

Liquorice extract as an alternative to reduce copper use in grapevines

Problem

Copper is the only effective fungicide authorised for a variety of important uses in organic farming. Because of its environmental impact, it is restricted to 28 kg/ha over seven years in the EU, and further restrictions may come while only a few alternatives are available on the market.

Solution

Liquorice (*Glycyrrhiza glabra*) extract is a plant extract (from leaves) with fungicidal properties which acts via contact against a range of fungal plant pathogens. It also affects bacterial pathogens. It is an effective addition to the toolbox of copper alternatives with good efficacy on important diseases.

Outcome

As soon as the formulated Liquorice extract is authorised under EU regulation 1107/2009 and registered as a plant protection product (PPPs), it can help to reduce or even replace copper-based products, especially in organic grape production.

Practical recommendations

For use in organic grapevines:

- Liquorice formulation can be used as a stand-alone replacement for copper under low to medium disease pressure.
- Preliminary field trials showed excellent protection of grapevine berries against downy mildew. Protection of leaves is good but might be moderate under high disease pressure.
- For an optimised efficacy, assessing the infection pressure and potential infection periods is crucial. **Decision Support Systems** are thus strongly recommended to apply Liquorice formulation at the optimal time, i.e. right before or at the onset of a probable infection period, as Liquorice should be used as a contact fungicide.
- Taint tests and vinification trials showed that the formulated Liquorice extract does not negatively impact the wine quality and flavour.
- Preliminary studies to assess the environmental risks of the Liquorice formulation show **no harmful effect on bees** and no negative impact on other beneficial insects.

Applicability box

Input used

- | | |
|--|--|
| <input checked="" type="checkbox"/> Copper | <input type="checkbox"/> Anthelmintics |
| <input type="checkbox"/> Mineral oil | <input type="checkbox"/> Antibiotics |
| <input type="checkbox"/> Fertilisers | <input type="checkbox"/> Vitamins |

Geographical coverage

Global

Application time

Application strategy similar to copper, i.e. prior to infection risk periods

Required time

Identical to standard treatments

Period of impact

Current crop

Equipment

Standard spraying equipment

Best in

Downy mildew of grapevine, cucumber and tomato



Pictures: Liquorice in flower (left), on a field (middle) and after drying (right) (Photos: Trifolio-M GmbH).

On-farm application

System approach

To reduce copper, all possible preventive measures, such as robust varieties and crop management practices, should be deployed. Liquorice extract must be used with professional spray equipment and decision support systems to optimise efficacy.

Further information

Weblinks

Check the [Farm Knowledge Platform](#) for more practical recommendations.

About this practice abstract and RELACS

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RELACS: 'Replacement of Contentious Inputs in Organic Farming Systems' (RELACS) builds on results of previous research projects and takes far-advanced solutions forward. As a system approach to sustainable agriculture, organic farming aims to effectively manage ecological processes whilst lowering dependence on off-farm inputs. The RELACS partners will evaluate solutions to further reduce the use of external inputs and, if needed, develop and adopt cost-efficient and environmentally safe tools and technologies.

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