

Table of Contents

[In Press](#)[Online First](#)[Article Archive](#)[SWR \(13\) 2018](#)[SWR \(12\) 2017](#)[SWR \(11\) 2016](#)[SWR \(10\) 2015](#)[SWR \(9\) 2014](#)[SWR \(8\) 2013](#)[SWR \(7\) 2012](#)[SWR \(6\) 2011](#)[SWR \(5\) 2010](#)[Issue No. 1 \(1-38\)](#)[Issue No. 2 \(39-74\)](#)[Issue No. 3 \(75-119\)](#)[Issue No. 4 \(121-185\)](#)[SWR \(4\) 2009](#)[SWR \(3\) 2008](#)[SWR \(2\) 2007](#)[SWR \(1\) 2006](#)[Editorial Board](#)[Ethical Standards](#)[For Authors](#)[Author Declaration](#)[Instruction for Authors](#)[Submission Templates](#)[Copyright](#)[Guide for Authors](#)[Fees](#)[Submission/Login](#)[For Reviewers](#)[Guide for Reviewers](#)[Reviewers Login](#)[Subscription](#)

Changes of soil organic matter under minimum tillage in different soil-climatic conditions

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Quantitative and qualitative soil organic matter properties were observed in a specific large area experiment (Chernozem – Gross Enzersdorf, Austria) and in a medium-term field experiment (Cambisol – Studena, Czech Republic). Two technologies – minimum tillage (MT) and conventional tillage (CT) – were compared by means of the determination of quantitative and qualitative soil organic matter parameters of the soil samples in the years 2004–2005. Cambisol showed higher values of quantitative soil organic matter parameters in MT compared to those in CT over the whole soil profile. For Cambisol, the qualitative parameters were almost comparable for both technologies. Chernozem showed more favourable values of the quantitative parameters in the surface layer in MT, however, the values had rather a contrary trend in deeper soil layers. CT showed slightly more favourable values of the qualitative soil organic matter parameters in Chernozem. It can be said that Chernozem organic matter reaction to tillage technology changes is slower and of minor rate in comparison with that of Cambisol organic matter. The results of quantitative and qualitative parameters do not conform with the generally recognised values for the Chernozem soil type.

Keywords:

Cambisol; Chernozem; humus content and quality; humus fractionation; minimum tillage

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