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Greenhouse gas emissions in a faba bean crop: incluence of management practices and cultivars

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In this study we evaluated the effect of two cultivars of faba bean (Muchamiel and Palenca) with two different management practices (conventional and organic) on the direct emissions of N2O and CH4 during the crop cycle and their interaction with soil properties. The study was randomly designed in blocks with four replications, in plots of 10 m2. Faba bean crop spanned from 24 November 2014 to 2 March 2015. Gas samples were taken in different times (0, 30 and 60 minutes) once a week using the static gas chamber technique for crop cycle.
The results showed that accumulated N2O was higher for both cultivars under conventional management practice with comparison to organic management, with an average increase of 18.27 mg m-2 in Muchamiel cultivar and 8.95 mg m-2 in Palenca cultivar. Accumulated CH4 was higher in Palenca cultivar under conventional management practice, with an average increase of 455.28 mg m-2 over this cultivar under organic management practice. We observed significant negative correlations between N2O emission and β-glucosaminidase activity, and between CH4 and sodium content in soil. In addition, CH4 emission showed a positive correlation with the enzyme activities arylesterase and cellulase.

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