

Title: **Impacts of nitrogen addition and plant diversity on soil fauna in grassland ecosystems**

Speaker's name: **Thu Zar Nwe**

List of authors: Thu Zar Nwe, Santiago Soliveres, Anne Kempel, Eric Allan & Nadia I. Maaroufi

Affiliation: Institute of Plant Sciences, University of Bern

Abstract: Several studies have provided evidence that nitrogen enrichment can alter plant communities directly, or indirectly by changing plant richness and functional trait composition. However, it is unclear what the relative importance of these drivers is in affecting important soil fauna groups, detritivore and predatory mites, in temperate grasslands. We conducted a large grassland experiment that tested the effects of nitrogen addition, plant functional composition and diversity, and foliar pathogen presence (controlled by fungicide) on soil decomposer and predatory mites (total, adult and juvenile abundances and adult-juvenile relative abundance). We also examined effects of plant nutrient content and plant biomass (root and shoot). The results showed that nitrogen addition and high soil C:N ratio increased soil mite abundances (total, Oribatida juveniles and Mesostigmata adults). Further, high plant functional diversity increased total and adult predatory mite abundances, while fungicide application reduced the number of juveniles. We also found that the C:N ratio significantly decreased the proportion of Oribatida (detritivores), but increased Prostigmata-Astigmata abundances in fast-growing compared to slow-growing plant communities. The proportion of Mesostigmata (predators) was increased at high plant functional diversity. Interestingly, root biomass significantly increased adult Oribatida, while above-ground biomass increased overall mite abundances. Our results suggested that nitrogen addition and soil C:N ratio were key drivers of the abundance of soil mites and their trophic groups in temperate grasslands.