



Project Title:	RELACS: Replacement of Contentious Inputs in organic farming Systems
Project number:	773431
Project Acronym:	RELACS
Proposal full title:	Replacement of Contentious Inputs in organic farming Systems
Type:	Research and innovation actions
Work program topics addressed:	SFS-08-2017 Organic inputs – contentious inputs in organic farming

Deliverable No D7.1: Publishable executive report on uses of contentious inputs in organic plant and livestock production

Due date of deliverable:	30.04.2021
Actual submission date:	30.04.2021
Version:	v1
Main Authors:	Korinna Varga (ÖMKi), Dóra Drexler (ÖMKi), Judit Fehér (ÖMKi), Bence Trugly (ÖMKi)



This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 773431

Project ref. number	773431
Project title	RELACS: Replacement of Contentious Inputs in organic farming Systems

Deliverable title	Publishable executive report on uses of contentious inputs in organic plant and livestock production
Deliverable number	D7.1
Deliverable version	VI
Contractual date of delivery	30.04.2021 (M36)
Actual date of delivery	30.04.2021 (M36)
Document status	final
Document version	V.1.2
Online access	
Diffusion	PU (Public)
Nature of deliverable	Report
Workpackage	WP7
Partner responsible	ÖMKI
Author(s)	Korinna Varga (ÖMKi) Dóra Drexler (ÖMKi) Judit Fehér (ÖMKi) Bence Trugly (ÖMKi)
Editor	
Approved by	Lucius Tamm (FiBL)
REA Project Officer	Camilla LA PECCERELLA

Keywords	Copper, nutrients, mineral oil, fertilization, feed additives, anthelmintics, antibiotics, organic farming, agricultural inputs, policy instruments
-----------------	---



This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 773431



Table of Contents

1.	Title of the review and executive summary	4
2.	Extended summary	4
2.1	Surveys on the current uses and needs of contentious inputs and their alternatives	4
2.2	State of play and need for targeted policy measures.....	5
3.	Urgent need for research support and stakeholder engagement	5
4.	Outlook.....	6
5.	Further Information:.....	6
6.	References:	6



1. Title of the review and executive summary

The current use of copper, mineral oil, external nutrient input, anthelmintics, antibiotics and vitamins in organic farming in the EU and the need for well-targeted reduction policies

In frame of the RELACS Horizon 2020 project, comprehensive surveys were conducted on the current use of copper, mineral oil, external nutrient input, anthelmintics, antibiotics and vitamins and their alternatives in organic farming. These surveys were complemented by a mapping of existing reduction strategies and policy efforts in 11 European countries. The project aims at enhancing the usage of cost-efficient, environmentally beneficial technologies that could help reduce or replace the application of products from these six contentious input categories in organic agriculture.

2. Extended summary

2.1 Surveys on the current uses and needs of contentious inputs and their alternatives

Although input use in organic agriculture is strictly regulated, and significantly less contentious inputs are applied in organic than in conventional farming systems, the project surveys' results show that copper, mineral oil, external nutrient input, anthelmintics, antibiotics and vitamins are still prevalently used among organic farmers in the EU. This is partly due to the scarce availability of alternative products and difficulty to implement preventive strategies, which are not always efficient. Moreover, besides the direction set by the EC 889/2008 organic regulation, only a handful of policy instruments exist at national levels to reduce the use of these contentious inputs. However, the number of international and national voluntary initiatives is gradually growing.

In light of the ambitious target to reach 25% share of organic farmland within EU's total agricultural area by 2030, as set by the Farm to Fork strategy, a great challenge to overcome is the major reduction of the mentioned contentious inputs as the EU's organic sector is currently highly dependent on these materials. Therefore, targeted research and well-planned policy instruments are paramount to pave the way for a successful scale-up of organics in Europe.

The figures reported in this study are based on international surveys, in-depth interviews, multiple case study methods and calculations - using EU and national statistical databases - conducted between 2018 - 2019 to gain insight into the use of copper, mineral oils, external nutrient input, anthelmintics, antibiotics, vitamin and their available alternatives in organic farming in RELACS partner countries and beyond. Additionally, a survey was conducted in 2021 to map existing policy instruments and voluntary, public/private initiatives in the EU aiming to reduce the use of the six input categories.

The outcome of these surveys is new data on the current consumptions of copper, external nutrient input, anthelmintics, antibiotics and vitamins within the organic sector. This review also highlights potential alternative strategies in the pipeline, the advantages and disadvantages of available preventive measures and the willingness of farmers towards adopting these solutions. Moreover, this review informs EU and national decision-makers about specific policy instruments already in force, as well as about ongoing voluntary initiatives to reduce contentious inputs that may serve as an example for developing further successful reduction measures.



2.2 State of play and need for targeted policy measures

Copper has widespread use in almost all crop categories but its overall usage rarely reaches the maximum limitations set by the organic regulation. Also, there are large differences in the used amounts between European countries. Southern European countries have the majority of copper used due to their large areas of horticultural production (mostly olives and grapes). A number of copper alternatives are present for farmers; however, their efficacy and applicability cannot be compared to those of copper, which prevents their widespread adoption. Moreover, the price of alternative products is much higher than the cost of copper products. Copper reduction is targeted by a number of international voluntary initiatives such as organic private certification standards (e.g., Bio Suisse, Demeter) and by a few policy instruments like the German Copper Minimisation Strategy.

Mineral oil is heavily used in organic fruit production, authorized by almost all European countries, but mainly used in Southern Europe, due to large-scale citrus production. There are some promising alternative products to substitute mineral oil. However, their development is financially challenging as well as the upscaling of their raw material production and product manufacturing. Also, based on the survey results, there are virtually no voluntary initiatives to reduce mineral oil usage, and the few policy instruments that are present lack implementable measures.

Regarding nutrient management practices, RELACS' results show that the majority of organic farms have a low, but positive nitrogen balance, with great reliance on biological nitrogen fixation, while their potassium and phosphorus budget is often deficient. This points to inefficient nutrient management practices. Also, results reinforce that organic farmers mainly use organic sources to cover their external nutrient inputs, however, there is still a great dependence on conventional manure, as fertilizer resource. Only a few voluntary initiatives address external nutrient input usage with specific limitations like the Naturland certification standards.

Anthelmintic and antibiotic treatments can only be administered in organic farming if preventive measures and alternative treatments are inappropriate. However, if they are used, great differences can be observed between countries in the proportion of estimated and actually administered treatments. This points to difficulties with the prediction and prevention of diseases' appearance. There is a greater number of policy instruments and voluntary initiatives to raise awareness of further restricting anthelmintics use - mainly in the UK - and on antibiotics, with defined targets like the Responsible Use of Medicines in Agriculture (RUMA) alliance.

In most cases vitamin containing premixes for livestock are produced by few supplement producers across Europe, and the levels used are similar to the recommendations by the European Association of Specialty Feed Ingredients and their Mixtures (FEFANA). These recommendations, as well as their scientific background are general and no specific figures for organic livestock systems exist. Lower requirements for animals in organic systems seem possible, but need evidence in every single case. So long, there is no scientific basis for reduction of vitamin supplements without risking harm to animal health. A voluntary initiative by Soil Association in the UK regulates synthetic vitamins in animal feed and a Norwegian project NATVIT had the objective to replace vitamins with natural sources in feed supplements.

3. Urgent need for research support and stakeholder engagement

Overall, due to the current dependence of organic farming systems on the six categories of contentious inputs investigated in this study, any sudden phase-out or ban on their usage would do more damage than good to the organic sector. Therefore, gradual, data-driven reduction measures are needed, which require significant further investments in targeted research, and in policy support measures, with the active involvement of agricultural stakeholders. This is pivotal to fulfil the prerequisites of the ambitiously aimed 25% share of organic farmland by 2030 in the EU.



4. Outlook

The detailed findings of the individual surveys are either published (Leiber, 2020) or currently undergoing peer-review process for scientific publication. The current review will appear in a long format in an upcoming peer-reviewed publication as well, and will include the results of the survey on the policy tools for the reduction of contentious inputs.

5. Further Information:

Farm to Fork Strategy: https://ec.europa.eu/food/sites/food/files/safety/docs/f2f_action-plan_2020_strategy-info_en.pdf

RELACS project: <https://relacs-project.eu/>

Commission Regulation (EC) No 889/2008 of 5 September 2008: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32008R0889>

6. References:

- [1] Leiber, F. 2020. Vitamin B2 in organic poultry nutrition – an update. *Organic matters* 143:24-25.”
- [2] Chylinski C., Borthwick M., Michie D., Hathway S., Athanasiadou S. Current anthelmintic and antibiotic use in UK Organic farming systems. *Veterinary Record* (under review)
- [3] Oelofse, M et al Overview of the current use of and need for external nutrient inputs in eight case study regions in Europe. (temporary title, finalised manuscript)
- [4] Tamm, L et al. Overview of the current use of and need for copper alternatives in organic crop production (temporary title, under development).
- [5] Varga, K., Fehér, J., Trugly, B., Drexler, D., László, A., Ladányi, M., Moeskops, B., Herforth-Rahmé, J., Chylinski C., Athanasiadou S., Leiber, F., Magid, J., Tamm, L. The state of play of copper, mineral oil, external nutrient input, anthelmintics, antibiotics and vitamin usage and available reduction strategies in organic farming across Europe (under development)