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# Carbon dioxide emissions after application of different tillage systems for loam in northern China

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Tillage operations influence soil physical properties and crop growth, and thus both directly and indirectly the cropland CO2 exchange with the atmosphere. In this study, the results of CO2 flux measurements on cropland, under different tillage practices in northern China, are presented. CO2 flux on croplands with a winter wheat (Triticum aestivum L.) and maize (Zea may L.) rotation was monitored on plots with conventional tillage (CT), rotary tillage (RT) and no tillage (NT). Soil CO2 flux was generally greater in CT than in NT, and the RT CO2 flux was only slightly smaller than the CT. Daily soil CO2 emissions for CT, RT, and NT averaged 11.30g m-2, 9.63 g m-2 and 7.99 g m-2, respectively, during the growing period. Analysis of variance shows that these differences are significant for the three tillage treatments. Peak CO2 emissions were recorded on the CT and RT croplands after tillage operations. At the same time, no obviously increased emission of CO2 occurred on the NT plot. These differences demonstrate that tillage results in a rapid physical release of CO2.