



## Spatial heterogeneity of CO<sub>2</sub> emission in Hungarian and Croatian arable fields – preliminary results

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The aim of this study was to investigate the spatial heterogeneity of CO<sub>2</sub> emission of two different croplands in Croatia (Šašincev, 45° 50' N; 16° 11' E; soil type - Stagnosols) and in Hungary (Józsefmajor, 47° 40' N; 19° 36' E; Chernozems). The measurements of the soil water content (SWC), soil temperature (Ts), organic matter (OM) and CO<sub>2</sub> flux was executed after the harvest of the soybean in both fields. In a regular grid (2 x 2 m and 2 x 3 m) 44 and 170 samples were collected from Croatian and Hungarian site, respectively. At Hungarian site Ts and SWC showed relatively high spatial heterogeneity, ranging from 19.4 to 24.6 °C, and from 7.5 to 34.1%, respectively. Content of soil OM had lower variability ranging from 2.0 to 2.4 % at Croatian and from 3.2 to 4.5 % at Hungarian site, respectively. CO<sub>2</sub> efflux was 0.125 ± 0.078 and 0.060 ± 0.088 mg m<sup>-2</sup> s<sup>-1</sup> in average at Croatian and Hungarian field, respectively. Investigated properties did not follow normal distribution, so logarithm transformation were applied before modelling. Kriging interpolation model for mapping soil properties is tested to compare the prediction accuracy. Soil maps showed sufficient concentrations of soil OM at Hungarian site and insufficient concentrations of OM at Croatian site. Soil CO<sub>2</sub> efflux map showed that the largest part of the investigated area in Hungary have low loss of C, while loss of C at Croatian site is high. There are areas, especially wheeled rows, where CO<sub>2</sub> emission is lower than the average value of the field at both investigated site. These low CO<sub>2</sub> emission areas coincide with the compacted row of wheel tracks. For future management it is necessary to provide better conditioning of soil at Croatian site and adopt environmental friendly soil management at both sites.

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