

**Session Biosphere: April 12th 11.30 hrs**

**1s3 The contribution of biodiversity to productivity in circular agriculture**

## **AGROECOLOGY FOR BIODIVERSITY**

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Agroecology has been identified as an approach to address multiple crises in the agricultural system. It offers an opportunity to design, develop and promote a transition towards biodiversity-enhancing, low environmental impacting, and socially fair and economically sound farming systems. This paper focusses on the role of biodiversity in these farming systems. We interviewed 17 agro-ecological farmers representing CSA, agroforestry, dairy and mixed farms in the Netherlands. Through these interviews we gained insight in how farmers define and value biodiversity and what drives them personally. We surveyed the farmers on measures they take to enhance biodiversity in their farming system. On 3 CSA and 3 agroforestry farms we assessed biodiversity on 3 distinct locations by monitoring flora and fauna in hedgerows, flower strips and cropped areas year-round. Additional measurements of soil microbial biomass during wintertime have been done to get more insight in the importance of natural elements for enhancing biodiversity.

Agroecological farmers have the ambition to farm and produce healthy food in harmony with nature for the local and regional community. They value the beauty of biodiversity and consider it the basis of a resilient system. Next to above ground biodiversity and crop diversity, farmers express the importance and complexity of soil life. To reduce the direct interference in natural processes as well as to reduce the impact on biodiversity by farming practices, farmers choose to avoid application of artificial fertilizer or pesticides. Instead large amounts of high quality manure or compost are being applied to stimulate soil life. At some farms composting receives a lot of attention whereby farmers experiment with incorporation of specific woody types of composts to stimulate fungi and mycorrhiza. On farm level various other measures are taken to promote biodiversity including the establishment of natural elements like hedgerows and flower strips, a large diversity of crops, minimal or no tillage, and flowering plants during the whole season. Biodiversity in terms of 'number of species' of flowering plants and (soil) fauna was largest in undisturbed areas like hedgerows, flower strips, small fruit, and grassland fields. Soil microbial biomass, fungi, and mycorrhiza were strongly correlated with soil C content.

Our current findings illustrate how agroecological practices can be an inspiration for farmers and other stakeholders to enhance biodiversity in socially fair and economically sound farming and food systems.

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*Keywords: Agroecology, biodiversity, management, inspiration*

