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calculated. The EOs distilled between 2017 and 2019 were analysed by GC-MS and tested against a stored product pest model (*Tribolium confusum*) in repellency, direct contact (with filter paper or crystallized cellulose as carriers) or contactless toxicity (fumigation). Thirteen of the EOs showed at least one type of bioactivity against the model insect. Some species share similar compounds that could explain their bioactivity, despite agronomic data showed significant differences. Considering chemical composition, bioactivity and agronomic performance, the EOs were grouped using Rstudio as clustering and dendrogram plotting tool, resulting in five groups. Groups 3 (thymol, carvacrol and p-cymene) and 4 (piperitenone and piperitenone oxide) hold the strongest bioactivity (lowest EC_{50} values for repellency and toxicity, respectively). Therefore, this composition-bioactivity based grouping method holds potential to predict additional bioactivities of essential oils based on their chemical compositions, rather than phylogenetic relationships. Additionally, the agronomic data gatherted for each species allows for the election of the best performing species for cultivation.

SE33 C06

COMPARISON OF EXTRACTION METHODS FOR THE DETERMINATION OF ESSENTIAL OIL CONTENT, COMPOSITION AND ANTIFUNGAL ACTIVITY OF DIFFERENT PLANT SPECIES

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Plant essential oils (EOs) are gaining interest as biopesticides for crop protection. The antifungal effect of some EOs is one of their most important crop protection properties. In addition to these direct effects on the pathogen, it has been reported that EOs can induce plant defenses (priming effects) resulting in better protection against the pathogen. Considering the growing importance of EOS as active ingredients, the domestication and cultivation of Aromatic and Medicinal Plants (AMPs) to produce chemically stable EOs contributes to species conservation, provides sustainability of the production and lower variations in active ingredients. Otherwise, the essential oil content and consequently their bioactivity can vary with development stage and by extraction methods. The aim of the study was to compare a laboratory distillation in a Clevenger apparatus and steam distillation in a pilot plant to extract EOs from plant species belonging to the genera Artemisia, Dittrichia, Geranium Lavandula, Mentha, Origanum, Rosmarinus, Salvia, Satureja, Santolina, Tanacetum and Thymus experimentally cultivated. The Eos were analyzed by GC-MS and tested in vitro against phytopathogenic fungi (spores of Alternaria alternata, Botrytis cinerea, Fusarium oxysporum) to select the most active and les phytotoxic one (against Lolium perenne) as plant candidates. Differences in activity and composition have been found between the laboratory and pilot plant extracted oils. Therefore, the semi-industrial conditions for the extraction of bioactive EOs must be optimized case by case to improve the EO content in bioactive compounds.

SE33 C07

VOLATILE COMPOUNDS FROM BACILLUS SIAMENSIS NKIT9 INHIBIT MYCELIAL GROWTH OF RHIZOCTONIA SOLANI

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*Rhizoctonia solan*i, a widespread fungus, affects crops in both greenhouse and field environments, leading to plant damping-off and fruit rot, and consequently substantial yield losses. This study explores the use of bacterial volatile organic compounds (VOCs) as an alternative to chemical pesticides to control *R. solani* infections. Bioassays conducted in sealed plates demonstrated that VOCs produced by *Bacillus siamensis* strain NKIT9 significantly inhibited *R. solani* mycelial growth by over 60%. Solid-phase microextraction-Gas chromatography-mass spectrometry (SPME-GC-MS) analysis identified more than 40 volatile compounds, including 2-Undecanone, 6-methyl-2-heptanone, Heptadecane, and β-fenchol, which are known for their antifungal properties. Among these, 2-Undecanone exhibited the highest antifungal activity against *R. solani*.