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BOOK OF ABSTRACTS

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P6.1-068

HOW TO IMPROVE THE PERFORMANCE OF MINERAL OIL TO CONTROL POTATO VIRUS Y IN SEED POTATO PRODUCTION?

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Text

Mineral oil is the main alternative treatment identified to limit the spread of Potato Y virus (PVY) in seed potato production, this plant protection product is a part of the biocontrol list according to the French plant health authorities. Because there are currently no exact recommendations for its use, the mineral oil is commonly spread by farmers on potato plants every 2-3 days during the active plant growth and every 7 days when the vegetation is stabilized.
Our main objective is to better understand the duration of the oil protection in order to give recommendations to farmers with regard to the frequency of applications for optimal performance against the virus transmission and being consistent with the environmental recommendation of the French Ecophyto II+ program.
High resolution mass spectrometry using an electrospray ionization source (ESI-HRMS) was selected to detect the mineral oil with a high sensitivity and an experimental protocol was developed to distinguish the fraction of oil which penetrates the leaf from the surface fractions.
The results of kinetic study demonstrated that oil persists on treated leaves surface after 7 days. The relationship between this persistence and the oil ability to protect the leaves against virus transmission by aphids will be discussed.

P6.1-069

STRATEGIES FOR COPPER REDUCTION IN GRAPEVINE, APPLE, ROSES AND VEGETABLES BY USING ALTERNATIVE EXPERIMENTAL PRODUCTS

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Text
Reducing the use of copper fungicides with the aim of phasing out has a high priority in

European policy as well as in organic farming. To reach this goal without compromising yields, all preventive strategies have to be implemented and several affordable alternative products need to be brought to the market. Within the EU-funded project RELACS (2018-2022), we investigated alternative compounds that had reached a high technology readiness level. We focused on major copper-relevant crops/pathogens (grapevine/*Plasmopara viticola*, apple/*Venturia inaequalis*, vegetables/downy mildews/late blight, oil-producing roses). As alternatives, two plant extracts including licorice leaf extract (*Glycyrrhiza glabra*) and a larch bark extract (*Larix decidua*), a rare sugar (tagatose) as well as a test product based on fatty acids (NEU 1143F in apple) were evaluated.
Refined strategies with these alternatives were tested, adapted and validated under practical conditions in different European countries, and further aspects of importance (e.g. mode of action, wine fermentation, compatibility with other plant protection products) examined. All alternatives proved to be effective in one or more of the investigated crops. In some cases, their efficacy as stand-alone treatment was comparable to that of copper. In other cases, the combination of the alternatives with reduced amounts of copper or in combination with other standard methods provided effective protection of the crops.

P6.1-070

TRANSCRIPTIONAL REPROGRAMMING OF LETTUCE ROOTS IN RESPONSE TO CHITIN SOIL AMENDMENT, EFFECT ON PLANT GROWTH, RHIZOBIOME COMPOSITION AND DISEASE RESISTANCE

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Text
Chitin soil amendment improves soil quality, plant growth and plant stress resilience, but the underlying mechanisms are not well understood. To gain a deeper understanding on the effects of chitin, several omics approaches were applied in a multidisciplinary project.
We studied the growth promoting effects on lettuce upon treatment with chitin in two different soil types (potting and greenhouse). In both soils, lettuce grew bigger with chitin amendment. Lettuce grew generally better in the potting soil compared to the greenhouse soil.
The rhizobiome composition was analyzed using metabarcoding. A decrease in α-diversity was observed upon chitin treatment in both soils. Based on β-diversity, chitin amendment had a stronger effect on the fungal community compared to the bacterial one. Both soils contained different genera significantly altered upon chitin treatment. In potting soil, a known plant-growth promoting fungus was significantly more abundant and associated with other chitin degraders. Such association was not observed in the greenhouse soil.
The transcriptional reprogramming of lettuce roots in response to chitin treatment was studied using RNA-Seq. Over 300 genes were significant differentially expressed with chitin amendment.