

Final Technical Report

LIFE+11 ENV/ES/000613

 **LIFE + SAVECROPS**

POLYVALENT NATURAL PESTICIDE FROM LOCAL WASTE
PESTICIDAS POLIVALENTES DE ORIGEN NATURAL OBTENIDOS A PARTIR DE RESIDUOS



Final Technical Report

We can summarize the technical progress of the project as follows:

- The biocide active ingredients coming from whey were extracted from ovine and goat cheese by fermentation with microorganisms to increase its concentration.



- Vegetable waste from Allium and Brassica genus were subjected to solid-liquid extractions, and the corresponding extracts were quantified in their active compounds content: Sulfoxides (SOXs) and Glucosinolates (GSLs) respectively.





- Local agro food by-products have been characterized in their content of active principles with biocide capacity and could be industrially extracted: Fermented Lactic Whey and Garlic Extract.
- In vitro evaluation of the biocide activity of the extracts obtained was carried out by means of m.i.c. technique on the microorganisms responsible for the main diseases in the target crops: tomato, olive and grapevine.



- Extractions on lactic whey and vegetable waste were scale-up to EAL industrial facilities, and economic Viability Study of the SAVECROPS Pesticide manufacturing has been carried out to assess the cost the product.



- The SAVECROPS Pesticide has been formulated with the corresponding extracts: Fermented lactic whey/Garlic extract 67%. Ratio 1 / 2, and its production cost is estimated in 6.47 €/l.



- Eco toxicity, in soil and water, and dermal toxicity data of SAVECROPS pesticide have been assessed and contrasted with conventional pesticides. Its eco toxicity is 96% lower than traditional pesticides, and dermal lesions are not permanent.

TOMATO OLIVE VINE	TREATMENT	ACTIVE PRINCIPLE	FC50-48h (Daphnia M.)	Units	ECOTOXICITY REDUCTION
	SaveCrops biocide	Whey and waste garlic	32,3	mg/L	-
	Sparta 25%	Tebuconazole	4,2	mg/L	-87,00
	Azufre 99%	Sulphur	0,005	mg/L	-99,98
	Altacor 35%	Clorantmethylprol	0,029	mg/L	-99,91
	Apache 1,8%	Abamectine	0,00034	mg/L	-100,00
	Sultrin 40-0,5	S+Cipenmetrin	0,00036	mg/L	-100,00
	Dimetoato 40	Dimetoato	8,9	mg/L	-72,45
	Agrocobre	Oxidoluro de cobre	0,29	mg/L	-99,10

- Environmental and Socio-Economic Impacts of project actions have been quantified and contrasted with previous situation at the beginning of each implementation action.
- SAVECROPS Pesticide efficacy was tested in tomato, vine and olive crops during 2014 and 2015 seasons, and its agronomical and technological evaluation was carried out regarding conventional phytosanitary treatments. Besides, economic cost of SAVECROPS Pesticide application was compared to one of conventional pesticide treatment for each crop.
 - > Taking into account the results obtained in tomato crop, up to 100 % of conventional pesticide treatments could be replaced. Which means 100% of fungicide and insecticide active ingredients. This result exceeds the expected replacement rate of the proposal.
 - > No differences nor in Gross Yield or Acceptable Raw Material have been found in tomato crops comparing the two phytosanitary treatments. Technological and sensory quality of tomatoes and primary transformed tomato based products were not distinct between the two pesticide treatments (SAVECROPS vs. Conventional).
 - > Costs in phytosanitary products on Tomato Crop have been assessed in average: 555 €/ha in conventional treatment vs. 448 € with SAVECROPS Pesticide.



- > In vine crop, 100 % of conventional pesticide treatments have been able to be replaced in the 2015 season, with no differences in grape/ha yield between the two kind of pesticide applied (8.900 kg/ha); cost, however, was higher for SaveCrops treatments regarding conventional one: 224.1 vs 67.3 €/ha.
- > Must and wine manufactured from grapes coming from the two treatments were neither significantly different nor sensorial or technologically.



- > In olive trees, conventional fungicide and insecticide treatments have been able to be displaced in 66%, by SaveCrops pesticide. However, cost per hectare was higher with the natural biocide developed: 280 vs 107 €/ha.
- > Nor olive or olive oil yields were distinct under the two phytosanitary handlings. (15-20 kg olives/tree, 45000 kg olives that bears 1000 kg oil/ha)
- > Quality of olive oil elaborated (chemical and tasting) was the same for the two pesticide applications.



- The work plan established has shown to be not only viable, but also fit for the valorization of these residues as an efficient biocide treatment, with a commercial perspective of use.

participants



www.ctaex.com



Con la colaboración del instrumento financiero
LIFE de la Unión Europea.

With the contribution of the LIFE
financial instrument of the European Union.



+info

<http://ctaex.com/savecrops-life>