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INFLUENCE OF FOLIAR APPLIED MICRONUTRIENTS ON THE ESSENTIAL OIL AND FATTY ACID COMPOSITION OF CARAWAY (*CARUM CARVI* L.)

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Caraway (*Carum carvi* L.) is one of the most important spice crops worldwide. In Finland, it has become a hit agricultural product cultivated in over 1.500 farms and 20.000 hectares. Finnish caraway production fluctuated between 4.9-8.2 million kg during the period 2012-2016, while it reached a record 10.4 million kg in 2011. Most of the production is for export, where Finland holds a 1.4% share of the world's spice crop market. Caraway seeds contain between 1 to 7% oil, depending on whether the crop is annual or biennial, the latter usually accumulating more oil. The essential oil is mainly made of carvone, limonene and polyphenols, which have antioxidant activity and health promoting properties. Caraway, cv. 'Record', plant stand was established in 2016 at the Viikki Experimental Farm, Helsinki, Finland. In the second year, 2017, a field experiment was designed on the caraway plant stand using a randomized complete block design with four replicates and five treatments: a control and a foliar applied micronutrient of copper, magnesium, manganese or zinc. After milling seed oil was extracted using accelerated solvent extraction method. Essential oils and fatty acids were measured using solid phase microextraction (SPME) and gas chromatography – flame ionization detector (GC-FID) as described in da Silva and Câmara and Zi-Tao *et al.* respectively. To our knowledge, no previous studies have assessed the role of micronutrients on caraway oil composition. Our results indicate that while the micronutrient treatments have a significant effect on essential oil composition i.e., Zinc treatment giving the highest limonene content, not such effect was found on fatty acid composition.

Recent Publications

1. Da Silva C L and Câmara J S (2013) Profiling of volatiles in the leaves of Lamiaceae species based on headspace solid phase micro extraction and mass spectrometry. Food research international 51:378-387.
2. Vallverdú - Queralt A, Regueiro J, Alvarenga J F R, Martinez - Huelamo M, Leal L N and Lamuela-Raventos R M (2015) Characterization of the phenolic and antioxidant profiles of selected culinary herbs and spices: caraway, turmeric, dill, marjoram and nutmeg. Food science and technology 35(1):189-195.
3. Zi-Tao Jiang, Mo-Lei Sun, Rong Li and Ying Wang (2011) Essential oil composition of Chinese Caraway (*Carum carvi* L.) Journal of Essential Oil Bearing Plants 14(3):379-382.

Biography

Clara Lizarazo currently works at the Department of Agricultural Sciences, University of Helsinki. Clara does research in Food Science, Agronomy and Agricultural Plant Science. Has worked for two EU funded projects 'Climate CAFE: Climate change adaptability of cropping and farming systems' and 'Legume Futures'.

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