FER-PLAY

Circular fertilisers for healthy soils

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Consorzio Italiano Compostatori
1° February 2024
XI Forum on Composting and Anaerobic Digestion

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement N° 101060426.

What is FER-PLAY?

- Protect ecosystems
- Decrease EU dependence on fertilisers import
- Improve resource efficiency

BY…

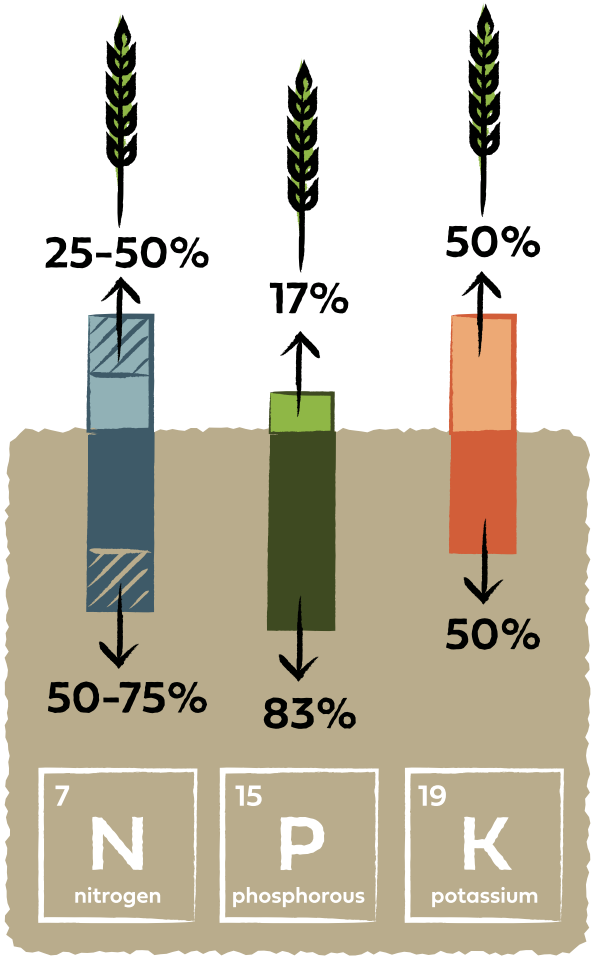
- Mapping and assessing circular fertilisers
- Fostering circular fertilisers production and application

fer▸play

The challenge

Conventional fertilisers are made using **finite**, often **imported**, resources and employing in some cases **energy-intensive** production processes. To ensure high yields, these fertilisers are optimised for the fast release of nutrients, making them an attractive choice for farmers but **a threat to soil and ecosystem health**.

Crops cannot absorb all the available nutrients – with plants absorbing just 25-50% of the available Nitrogen(N), 17% of phosphorous (P), and 50% of potassium (K). The excess nutrients leach in the soil, leading to the **degradation of ecosystems and water and soil quality**, including the r**eduction of the soil's capacity to sequester CO2**.

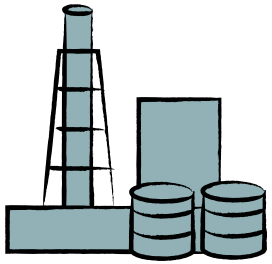


The opportunity

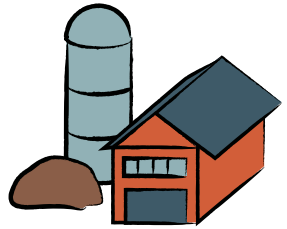
FER-PLAY is promoting **circular fertilisers** as a promising solution to this environmental challenge.

These fertilisers offer an opportunity to **reduce the environmental impact** of fertilisers and **close the loop between domestically available resources and required nutrients** to be used in fertilising products.

What are circular fertilisers?



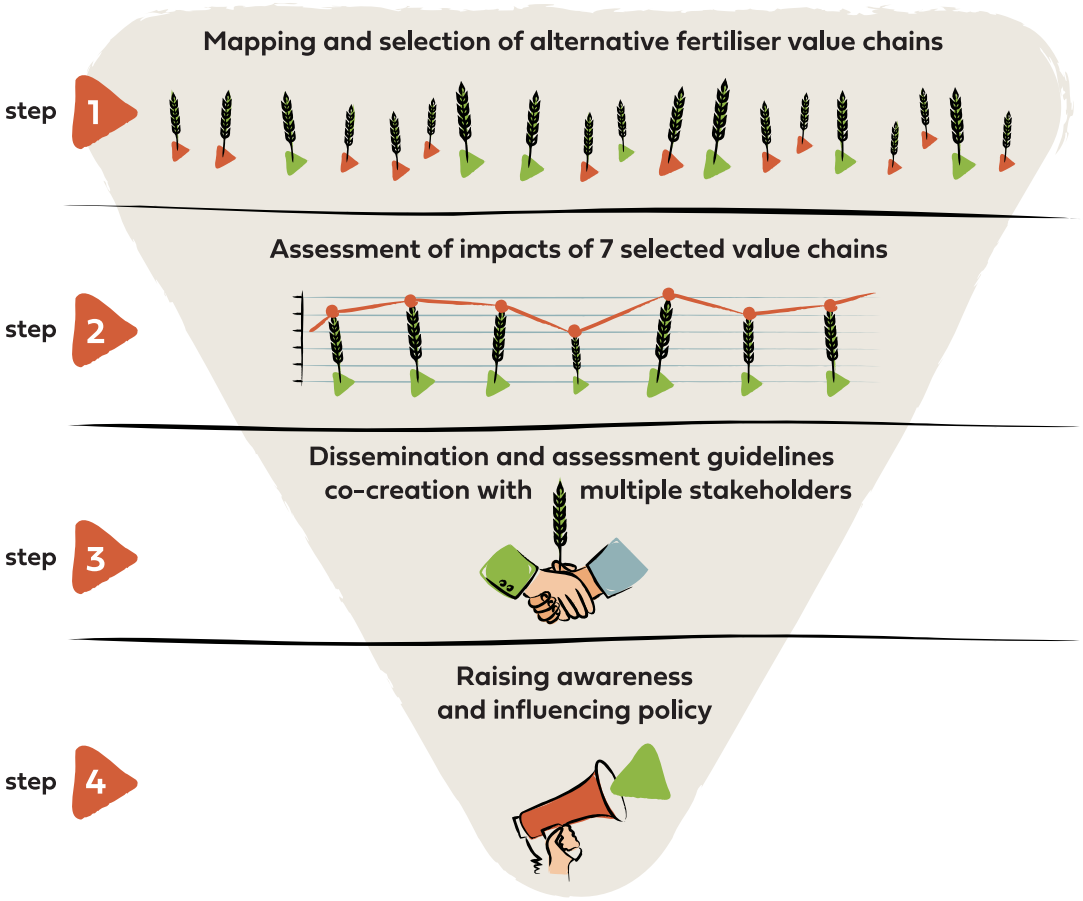
- Locally recovered materials
- Alternative to landfilling or incineration



- Increase organic matter in soil
- Reduce leaching

FER-PLAY's process

The project began in **September 2022** and run for 30 months, until **February 2025**



Completed March 2023

Operative

Operative

Operative

Stakeholder groups targeted

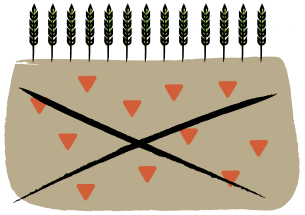
Waste valorisation & agricultural researchers

Public administrations

Farmers and farmers associations

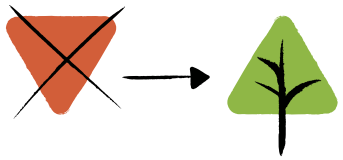
Fertiliser producers

Contributing to EU objectives

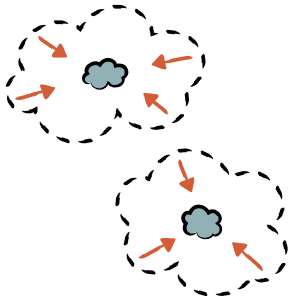


Preventing water and soil contamination:

By 2050, 2.83M tonnes less fertilisers leached into the environment each year

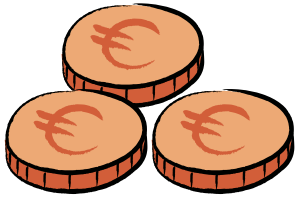


Replacing the +3.77 M tonnes of conventional fertilisers with circular ones



Mitigating GHG emissions from the agricultural sector:

88% of CO_2 and 87% of N_2O emissions by 2050

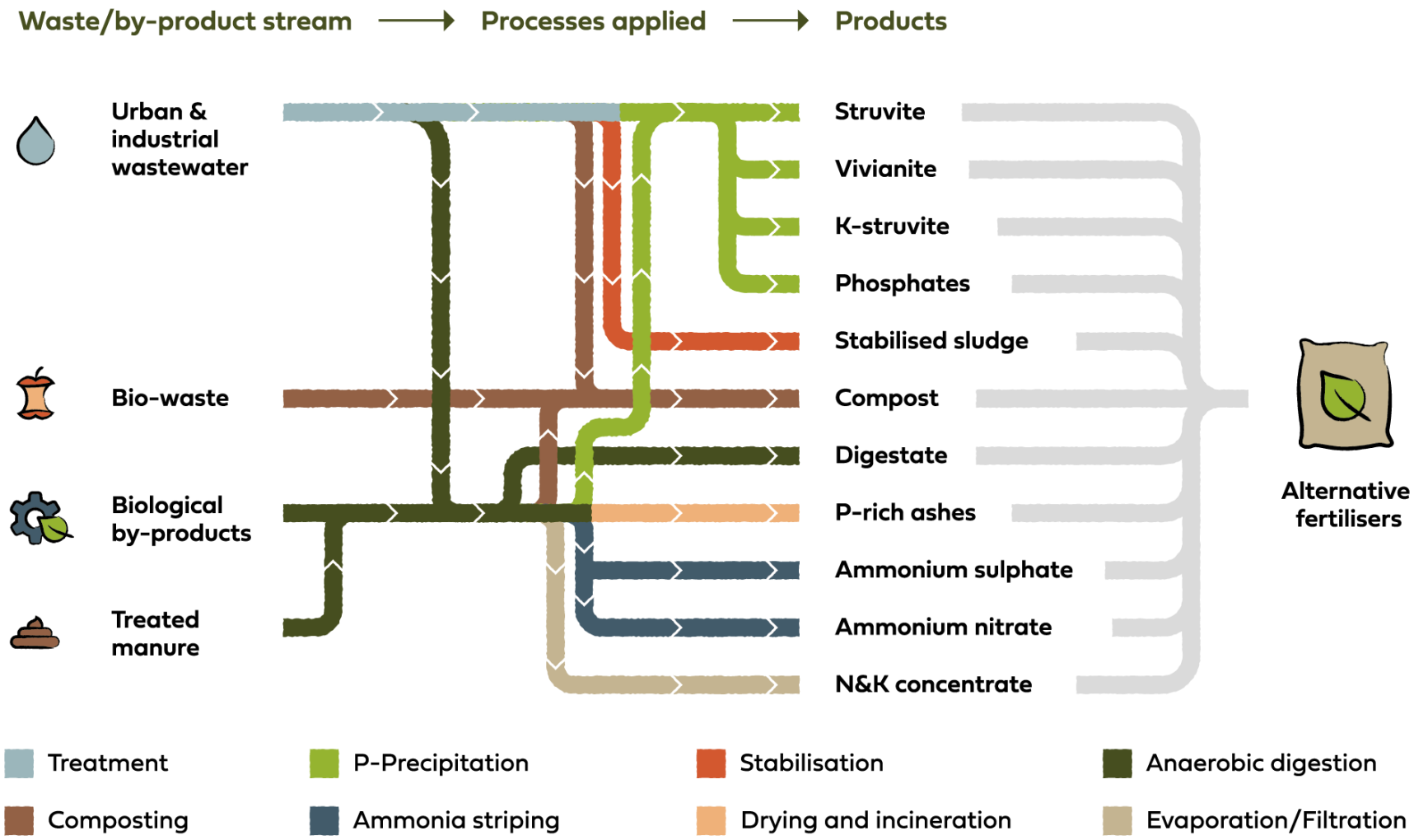


Improving resource independence:

Reduce fertiliser imports by 20% leading to savings up to €689.38M per year, diversifying EU sources of nutrient supply

Promoting the development of the circular bioeconomy at local and regional levels

Value chains



Value chains

Bio-waste	Compost
	Struvite
	P-rich ashes
	Biochar
	Hydrochar

Treated manure	Compost
	Ammonium nitrate
	Ammonium sulphate
	Mineral concentrate
	Struvite
	Vivianite
	Phosphates
	Biochar
	Hydrochar
	Liquid fraction
	Solid fraction

Biological by-products	Compost
	Struvite
	Vivianite
	K-struvite
	Phosphates
	P-rich ashes

Urban waste water	Struvite
	Vivianite
	K-struvite
	Phosphates
	Stabilised sludge

Sewage sludge	Struvite
	Vivianite
	K-struvite
	Phosphates
	Stabilised sludge
	Compost

Industrial waste water	Struvite
	Vivianite
	K-struvite
	Phosphates
	Stabilised sludge

Digestate	Untreated digestate
	Liquid fraction
	Solid fraction
	Compost
	Struvite
	Vivianite
	K-struvite
	Phosphates
	P-rich ashes

Selected value chains

Urban waste water	Struvite
Industrial waste water	Struvite
Sewage sludge	Stabilised sludge
Biowaste	Composted biowaste
Biological by-products	Feather meal
Digestate	Solid fraction of digestate
Treated manure	Spent Mushroom Substrate

The consortium

ACR+

ASAJA

CETAQUA
WATER TECHNOLOGY CENTRE

cetenma
Centro Tecnológico de la Energía y del Medio Ambiente

CONSORZIO ITALIANO COMPOSTATORI

COLDIRETTI

EBA
European Biogas Association

DRAXIS
ENVIRONMENTAL TECHNOLOGIES

inagro
ONDERZOEK & ADVIES IN LAND- & TUINBOUW

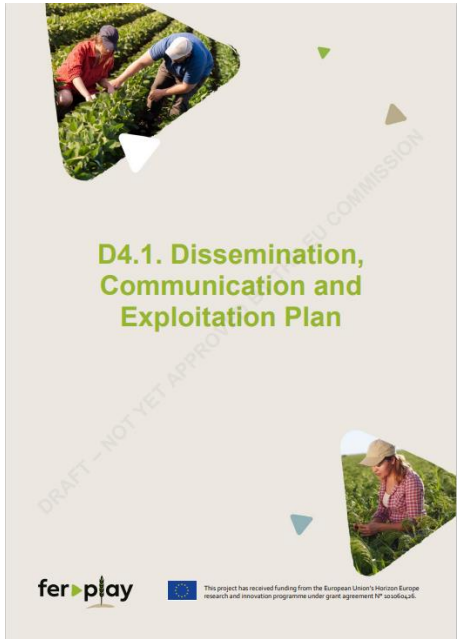
Naturland

NuReSys®

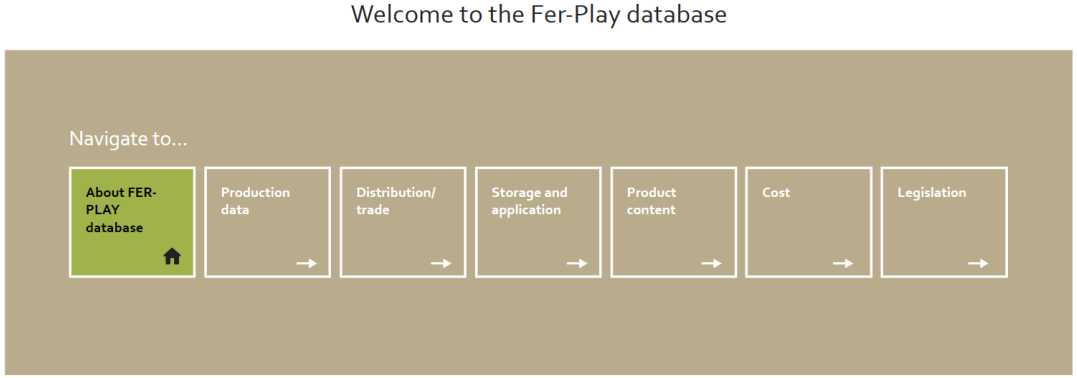
REVOLVE

Project outputs

Report and Deliverables



The FER-PLAY value chain database



Surveys

End-users

ITA

ENG

Producers

ITA

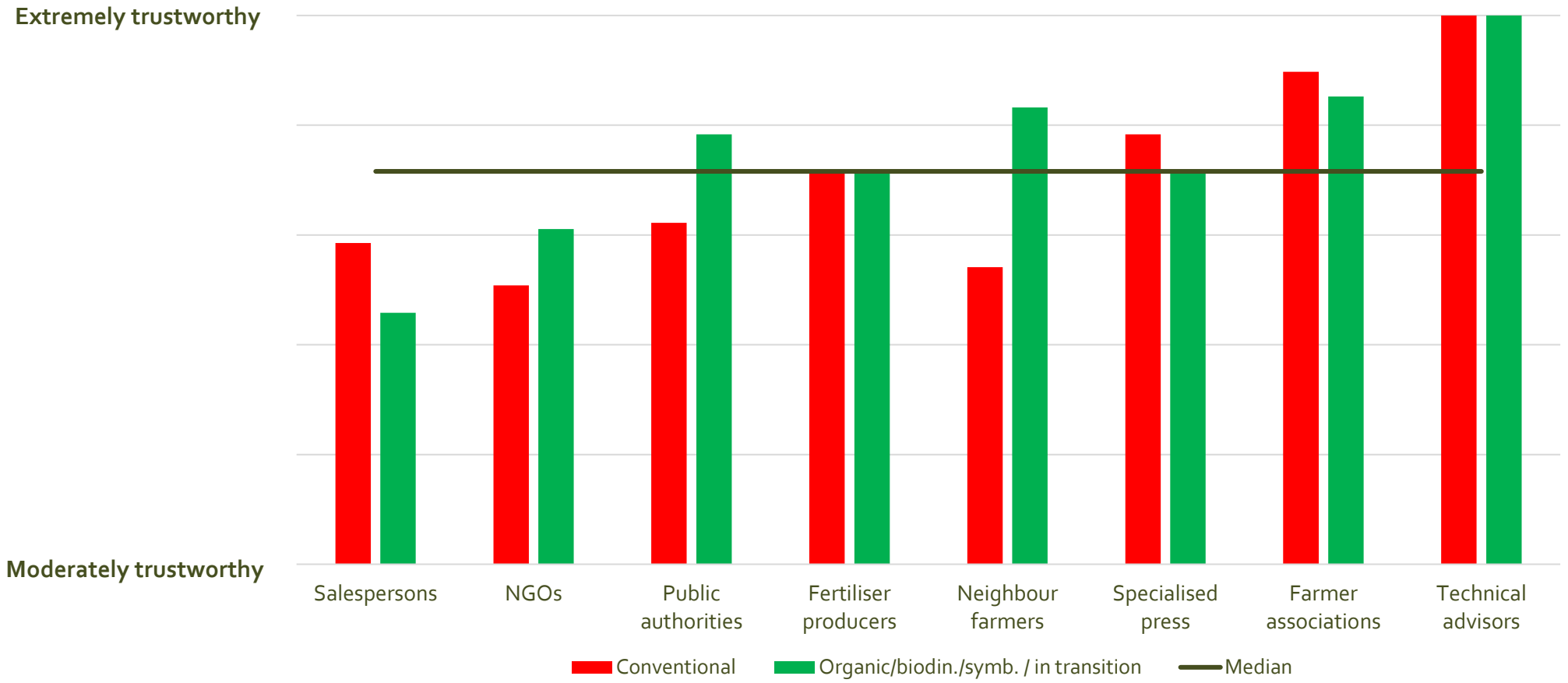
ENG

Some results

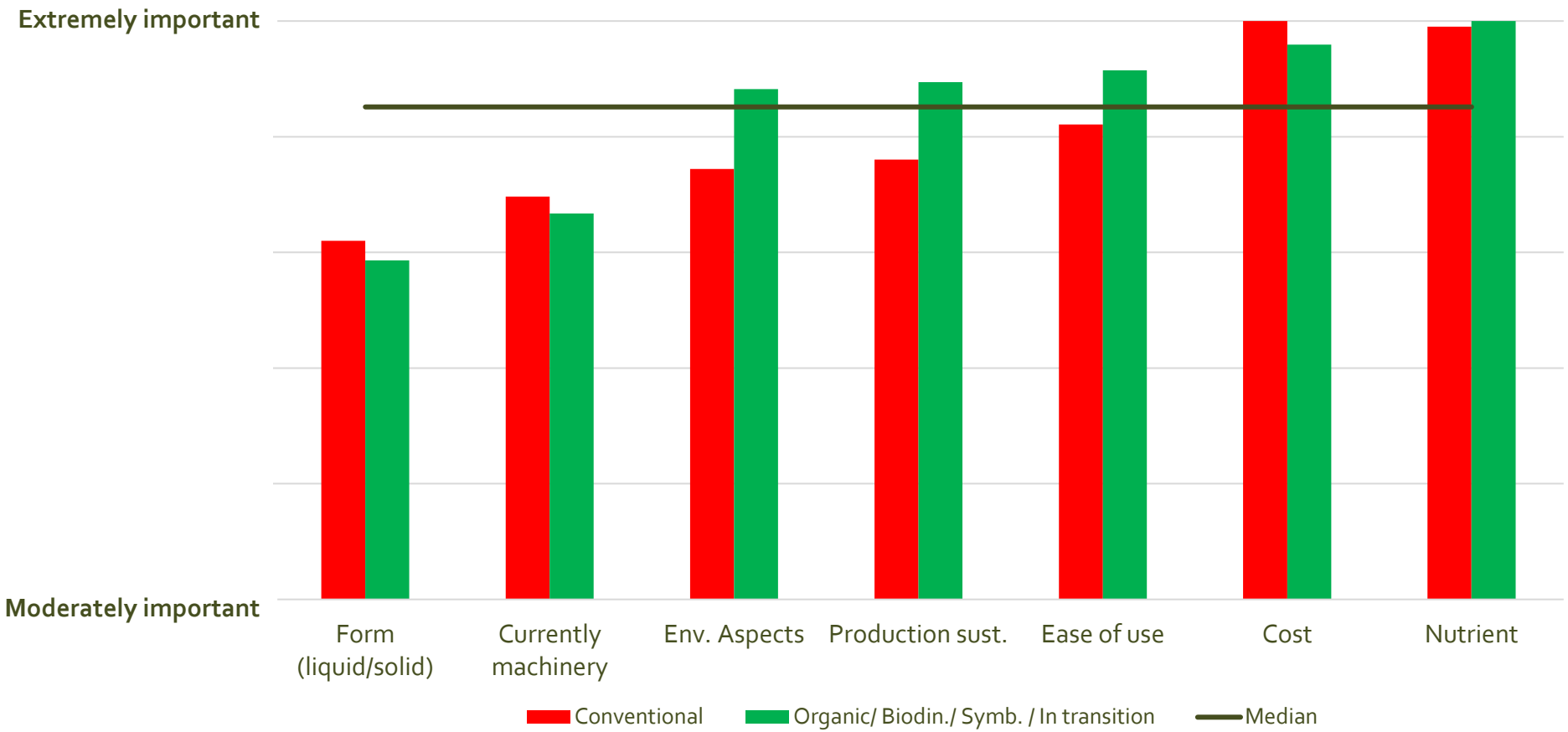
From the surveys

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement N° 101060426.

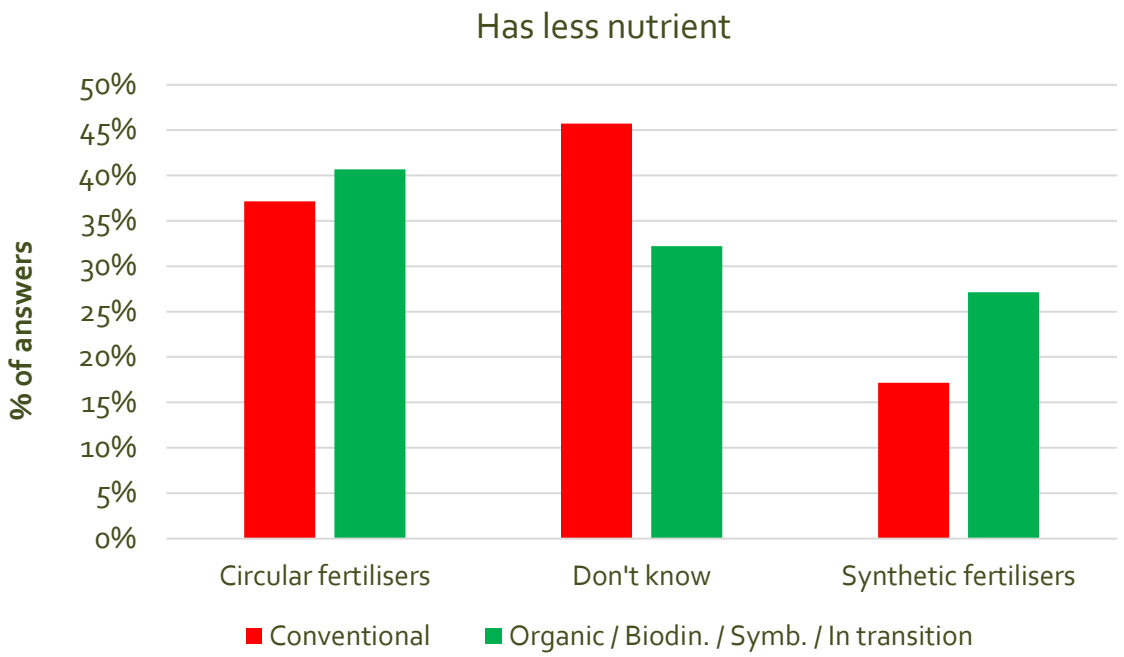
How much end-users trust in the different types of information source?

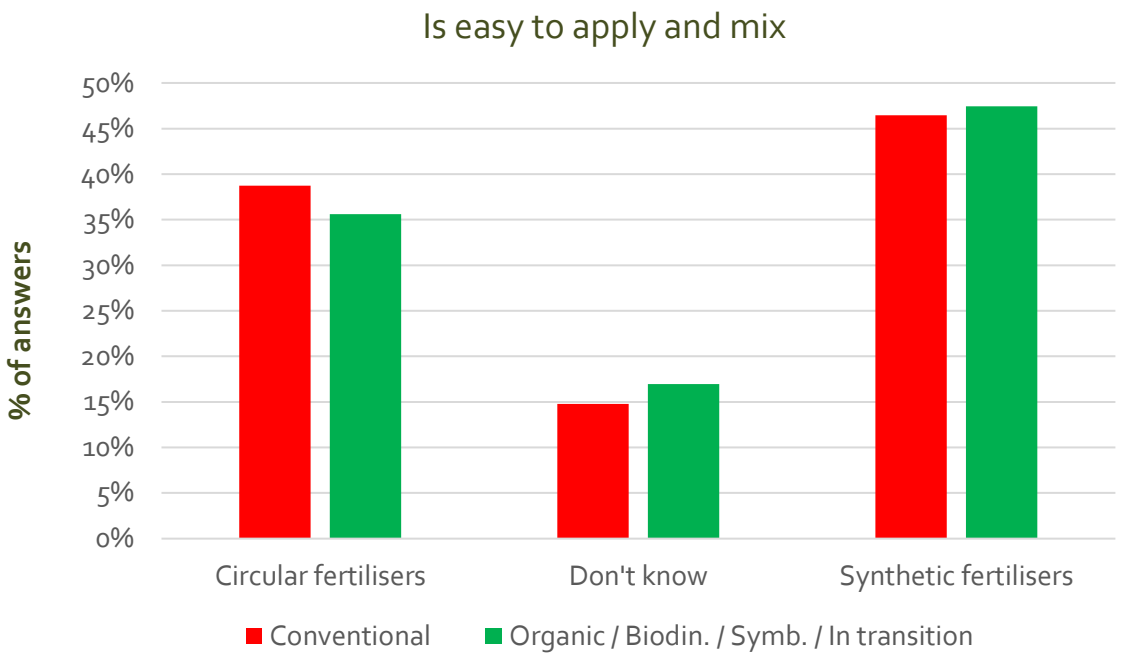


How «important» are the following factors when chosing a fertiliser?

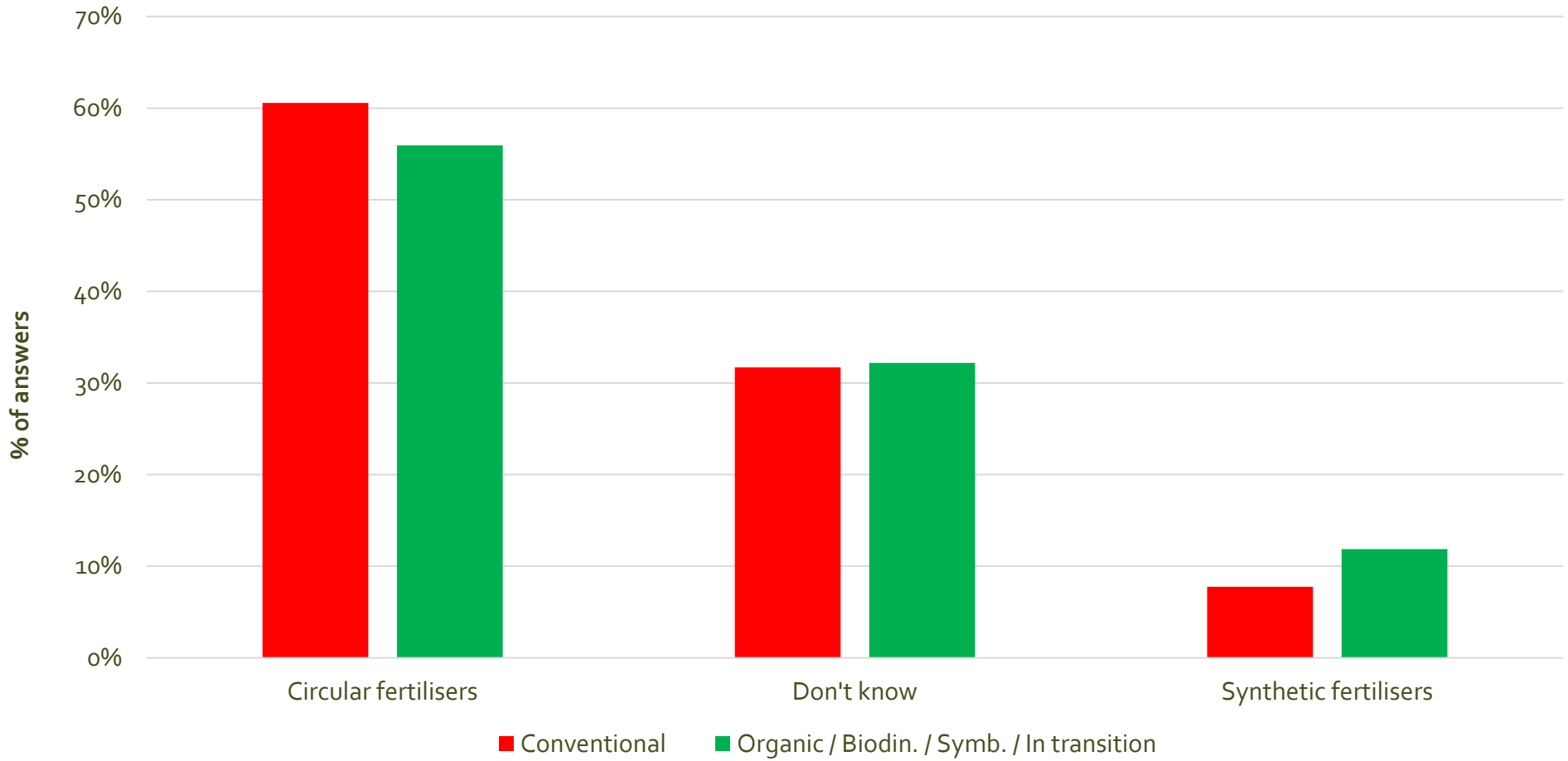


Which fertiliser (circular/synthetic) …?

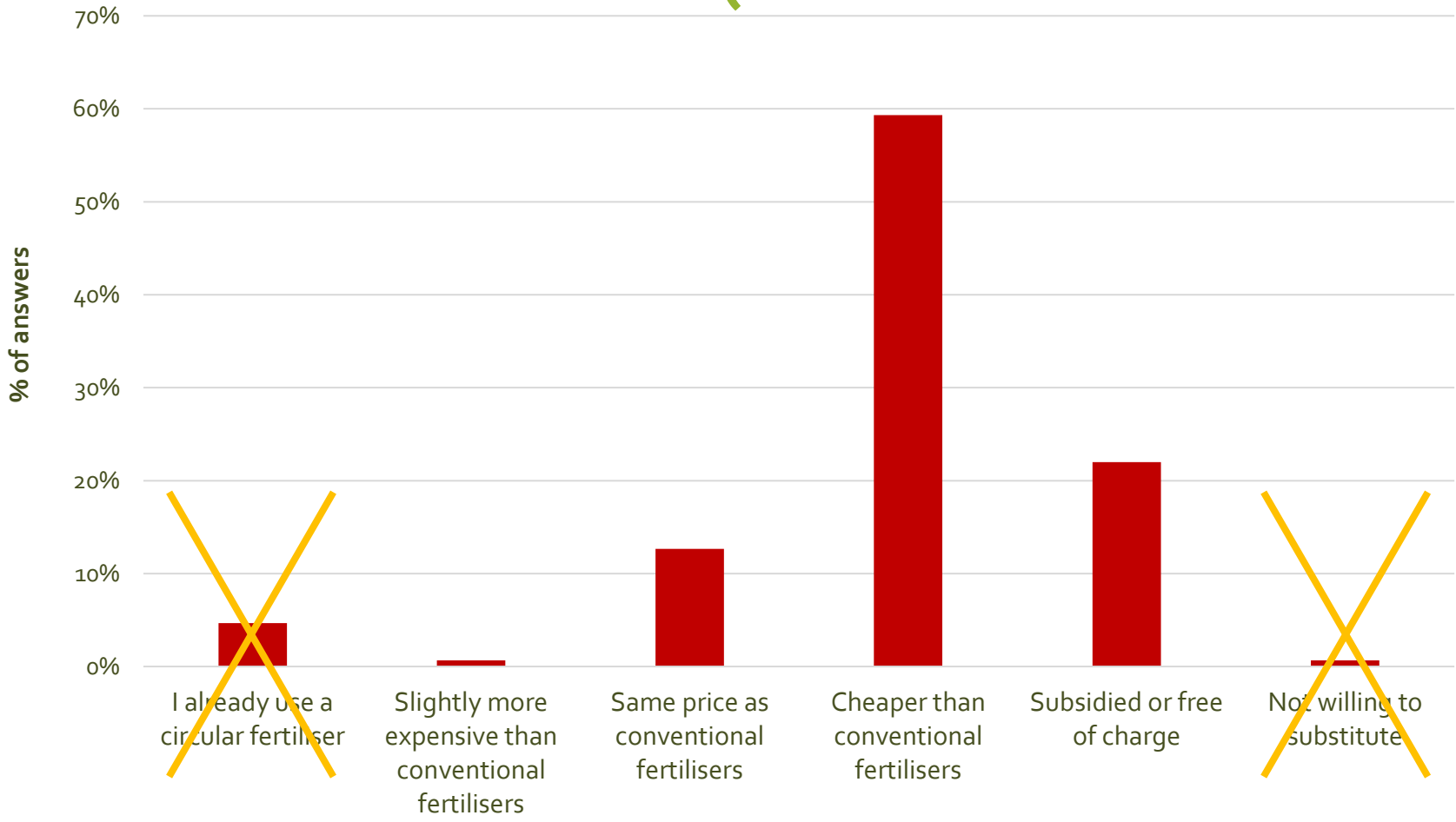




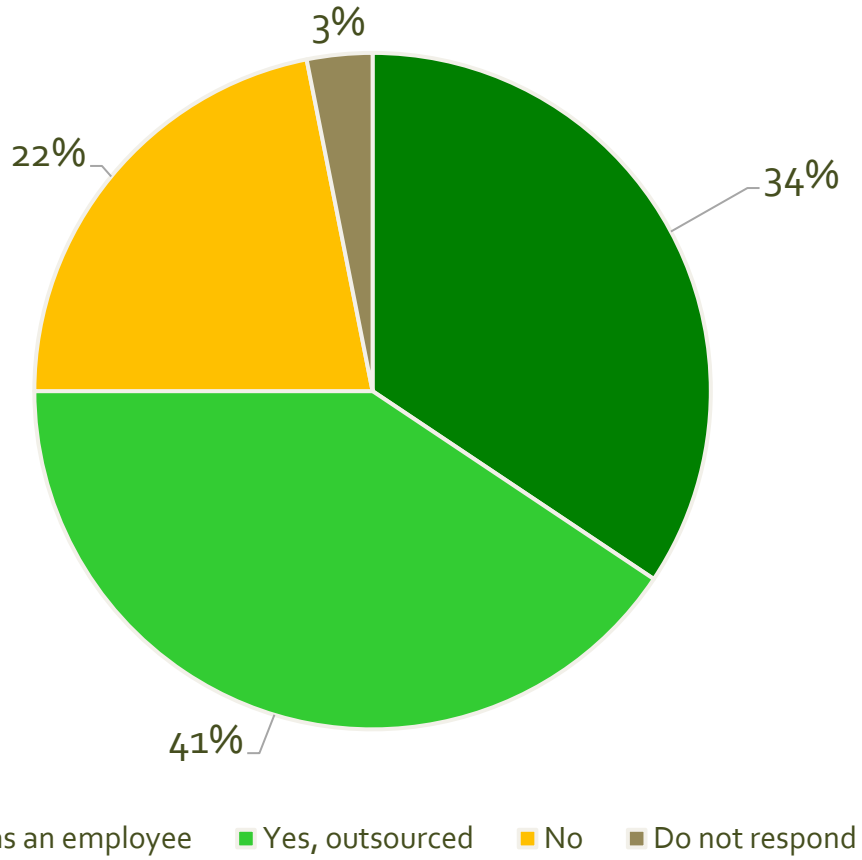
Which fertiliser (circular/synthetic) enhance soil quality?



Under which circumstances would you be willing to use circular fertilisers? (conventional farmers only)



Within the staff of the circular fertiliser producer, are there normally agronomists?



Some results

From the co-creation events with farmers, producers and public administration

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Co-creation Events

14 co-creation events carried out up to date that have involved a total of **397 participants** into discussions and that have **network with 10 EU/national funded projects/platforms/initiatives**

Co-creation Events – Main outcomes

Regulatory	End users are concerned about some regulation being not clear or to be updated.
Technical	Transport cost and mismatch between availability and farmers need can cause issues in their use.
Economic	The end-users are in general interested on immediate results losing a long-term perspective on how they could improve the soil overall health. Carbon credits seem an important driver to push the circular fertilisers market.
Environmental	Although most stakeholders agree on the benefit of circular fertilisers, still their use is still limited
Social	There is a reluctancy to "change their regular business" that sometimes burden the use of circular fertilisers by end-users. Quality Assurance Schemes at national level can be important instrument to overcome mistrust.

Thank you for your attention

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement N° 101060361.

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