

66th FEFCO

Forest Ecosystem Function Colloquium (FEFCO) は、地域や地球全体のレベルで森林生態系の機能とその持続的活用法を統合的に理解することを目的とし、研究者間の学術交流を推進します。

第66回森林生態系機能コロキウムは、Rocky Putra博士にご講演いただきます。どなたでも参加できますので、多くの皆様のご参加をお待ちしております。京都大学大学院アジア・アフリカ地域研究研究科東南アジア地域研究専攻 (nakamura.ryosuke.7x@kyoto-u.ac.jp) がホストを務めます。

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2024/1/26 16:30 - 18:00

Faculty of Agriculture Main Building, W414



↑ Zoom form for registration

Dr. Rocky Putra,
(Researcher, Chemical Ecology, Bielefeld University, Germany)

Metal, Metalloid and Metabolite (M³): Relevance of chemical ecology for plant-environment interactions

Plants play a pivotal role as a main producer in the ecosystem. Intricate interactions in the food webs are highly mediated by bio(chemistry), such as metals, metalloids and metabolites (M³), namely chemical ecology. This colloquium will present novel insights into complex interactions among plants and soils facilitated by the M³, as well as how such interactions impacted aboveground plant-arthropod interactions. In the first 45 minutes, the topic will be related to the functional role of the metalloid silicon (Si) in leguminous plants (Fabaceae). This was a comprehensive study examining the overlooked interactions between Si and nitrogen-fixing bacteria (rhizobia) in the root nodules of *Medicago* legumes from multiple experiments conducted in the glasshouse and in the field. In one of the glasshouse studies, Si supplementation significantly resulted in higher concentrations of nodule (iso)flavonoid metabolites, which might play a role as Nod-gene inducers and chemoattractants of rhizobia. In the last 25 minutes, the topic will switch to metal(loid) hyperaccumulator plants, such as the cadmium (Cd) and zinc (Zn) hyperaccumulator, *Arabidopsis halleri* (Brassicaceae). Soil amendments of Cd and Zn as well as supplementation of Si were found to influence foliar concentrations of glucosinolates, typical specialised metabolites of Brassicaceae, in different accessions of *A. halleri*. Finally, the evidential *raison d'être* of metal(loid) hyperaccumulation, which is the elemental defence hypothesis, will be presented and then incorporated into chemodiversity aspects to better understand the ecology and evolution of metal(loid)-hyperaccumulating plants in the environment. This work is anticipated to contribute to the emerging phytoremediation and/or phytomining endeavours.

Photo by Rocky Putra