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Austrian Carbon Calculator (ACC) - modelling soil carbon dynamics in Austrian soils

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Austrian Carbon Calculator (ACC) – modelling soil carbon dynamics in Austrian soils.
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Climate change will affect plant productivity due to weather extremes. However, adverse effects could be diminished and satisfying production levels may be maintained with proper soil conditions. To sustain and optimize the potential of agricultural land for plant productivity it will be necessary to focus on preserving and increasing soil organic carbon (SOC). Carbon sequestration in agricultural soils is strongly influenced by management practice.
The present management is affected by management practices that tend to speed up carbon loss. Crop rotation, soil cultivation and the management of crop residues are very important measures to influence carbon dynamics and soil fertility. For the future it will be crucial to focus on practical measures to optimize SOC and to improve soil structure.
To predict SOC turnover the existing humus balance model the application of the „Carbon Candy Balance“ was verified by results from Austrian long term field experiments and field data of selected farms. Thus the main aim of the project is to generate a carbon balancing tool box that can be applied in different agricultural production regions to assess humus dynamics due to agricultural management practices. The toolbox will allow the selection of specific regional input parameters for calculating the C-balance at field level. However farmers or other interested user can also apply their own field data to receive the result of C-dynamics under certain management practises within the next 100 years. At regional level the impact of predefined changes in agricultural management and crop rotations on the C-dynamics will be demonstrated.
Taking data on yield productivity under consideration the project also aims at developing recommendations for an optimal soil management under changing climatic conditions. The results will be applied, demonstrated and assessed in selected test regions in Upper and Lower Austria and discussed with key stakeholders and scientific experts.
Thus, the project shall build the knowledge base for the potential of soil carbon sequestration in agricultural soils for Austria with regard to different soil management practices including crop rotations better adapted to climate change.