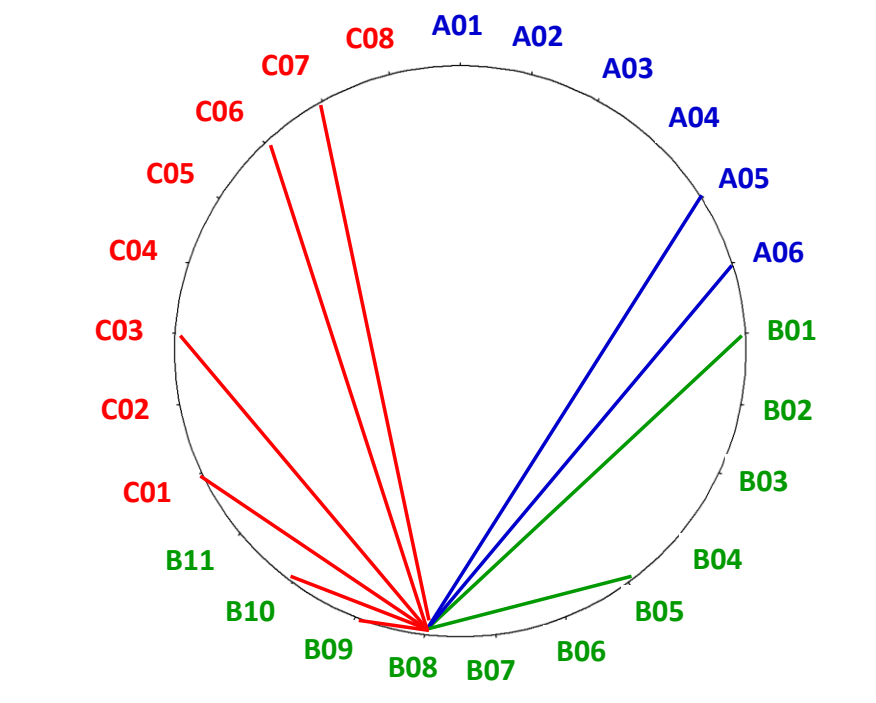


Structure and functioning of the decomposer system in lowland rainforest transformation systems

B08

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Background

- The decomposer system is responsible for major functions of terrestrial ecosystems: e.g., litter decomposition, soil formation and mineralization of nutrients
- Different decomposer energy channels: bacterial and fungal channel
 - Major bacterial feeding soil protists: testate amoebae (Testaceae)
 - Major fungal feeding soil invertebrates: oribatid mites (Chelicerata, Acari)
- Driving forces of decomposer food web of tropical forests are little understood

Goals

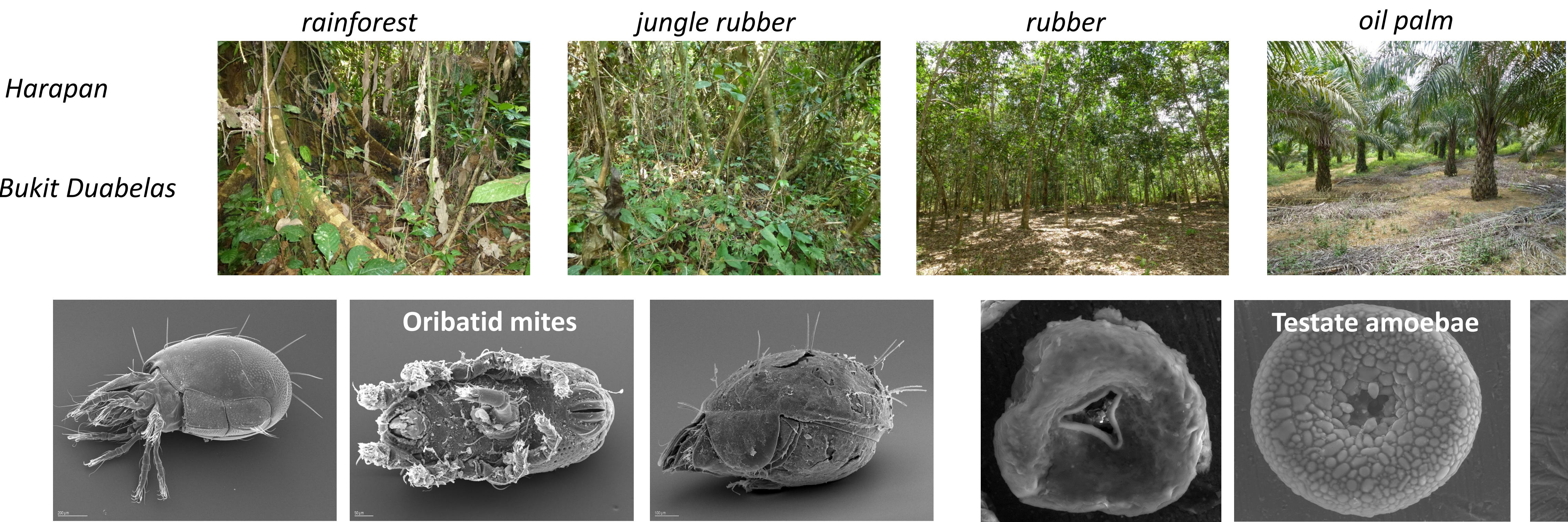
- ➔ Uncovering major driving factors for soil animal food web
- ➔ Relating changes in land use to structure and functioning of the decomposer system
- ➔ Predicting how soil food web and the services it provides change along gradients of anthropogenic land use intensity
- ➔ Uncovering generalities on the structure, driving forces and functioning of soil animal communities of forests on regional and global scale

WP1: Soil fauna as affected by transformation of lowland rainforest:

- Quantitative sampling of soil fauna at 32 core sites with focus on oribatid mites and testate amoebae

Current Status:

- ✓ 1st sampling of all transformation sites in Harapan landscape and Bukit Duabelas completed
- 2nd sampling in Nov. 2013

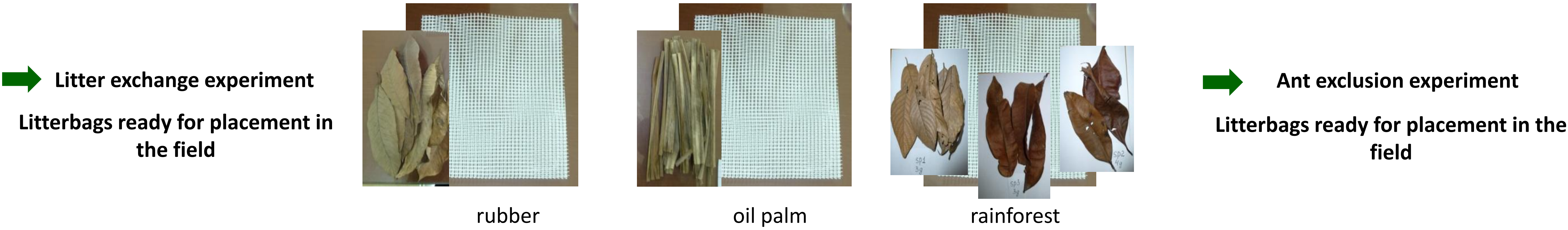


WP2: Decomposition processes in lowland rainforest transformation systems as affected by top-down forces

- Analysis of decomposition of leaf litter accross transformation systems
- Evaluating the role of cursorial predators, in particular ants, as driving factor for decomposition processes
- ➔ Contribution of litter decomposition to carbon and nutrient cycling
- ➔ Role of food web interactions for ecosystem functioning

WP3: Bottom-up forces as driving factors for the soil micro- and mesofauna

- Role of litter quality as regulatory force for soil microorganisms, soil micro- and mesofauna
- Analysis of stoichiometric mismatch between resources (litter) and consumers (decomposers and predators)
- ➔ Role of bottom-up forces in soil food webs of different transformation systems
- ➔ Role of stoichiometry as structuring force in soil food webs



Collaborative research projects

- Reconstruction of the past climate (A01 Behling)
- Effects of ants on soil fauna and decomposition processes (B09 Clough)
- Analysing taxonomic composition of soil animal species (Dr. Rahayu Widyastuti, IPB)
 - Temporal dynamics of soil fauna in oil palm plantations
 - Microhabitats of oil palm plantations
- Analysing microbial biomass using Ultrasonic Processor and Fumigation Extraction, abiotic parameters such as water content, pH and organic layers (Dr. Rahayu Widyastuti, Dr. Gunawan Djajakirana, IPB)
- Determination and archiving of Collembola species (Dr. Yayuk R. Suhardjono; LIPI)
 - Molecular barcoding of Collembola species and determination work on soil microfauna