

BioDive4Soil – A systematic assessment of soil biodiversity



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BioDive₄Soil

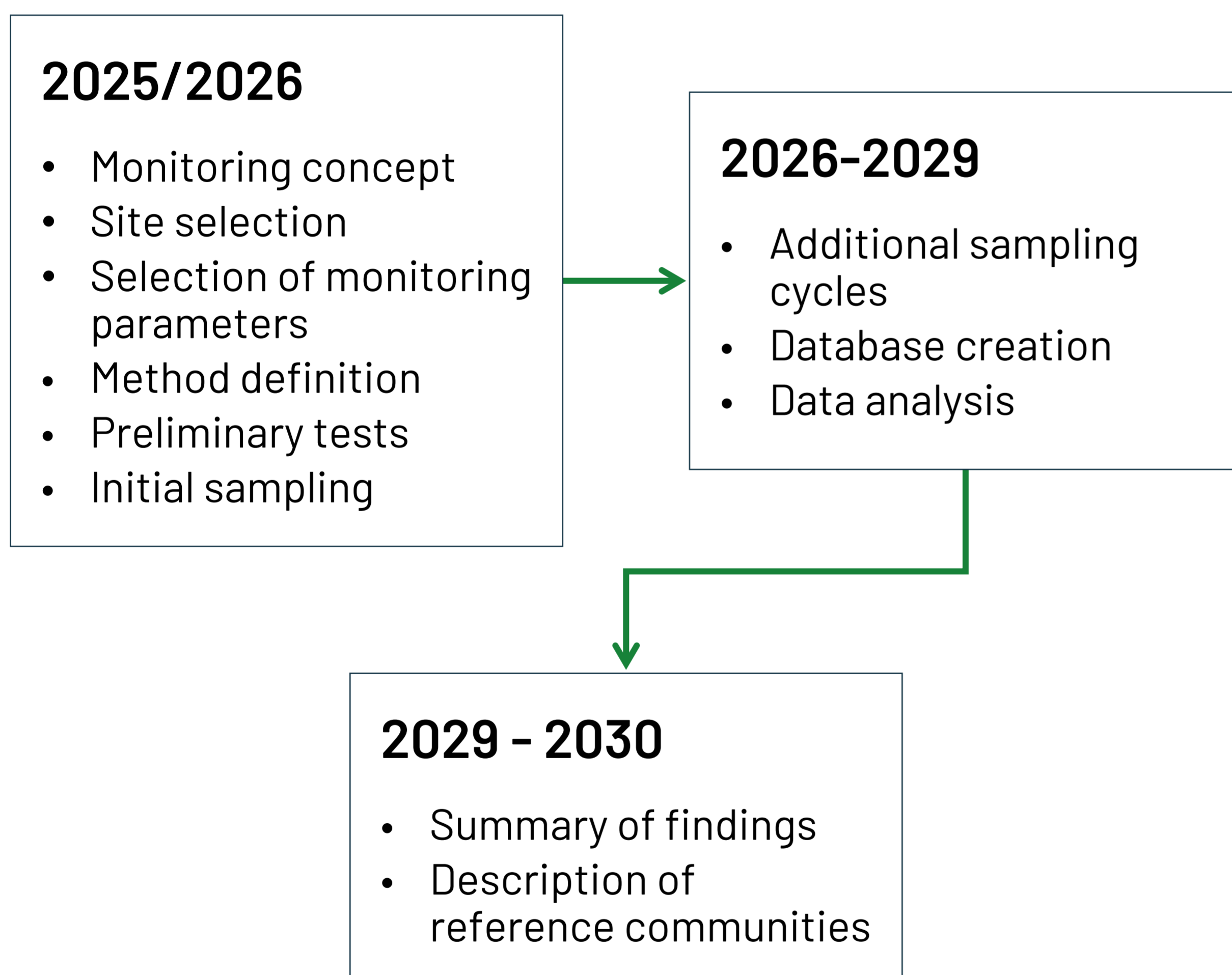
Background

Soils are among the most biodiverse habitats on earth. A single gram of soil can contain billions of microorganisms as well as numerous representatives of various groups of soil animals. These organisms regulate key ecosystem functions such as nutrient cycles, humus formation, the breakdown of pollutants, water retention and the stabilization of soil structure. To date, despite its importance, there has been no systematic monitoring of soil biodiversity in Germany. The BioDive4Soil project aims to develop a standardized monitoring concept and is conducting the first nationwide German soil biodiversity surveys across various land uses, climate conditions and soil types.

Project Objectives

- Identification of habitat-specific soil organism communities
- Analysis of environmental and land-use factors as drivers of biodiversity
- Development of biological indicators and thresholds for the assessment of biological soil health
- Standardization of methods for future soil biodiversity monitoring surveys

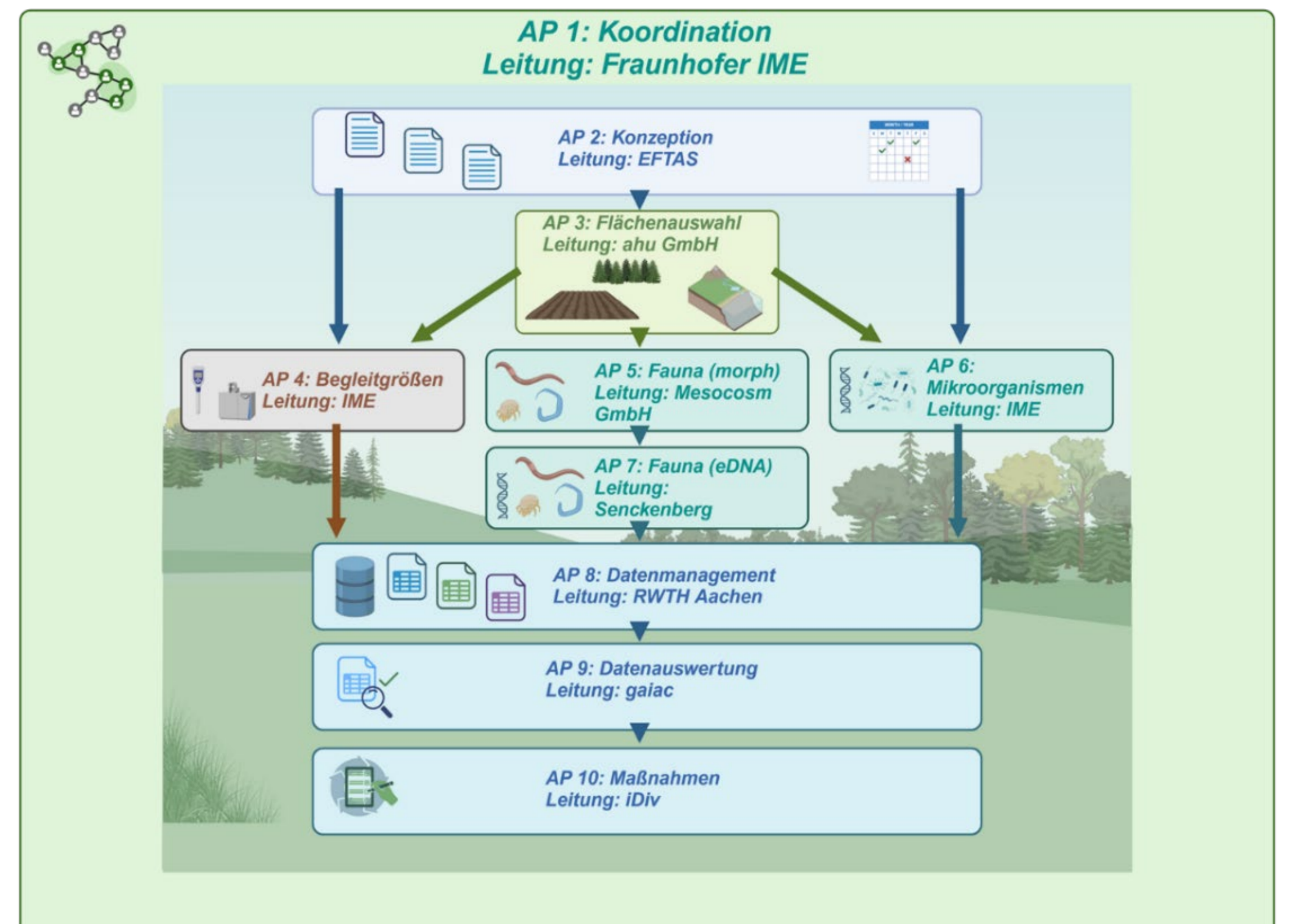
Road Map



Significance and Synergies

For the first time a systematic database on soil biodiversity in Germany is being created by BioDive4Soil, supporting the development of biological indicators and thresholds for assessing soil health. By linking with existing monitoring programs, sharing methods and best practices, the project generates important synergies for long-term soil biodiversity monitoring. The collected data will be integrated into a database for soil organisms and contribute to the implementation of the EU Soil Monitoring Law (SML), which aims for Europe-wide monitoring of soil health.

Project structure



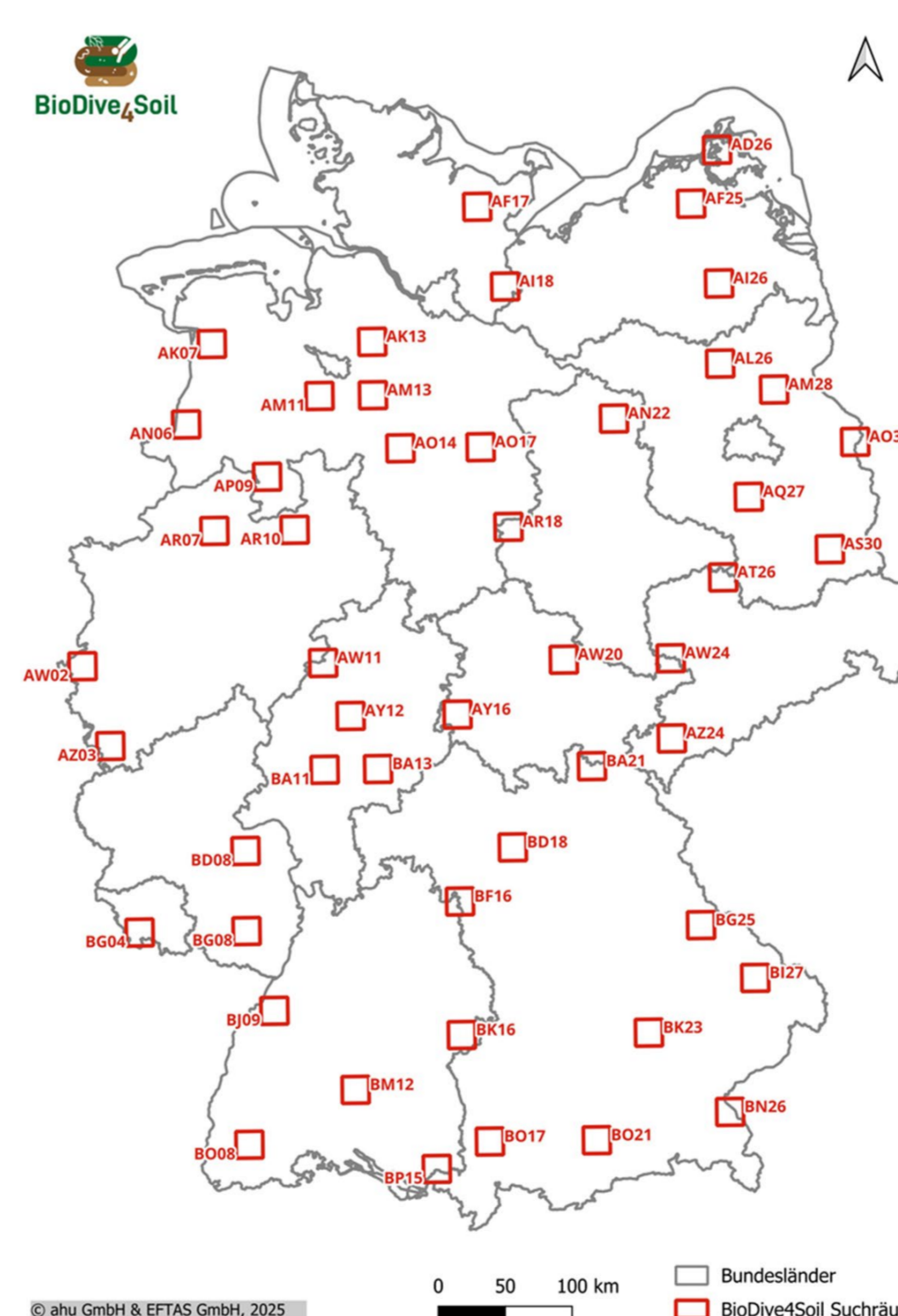
Research Approach

BioDive4Soil studies key groups of soil biota (Lumbricina, Enchytraeidae, Collembola, Oribatida, Mesostigmata, Nematoda) and soil microorganisms (fungi and bacteria).



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Sampling is conducted in forests, grasslands, and croplands with various soil types throughout Germany and combines traditional soil ecology methods with molecular biology approaches.



Forest in its natural state	Code	Sampling sites
1 Old acidophilous oak woods with <i>Quercus robur</i> on sandy plains	9190	12
2 Luzulo-Fagetum beech forests	9110	12
3 Asperulo-Fagetum beech forests	9130	12
4 Cephalanthero-Fagion	9150	12
5 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	9160	12
Open countryside in its natural state		
6 European dry heaths	4030	12
7 Species-rich <i>Nardus</i> grasslands, on silicious substrates in mountain areas	6230	12
8 Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>)	6510	12
9 Mountain hay meadows	6520	12
10 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>)	6210	12
Standard landscape (derived, significant units)		
11 Pine forest	1	12
12 Spruce forest	2, 3	24
13 Mixed deciduous forest	2, 3, 4, 5	24
14 Cultivated grassland	2, 3, 5	24
15 Arable land (sand)	1	16
16 Arable land (silt/loam/clay)	2, 5	32

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