

Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

Leaf-to-leaf spore dispersal of rust induced by rainsplash¹

HYUNGGON PARK, Virginia Tech, SEUNGHO KIM, Cornell University, HOPE GRUSZEWSKI, DAVID SCHMALE III, Virginia Tech, SUNGHWAN JUNG, Cornell University, JONATHAN BOREYKO, Virginia Tech — Rainsplash is an important dispersal mechanism for plant pathogens, but the underlying fluid dynamics are poorly understood. We studied how spore-laden satellite droplets, ejected from rainsplash on a diseased leaf, can subsequently stick to healthy leaves. This natural process was mimicked by rebounding microscopic droplets from an angled superhydrophobic substrate onto an adjacent wheat leaf that was horizontally oriented. The droplets either skipped along the wheat leaf or became stuck, depending upon the droplet's inertia, the orientation of the anisotropic leaf structure with respect to the droplet's path of motion, and whether the leaf was untreated or sprayed with a fungicide. A model successfully demarcated skipping versus sticking behavior by comparing the droplet's inertia against the surface energy required for dewetting to occur upon impact.

¹This work was supported by the USDA National Institute of Food and Agriculture (Award No. 2018-67013-28063) and by Virginia Techs BIOTRANS program.

Hyunggon Park
Virginia Tech

Date submitted: 22 Jul 2019

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