of Plant Pathology**

中国植物病理学会
Chinese Society for Plant Pathology