

Maintenance of small landscape elements in Flanders can contribute to soil quality - the wood chips story

The agricultural landscape in Flanders is often characterized by a mosaic of fields, meadows and orchards, bordered with small landscape elements such as wood edges, shrubs, tree rows, hollow roads, etc. Historically, these landscape elements had several practical functions: prevention of wind erosion, production of firewood, demarcation of fields, fencing of meadows etc. They are also important habitats for all kinds of plant and small animal species. However, in the last decades these landscape elements are disappearing because of intensification of agriculture. The remaining elements are not properly maintained anymore, although regular maintenance of the hedgerows is needed to maintain a sustainable use of the adherent fields. The wood waste resulting from this maintenance is often used as biofuel, but the small fractions are not suited for this. Instead, they could be shredded and applied in agricultural fields to improve soil organic matter content and soil quality in general. In Flanders we see indeed that low soil organic matter contents are an actual issue, so the application of ramial wood chips could offer an interesting solution. In this contribution and based on results from experimental fields we will discuss the possibilities of this technique for improving the physical, chemical and biological soil quality of Flemish arable plots. In addition results will be presented in the broader context of closing nutrient cycles and providing ecosystem services: landscape management, carbon storage in the soil and biodiversity.

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A methodology to assess the impact of agricultural practices in the Water-Energy – Food Nexus

By 2030, it is estimated that the world population will be 8.3 billion people, increasing the pressure in energy, water, food, land use and mineral extraction, especially in the developing world. These estimates indicate the immediate need to adopt interventions that can minimize these impacts. There is a lot of talk about sustainability, but it is still rare to make the results of integrated evaluations available on various topics. When considering the integrated Nexus Food-Water-Energy (F-W-E) assessment, this fact is even more challenging.

Considering the importance of the agricultural sector in Brazil and the existence of areas in different stages of degradation, it becomes strategic for interventions that can generate socio-economic and environmental benefits and positive impacts to the tripod F-W-E. Thus, the present proposal will be based on the Ribeirão das Lajes dam (RJ), a core area for the water supply of the second largest city in Brazil – Rio de Janeiro.

A methodological approach able to generate an integrated assessment tool to evaluate the impact of agriculture practices in the Nexus F – W - E will be presented. We used secondary official data as the main input for this tool. One of the reasons is to make it accessible for different stakeholders and decision makers. It can help to get better decisions regarding land use intervention - which may be technical or political.

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Functional Land Management for identifying regional transition pathways for sustainable development: an example from the Nordic region

The increase in the demand for biobased products worldwide is providing an opportunity for Eastern European countries to recover their agricultural and forestry activities, which previously collapsed as a result of historic political changes. At the same time, such economic recovery must be congruent with the long-term climate and biodiversity objectives of the EU. As a country rich in bioresources, Latvia is a highly relevant case study of the Eastern European region, and faces a choice of transition pathways to meet both economic and environmental objectives. The expansion of the agricultural sector gives an immediate economic return, but at the expense of increased GHG emissions. Contrastingly, expansion of the forestry sector leads to long-term investments in the economy, increased carbon sequestration and the provision of habitats for biodiversity. In order to assess the trade-offs between short term investments in the bioeconomy and the achievement of long term climate and biodiversity objectives, we used the Functional Land Management framework for the quantification of the regional supply and demand for the primary productivity, carbon regulation and biodiversity functions.

Our results shows that the balance between the supply and demand for soil functions varies at regional scale, depending on land use and soil characteristics. This, in turn, defines local land use changes and improvements in management practices that are most likely to meet the socio economic and environmental targets simultaneously. Changes in the CAP post 2020 provide opportunities to create targeted and region-specific instruments for the development of the agricultural and forestry sectors.



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