

FICHE – ORGANIC FARMING CASE

“ ‘RELACS’ AND ‘ORGANIC-PLUS’: CONTENTIOUS INPUTS IN ORGANIC FARMING WITH A FOCUS ON COPPER”

Data extracted in February 2022

Note to the reader: This set of *fiches – organic farming case* is offering additional information to the meta analysis literature review summarised in *general fiche* and set of fiches on the environmental aspects of ORGANIC FARMING SYSTEMS. Each individual case describes an initiative in different parts of organic food systems within the European Union, delivering more detailed information on possible ways to help develop organic systems.

1. DESCRIPTION OF THE ORGANIC SYSTEM

Geographical location	EU
Geographical level	Farm
Description	RELACS 'Replacement of Contentious Inputs in Organic Farming Systems' and Organic-PLUS 'Pathways to phase-out contentious inputs from organic agriculture in Europe' are two complementary research projects. They both aim at to reducing and ideally eventually phasing out the dependency on and use of contentious inputs in organic farming systems. Both projects are based on a multi-actor approach involving various stakeholders.
Key descriptors	<ul style="list-style-type: none"> • Assessing the current use and need for external inputs in organic farming • Identification and in-field evaluation of alternative tools, products and management practices in different pedo-climatic and farming conditions • Development with stakeholders of roadmaps for phasing out contentious inputs • Sustainability assessments of alternative <i>versus</i> current scenarios
Production system	<ul style="list-style-type: none"> • Organic plant productions (Arable crops, horticulture) <ul style="list-style-type: none"> ○ Inputs covered: copper and mineral oils, recycled fertilizers and conventional manure, peat, fossil fuel-derived plastic mulch • Organic animal productions (cattle, sheep, pig, chicken) <ul style="list-style-type: none"> ○ Inputs covered: antibiotics and anti-worm drugs, synthetic vitamins, conventional straw
Actors involved	<ul style="list-style-type: none"> • RELACS: 15 partners + 14 associate partners • Organic-PLUS: 26 partners + 51 associate partners • Research organisations, NGOs, universities, SMEs, (associations of) farmers, farmer advisors, dissemination institutions, etc. from EU (majority) and non-EU countries (minority)
Project type	Funding from the EU's Horizon 2020 research and innovation programme
Project status/ date of report	Ongoing (both due to end in April 2022)

2. VISUALS ASSOCIATED TO THE ORGANIC INITIATIVES



3. ACTIVITIES AND ACHIEVMENTS OF THE ORGANIC INITIATIVES – FOCUS ON COPPER

Rationale / Motivation for the sub-part of the projects on copper	
<p>The use of copper-based products has been, and still is, a prevalent method for the control of fungal or bacterial diseases in greenhouse (e.g. tomato, aubergine), permanent (e.g. citrus, olive, apple, vineyards), or arable (e.g. potato) crops. However, the repeated use of cupric formulations results in their accumulation in soils, with undesirable effects on crops and soil organisms. Accordingly, EU/national regulation is becoming more stringent regarding the maximum annual rate of copper use. RELACS and Organic-PLUS will thus help developing strategies to reduce or eliminate copper use under field conditions on crops with high relevance.</p>	
Actions	
Current use	<ul style="list-style-type: none"> • Survey (table/questionnaire) in order to map the use of contentious inputs linked to plant production (including copper). In most cases, the survey was filled out by interviewing 1-3 experienced advisors per crop • 14 crops (11 fruits and vegs, cereals, olive, potato) in 10 countries (7 in EU) • The level of use of copper varies significantly depending on the grower practices, crop type, and region/country.
Identification of alternative methods	<ul style="list-style-type: none"> • Based on experts/practitioners knowledge, previous projects, literature, etc. • Preventive measures: resistant varieties, orchard/vineyard/crop plantation design, good soil management practices, bio-stimulants, long-enough rotation, appropriate (pre-)sowing practices, irrigation strategy, etc. • Direct protection methods: mixture of lower amount of copper with other compounds, alternance between copper & other treatments, full replacement by other compounds (if effective enough), optimal timing of applications by strictly following infection forecast from decision support systems, etc.
Testing of efficacy of alternatives against target pathogens and compatibility with registered products	<ul style="list-style-type: none"> • Step 1 (RELACS): assessment under controlled conditions of efficacy against target pathogen and compatibility with products registered in organic farming • Step 2: application of alternatives under field conditions, including optimization of applications. Field experiments with four pilot products that are far advanced and have proven activity under field/greenhouse conditions on various combination of crop/common pathogen • Step 3: on-farm validation of at least one efficient strategy
Assessment of impacts	<ul style="list-style-type: none"> • Both socio-economic and environmental. Not yet available.
Dissemination	<ul style="list-style-type: none"> • Discussion and workshop about many different topics with stakeholders • Technical presentations • Website, social media pages, videos
Lessons	
<ul style="list-style-type: none"> • Many alternatives to copper are under development, but few are already available on the market, and fewer still are currently used by growers to a substantial extent. • Overall, results indicate that a significant reduction of copper use in various crops is possible. • However, abandoning copper cannot be easily achieved through a simple substitution strategy. It requires reconstructing the crop production system using an integrative approach, which is still under-developed. 	

Note: Similar work is (will be) available about all other inputs covered by the two projects.

4. SOURCES, PROJECT WEBSITE OR DATA COLLECTION ON THE CASE STUDY

RELACS project

Project's webpage <https://relacs-project.eu/>

Publishable report on exploration of low/no copper strategies for grapevine, apple and glasshouse crops
https://relacs-project.eu/wp-content/uploads/2022/01/RELACS_D1.3_publishable_report_on_exploration_of_low_no-copper-strategies.pdf

First results of the RELACS project experiments in Hungary on substituting copper in plant protection.
<https://www.biokutatas.hu/en/page/show/with-or-without-copper>

Fiche 'Copper reduction strategies in viticulture' https://relacs-project.eu/wp-content/uploads/2021/05/RELACS_PA_05_copper_O%CC%88MKi_final.pdf

Organic-PLUS project

Project's webpage <https://organic-plus.net/>

Organic-PLUS Practice abstract (#1 on copper)

<https://organicplusnet.files.wordpress.com/2019/12/d2.11-o-eip-practice-abstracts-first-batch-v2.pdf>

Briefing paper 'Organic Potatoes - Pathways to coping without copper'

<https://organicplusnet.files.wordpress.com/2020/01/coping-without-copper-briefing-paper-2019.pdf>

Current use and legal status of crop protection inputs <https://organicplusnet.files.wordpress.com/2019/02/d3.1-o-current-use-of-contentious-inputs-wp-plant.pdf>

Factsheet Potato <https://organicplusnet.files.wordpress.com/2019/12/o-o-potato-factsheet.pdf>

Factsheet Citrus <https://organicplusnet.files.wordpress.com/2019/04/1-o-citrus-factsheet.pdf>

Factsheet Olive <https://organicplusnet.files.wordpress.com/2019/02/2-o-olive-factsheet.pdf>

Factsheet Tomato <https://organicplusnet.files.wordpress.com/2019/02/3-o-tomato-factsheet.pdf>

Factsheet Aubergine <https://organicplusnet.files.wordpress.com/2019/02/4-o-aubergine-factsheet.pdf>

Additional resources

<https://organicplusnet.files.wordpress.com/2020/04/1-bibliographic-list-on-copper-alternatives-1.pdf>

<https://organicplusnet.files.wordpress.com/2020/04/andrivon-et-al.-2018-can-organic-agriculture-cope-without-copper-for-disease-control.pdf>

Co-free project

A EU-funded project that is a key basis for the RELACS and Organic-PLUS projects.

<http://www.co-free.net/index.html>