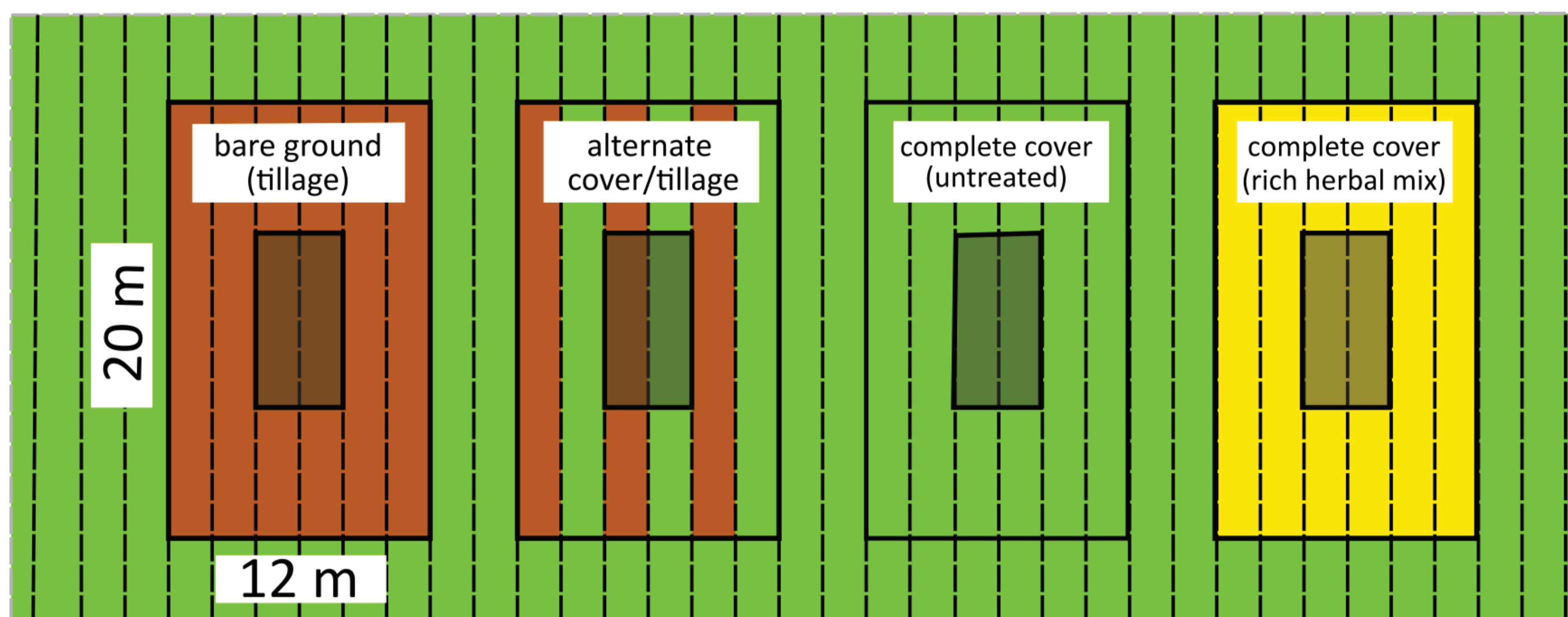


Introduction

The interaction between biodiversity and ecosystem services (ESS) is recognized to play a key role in the context of sustainable agricultural systems requiring as few external inputs as possible. Vineyards can provide high levels of biodiversity inside the cropped area, which cannot be found in annual cropping systems. Therefore, viticultural systems provide ideal conditions for analyzing biodiversity and ESS relevant for the winegrower.

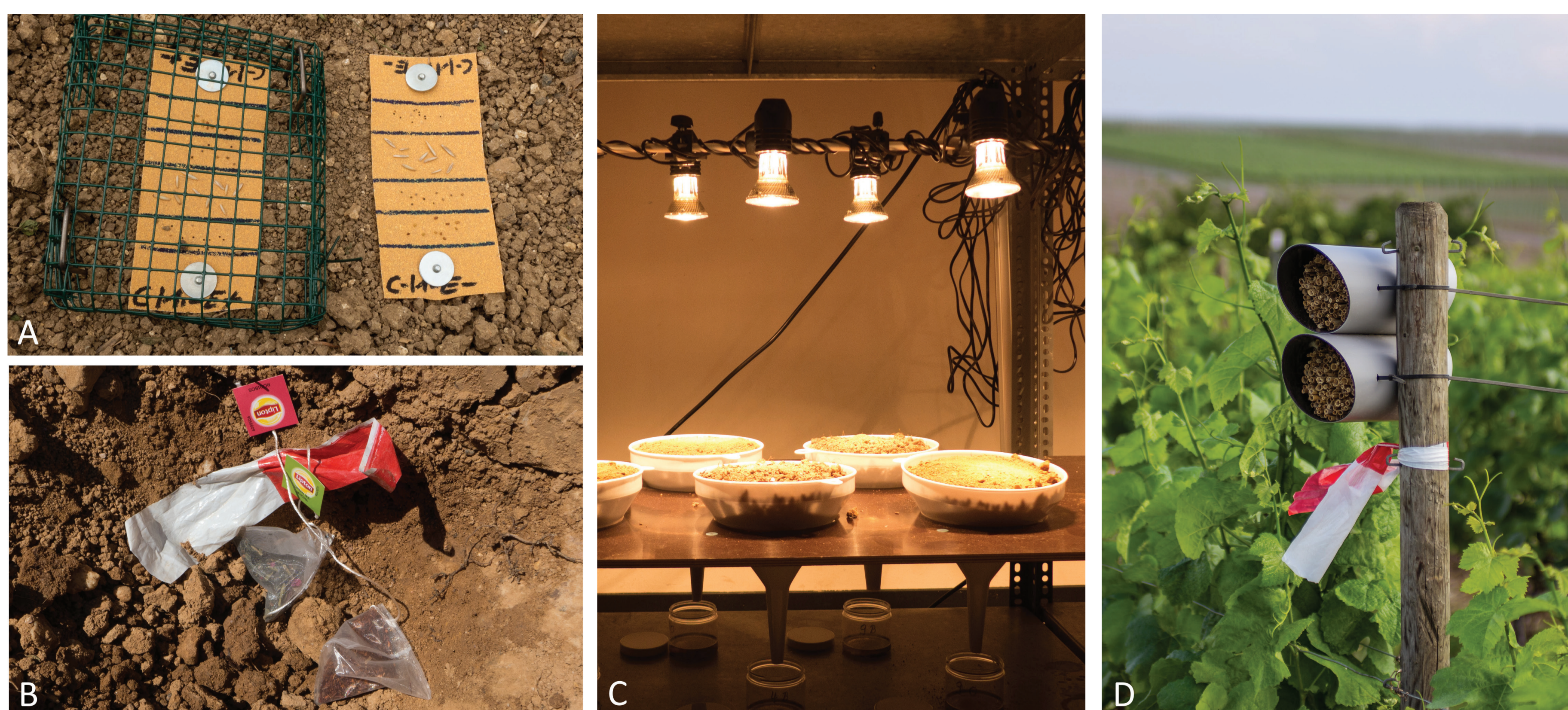
Our research is part of a European project carried out in temperate vine-growing regions in Germany, France, Switzerland, Austria and Romania. In a study with all countries involved, we analyze the links between the diversity of relevant species groups and corresponding ESS, applying standardized methods in an experimental design.

Ground management



In each of nine vineyards, four experimental plots of different ground management types have been installed. Colored rectangles indicate soil treatments between vine-rows (dashed lines). Within the center of each experimental plot (shaded rectangles), we will assess biodiversity (e.g., soil surface arthropods, soil macroarthropods, microbial community) as well as ESS (e.g., organic matter decomposition, soil fertility, pest control).

Selection of methods



Numerous methods will be applied to assess biodiversity and related ESS. The figure above shows a selection of methods that have been adapted to our approach: A: seed cards (→ weed control), B: Tea Bag Index (→ litter decomposition), C: Berlese Extraction (→ microarthropods), D: Trap Nests (→ solitary bees and wasps).

Aim

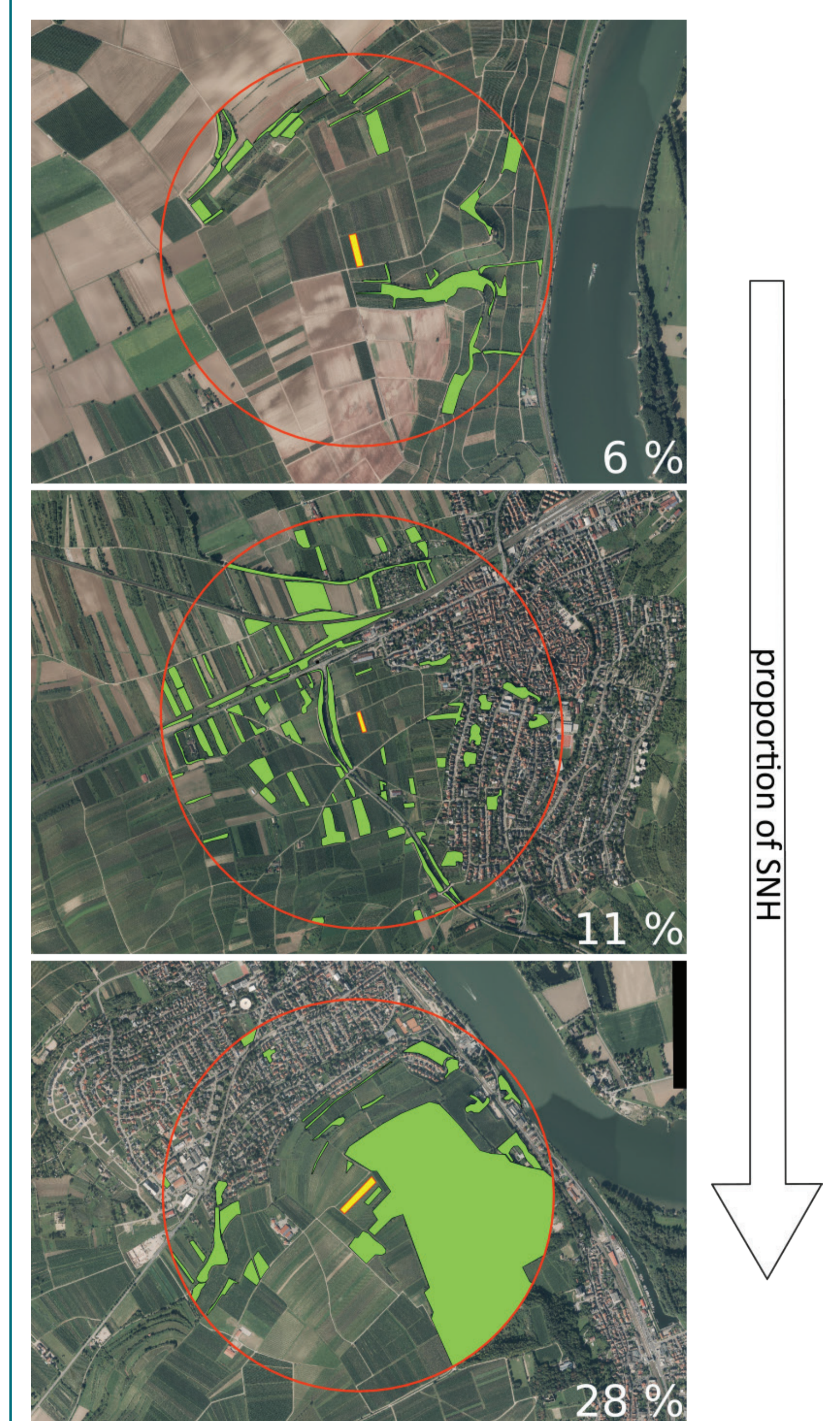
Provision of management options in vineyard systems in order to improve biodiversity-linked ESS

Objectives

Investigation of biodiversity driven processes associated with ESS by analyzing management effects on two spatial scales:

- Ground management
- Landscape heterogeneity

Landscape heterogeneity



Vineyards (yellow) have been chosen in order to reflect a gradient of heterogeneity of the landscape surrounding the respective vineyard. As a measure for landscape heterogeneity, the proportion of semi-natural habitats within defined areas (SNH, green) has been calculated. The red circle indicates an 800 m radius.