

FIRST JOINT MEETING ON SOIL AND PLANT SYSTEM SCIENCES (SPSS 2019)

Natural and Human-induced
Impacts on the Critical Zone and
Food Production

CIHEAM BARI, ITALY
23-26 SEPTEMBER 2019

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First Joint Meeting on Soil and Plant System Sciences (SPSS 2019)

**Natural and Human-induced Impacts on the
Critical Zone and Food Production**

PROGRAMME AND ABSTRACTS

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PIV.8

Variation in phenolic composition and antioxidant properties in leaves and flowers of green and red basil (*Ocimum basilicum* L.)N. Negrini, S. Morgutti, L. Espen, Bhakti Prinsi

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Sweet basil (*Ocimum basilicum* L., *Lamiaceae*) is a culinary and medicinal herb, cultivated worldwide and highly appreciated for its organoleptic and antioxidant properties. These properties are partly attributed to a high content of phenolic compounds, such as rosmarinic acid and chicoric acid. Besides the green cultivar 'Italiano Classico' (IC), widely cultivated in the Mediterranean area, sweet basil includes varieties with red leaves and flowers, known as *purpurascens*, that might represent rich sources of highly glycosylated anthocyanins. Among the red varieties, 'Red Rubin' (RR) was proposed as a novel culinary herb, while 'Dark Opal' (DO) is mainly appreciated as ornamental plant. Several studies indicate a high variability in the leaf phenolic composition in *Ocimum* spp., while to date any investigation has not been conducted in flowers. The purpose of this work was to characterize the antioxidant properties and composition in phenolic acids and flavonoids in leaves and flowers of IC, RR and DO, by colorimetric assays and reverse phase chromatography - tandem mass spectrometry (LC-ESI-MS/MS). This study provided novel molecular information about anthocyanins in leaves, highlighting differences in total contents and composition between the two red varieties. Moreover, the analyses of polyphenolic acids in leaves and flowers revealed qualitative and quantitative differences among all the three varieties. In particular, flowers showed higher antioxidant properties than leaves and a very specific composition. Indeed, this first chemical profiling of basil flowers revealed the presence of interesting bioactive compounds, such as several members of the salvianolic acid family.

Overall, the study provides the basis for future investigations about the physiological roles of phenolic compounds in basil, and for improvements in the use of this important nutraceutical resource.

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