

## HUNTER – Developing, Testing and Introducing an Excel Tool for sustainability benchmarking in plant production

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In the joint project “Climate Effects and Sustainability of Agricultural Systems – Analyses in a Network of Pilot Farms” almost 80 farms and diverse scientific institutions have been working together throughout Germany to compare and benchmark their plant production. For calculating various balances at the farm-level we used a special program called REPRO (REPROduction of soil fertility). With REPRO it is possible to make a very detailed analysis of a farm, but this requires a lot of time and thorough knowledge of the software. Our goal, in the context of the network of Pilot farms was to develop a free and easy to use tool for making these calculations.

The HUNTER tool (acronym for HUmus, Nutrition, Total greenhouse gases and Energy Reckoning) is based on Excel and consists of different input-sheets to be filled in by the user. Data for a complete year is required but one is free to decide how detailed and precise the results should be. After finishing the first sheet, the user already has results for the humus and nutrition balances. Other input-sheets are concerned with tillage, plant protection, mineral and organic fertilization and harvesting. HUNTER automatically calculates balances for energy use and greenhouse gas emissions and the results are shown in tabular and chart form. A very useful feature is the comparison of many farms in a scatter-plot, enabling scientists and farmers to see how different farms compare in these important parameters.

The dataset for comparing ones own farm with other farms derives from long-term calculations in the network of Pilot farms for energy use and the ongoing collection of new data for greenhouse gases.

During numerous visitations for data collection at the farms, we occasionally presented farmers with current results for their farms. Farmers were interested to see how their farms compared with other farms. They were especially interested in differences between the groups practicing organic farming and those using conventional methods. With the exception of humus and nitrogen, most farmers did not have experience with the other parameters. This lack of scientific background requires, on the one hand, some brief introductions within the HUNTER tool, and on the other hand, good counseling by the consultants. A practiced consultant can use the results from HUNTER to give advice for improving the sustainability of a farm. First results of calculations with HUNTER will be presented.

**Keywords:** humus-balance, energy balance, nitrogen balance, sustainability benchmarking, plant production, greenhouse gases, do-it-yourself-tool



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