

Project Proposal Idea euBIOGROWTH

TITLE

New formulations with biofumigant and biofertilizer properties for the improvement of agricultural productivity based on a Circular Economy concept in the agrifood sector.

CALL DESCRIPTION

CALL/TOPIC	HORIZON-CL6-2023-FARM2FORK-01-7: Innovations in plant protection: alternatives to reduce the use of pesticides focusing on candidates for substitution.
DEADLINE	12/04/2023
BUDGET	EU contribution of around EUR 6.00 million / EUR 12.00 million for the overall topic.
TYPE OF ACTION / FUNDING	Innovation Action (IA) / Funding rate is 70% for profit-making legal entities and 100% for non-profit legal entities, over direct costs (+25% of indirect costs).
PROJECT DURATION	36-48 months.
TOPIC DESCRIPTION	<u>Scope:</u> The use of chemical pesticides in agriculture contributes to soil, water and air pollution, biodiversity loss and can harm non-target plants, insects, birds, mammals and amphibians. The Commission is taking action to reduce the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50% by 2030. Significant efforts are required to develop alternatives to critical active substances used in plant protection. Active substances with certain properties defined in Regulation (EC) No 1107/2009 are considered as candidates for substitution. For Plant Protection Products (PPPs) containing these active substances, Member States are required, when assessing an application for authorisation, to evaluate if these PPPs can be replaced (substituted) by other adequate solutions (chemical or non-chemical). Proposals should target one or more pesticides candidates for substitution in the EU and those pesticides which have been reported to be losing their efficiency due to the emergence of resistant pests.
TYPE OF CONSORTIUM	Proposals must implement the 'multi-actor approach' including a range of actors to ensure that knowledge and needs from various sectors such as researchers, farmers, advisors, and industry including SMEs are brought together.

ABSTRACT

The protection of agricultural soils is a priority concern and has its origin in the incorrect management of resources or their massive use, which has given rise to serious environmental impact problems, with synthetic products of phytosanitary action and fertilisers being considered as one of the main agents. This situation, together with the large amount of agro-industrial waste produced globally, has generated a very serious problem in the agri-food sector. In general, waste management is limited to landfill or accumulation and only in a very specific way is it put to productive use, valorising these by-products, and transforming them into products of interest.

For all these reasons, it is necessary to propose new management models, where the valorisation of by-products obtained in the industry reaches another level, and the use of bio-disinfectants and bio-fertilisers from plant by-products give rise to a response in the reduction of the "soil fatigue" action caused by disinfections carried out using products as aggressive as methyl bromide.

Furthermore, most disinfectant products are disappearing from circulation in the European Union due to their prohibition and proven harmful effects, such as those formulated with the well-known methyl bromide, formulated with metam sodium, metam potassium and dazomet.

In view of the seriousness of the phyto-pathological problems and the relationships with soil fatigue, it is necessary to find non-chemical alternatives that adapt to the agroecological characteristics of

each area. Among the alternatives studied to control soil pathogens is the application of residual organic matter to the soil of different origins, including that of plant origin, and using bio-disinfection or bio-solarisation strategies. After disintegration in the soil, they are said to improve yields by regulating the populations of nematodes, fungal pathogens, and weeds. In this way, the aim is to improve certain criteria, currently under development, on the elimination of these phytopathogens and on soil improvement criteria, associated with the application of amendments or metabolites produced by plants.

The **euBIOGROWTH project** aims at the reduction, reuse and valorisation of by-products originating from the agri-food industry for the development of extracts with potential for the improvement of agricultural productivity. It considers three phases of execution for the implementation of the Circular Economy concept in agri-food industries with their own agricultural production areas and marketing of fresh and processed products:

- **Phase 1.** Obtaining functional ingredients for the development of foods with antioxidant and antimicrobial properties from by-products generated in the agri-food industry.
- **Phase 2.** Obtaining plant extracts from Phase 1 to test the biofumigant action of the combination of extracts obtained and reduce the use of chemical bio-disinfectants, which are increasingly restricted in the market.
- **Phase 3.** With the residue obtained in Phase 2, determine the bio-fertiliser action on the main crops to be selected.

The expected impact of the project will be manifested in an increase in the competitiveness of the European fruit and vegetable production sector, anticipating the adaptation of crops to the new European public health requirements and making it possible to adapt to compliance with the European Union's regulations and recommendations on environmental sustainability, mainly in areas of agricultural intensification.

The impact of the innovation on food health, agriculture and the environment is related to the reduction of synthetic products, in line with the line followed by the European Union in environmental matters. The aim is to restore soil and crop health by incorporating metabolites that can not only reduce the incidence of phytopathogens in the main crops but can also improve their productive yields. On the other hand, the proposal is highly innovative and ambitious as it includes the total management and use of the extracts obtained in the entire production line within the framework of a Circular Economy.

In terms of technological impact, the use of metabolites obtained from vegetable by-products such as those from cruciferous vegetables, citrus fruits, olive groves, etc., which minimise risks as they are of vegetable origin, is noteworthy. The aim is to set an example of Circular Economy applied to the European agri-food sector in favour of sustainable development, but at the same time without losing profitability in the process.

PROJECT CONSORTIUM (draft)

Partners already involved	Country	Role
1. CTNC – Technology Centre for Canning and Food Industry	ES	Coordinator.
2. SME/Large company	ES	Enterprise with extensive applied research activities on bio-fertilisers, and bio-stimulants for the agri-food sector.
Looking for new partners	Country	Role
3. SME/Large company		Focused on producing bio-fertilizers / biofumigants products.
4. SME/Large company		Agricultural/food company generating by-products to validate results on the field.

5.	SME/Large company		Agricultural company able to validate results on the field.
6.	Other actors with interest on the subject such as farmers, advisors, industry associations, etc.		