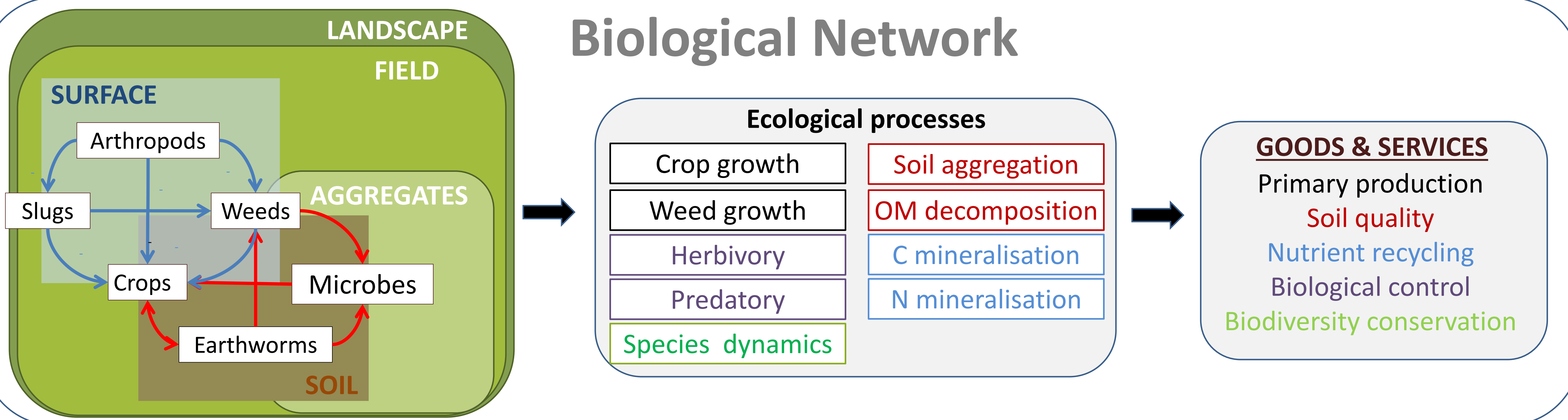


Context

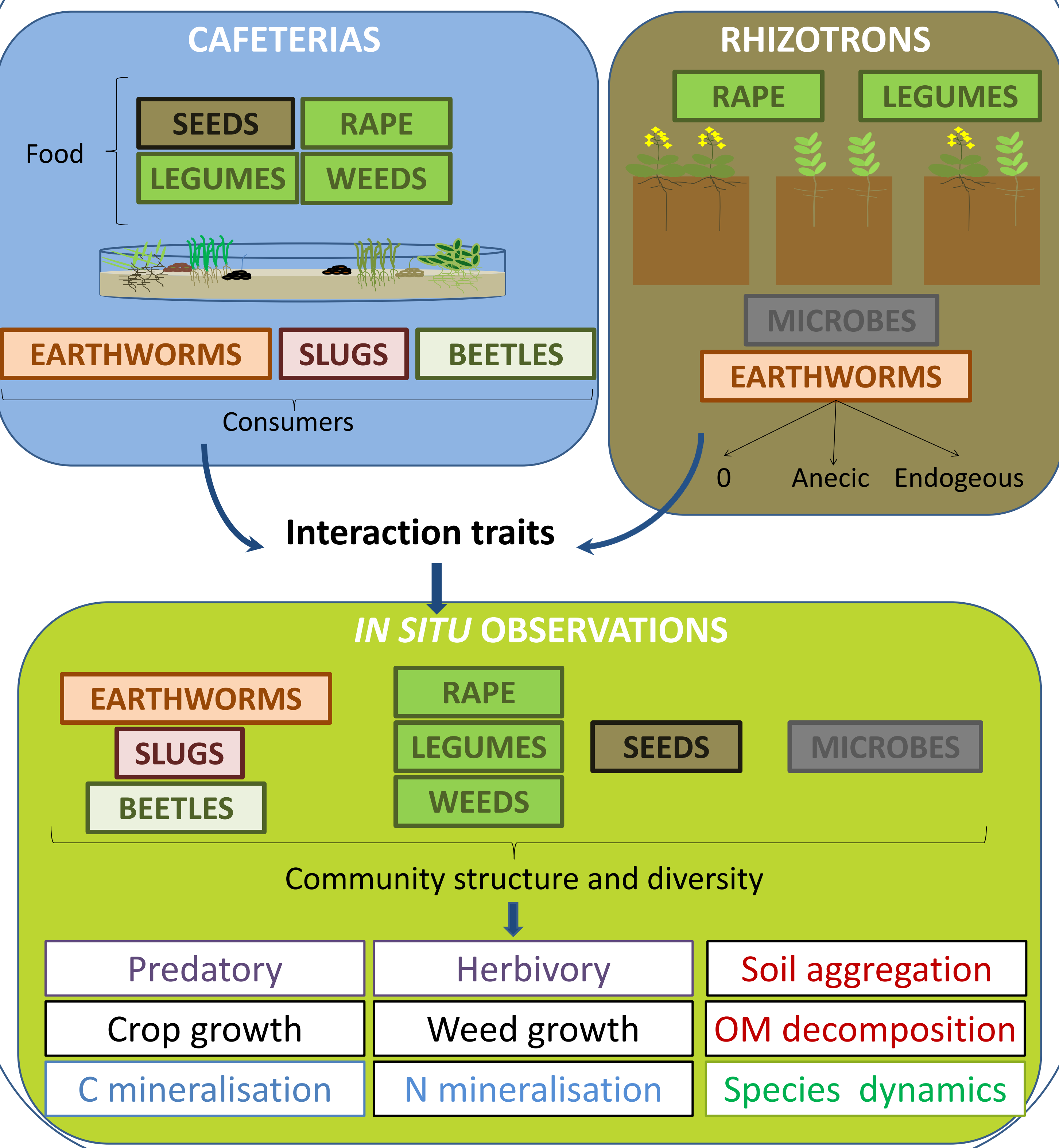
While the earth population is expected to increase in the next few decades (FAO, 2014), conventional agricultural practices that tend to increase crop yield are more and more questioning due to the intensive use of pesticides and their negative effects on health, food quality environmental pollution and biodiversity (MEA, 2005). Moreover, soils contain 25% of known living species which contribute to soil functioning and the provision of goods and services (Briones et al. 2014). Rape (*Brassica napus* L.) crops are very sensitive to pest attacks and are one of the most pesticide consumers (Agreste, 2011) leading to non negligible negative environmental balance (Bouchard et al. 2011). To reduce environmental impacts of rape cultures and increase soil fertility, there is a growing interest in legumes cover crop (Hartwig & Ammon, 2002). However, there is still a lack of knowledge on mechanisms of soil functioning and the particular role of soil biodiversity including multi-trophic interactions for the provision of goods and services in cropland (Briones et al. 2014).

Objectives : Our multidisciplinary project aims to answer these following questions: 1) What is the role of soil functional diversity as well as the multi-trophic interactions in soil functioning ? 2) What is the role of legume cover crops in rape resistance to pest and how they modify the soil multi-trophic interactions ? 3) What are the implications of multi-trophic interaction and legume cover crops in the provision of goods and services in rape crops ? To this end, a functional traits approach will be used to characterize soil biodiversity (Pey et al. 2014).and trophic interactions (Lavorel et al. 2013).

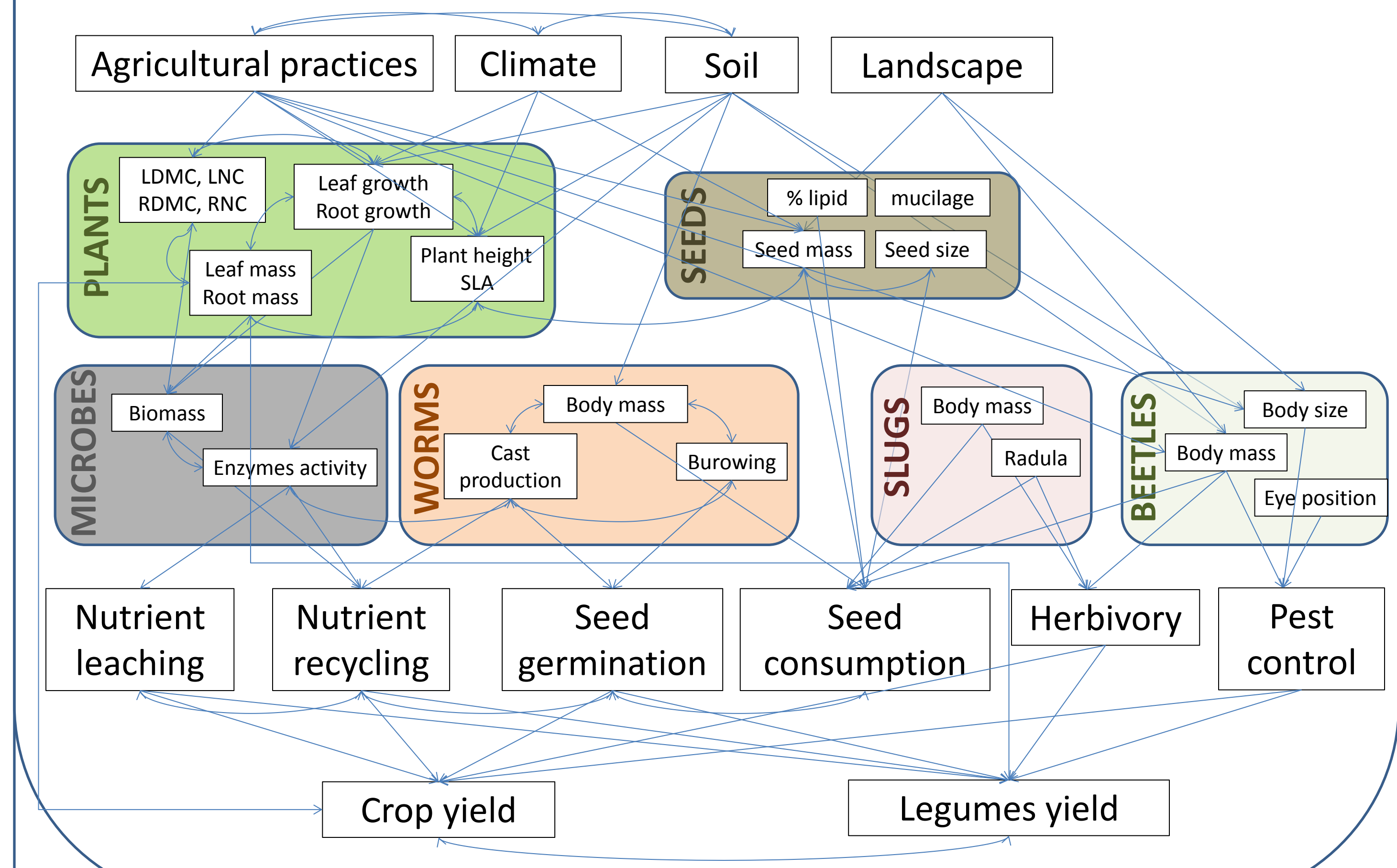
Biological Network



Experimental approach



Diversity and ecosystem functioning relationships



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