

The Making of Socio-ecological Resilience Requisite Variety as a Condition for Addressing a Global Banana Disease

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Abstract

The spread of Panama disease, caused by the soil-borne fungus *Fusarium oxysporum* f. sp. *cubense* (Foc), threatens banana production in plantations, smallholder farms, or backyards in the Philippines. This threat cuts across organizational boundaries and urges different actors to respond. Most likely, different organisational actors will first act in line with their own logics, preferred solutions, or management styles. However, the threat posed by boundary-crossing plant diseases also has a systemic dimension and the scale makes it relevant to identify places to intervene in the system. The notion of socio-ecological resilience asks the question whether the system, connecting distinct organizational actors with biological properties of the disease, has the ability to cope with change and continue to develop. This translates into an interest in understanding whether such a threat catalyses renewal and innovation or whether institutional rigidity obstructs this. The use of business system thinking, connecting rules and practices in private and public realms, and innovation system thinking, exposing mediating, feedback and selection mechanisms, supports an integrative approach to identifying institutional conditions under which socio-ecological resilience is made or obstructed. This discussion is rooted in co-evolutionary thinking, which emphasises requisite variety of organisational actors and pathways as a condition for making resilience and deviating from locked-in R&D processes. Therefore, it seems relevant to determine whether the required variety of pathways, interests, and perspectives is in place for constituting socio-ecological resilience and human capacity to manage diseases, especially when export-oriented plantations operate adjacent to neighbouring small-scale farms producing for export or domestic markets and backyard gardens producing banana as food crop.