



## **Effect of the Cover Crop cultivation on the Maize soil and root bacterial microbiomes**

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Crop rotation is known from millenia as the one of the best agronomical practice in plant cultivation. Rotation of plant crops is beneficial due to erosion prevention, nutrients retention, and many other factors for soil quality and improvement. Mostly, single catch crops are applied, but the benefits of diverse mixtures of catch crops are not yet clear. A long-term field experiment of the CATCHY project (Catch-cropping as an agrarian tool for continuing soil health and yield-increase) with two contrasting crop rotations was established in two different locations in Northern (Asendorf) and Southern (Triesdorf) Germany. Single catch crops (white mustard, Egyptian clover, phacelia and bristle oat), catch crop mixtures (a mixture of the above and a commercial mixture) and main crops (wheat and maize) have been grown. To investigate how catch crops can affect the microbial diversity and community composition, we were studying first the short-term effect of different catch crop mixtures on the microbiomes associated with soils and roots of the next main crop, maize. Roots, rhizosphere and bulk soils were collected from representative samples of triplicate field plots, including fallow treatments.

Changes of the bacterial populations in the bulk soil, rhizosphere soil and root microbiomes of maize were investigated by Illumina Miseq amplicon sequencing of the targeted rRNA, and protein encoding *nifH* genes. Effects of the cover crop cultivation were compared with fallow soil treatment as control, relative abundance, alpha and beta diversity analyses were performed.