ZERYA® free from pesticide residues Certified Farm Management Systems

BASIC SUBSTANCES SEMINAR

Javier Arizmendi - COO

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guarantee of healthy food

BASIC SUBSTANCES

PART 1. REGULATORY ASPECTS

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Basic substances have their legal framework in Regulation (EC) No. 1107/2009

Article 23 defines the approval criteria for basic substances:

a) Not being a substance of concern

b) Do not have an intrinsic capacity to produce endocrine changes or neurotoxic or immunotoxic effects

c) Cannot be used mainly for phytosanitary purposes.

d) Not be marketed as a plant protection product.

The same article 23 admits as basic substances products considered foodstuffs under the terms of article 2 of Regulation (EC) no. 178/2002. Article 28, no. 2-A, authorizes their use with freedom of movement and single market. "... plant protection products may only be placed on the market if they have been authorized in the Member State..." Except "... the use of products containing one or more basic substances;"

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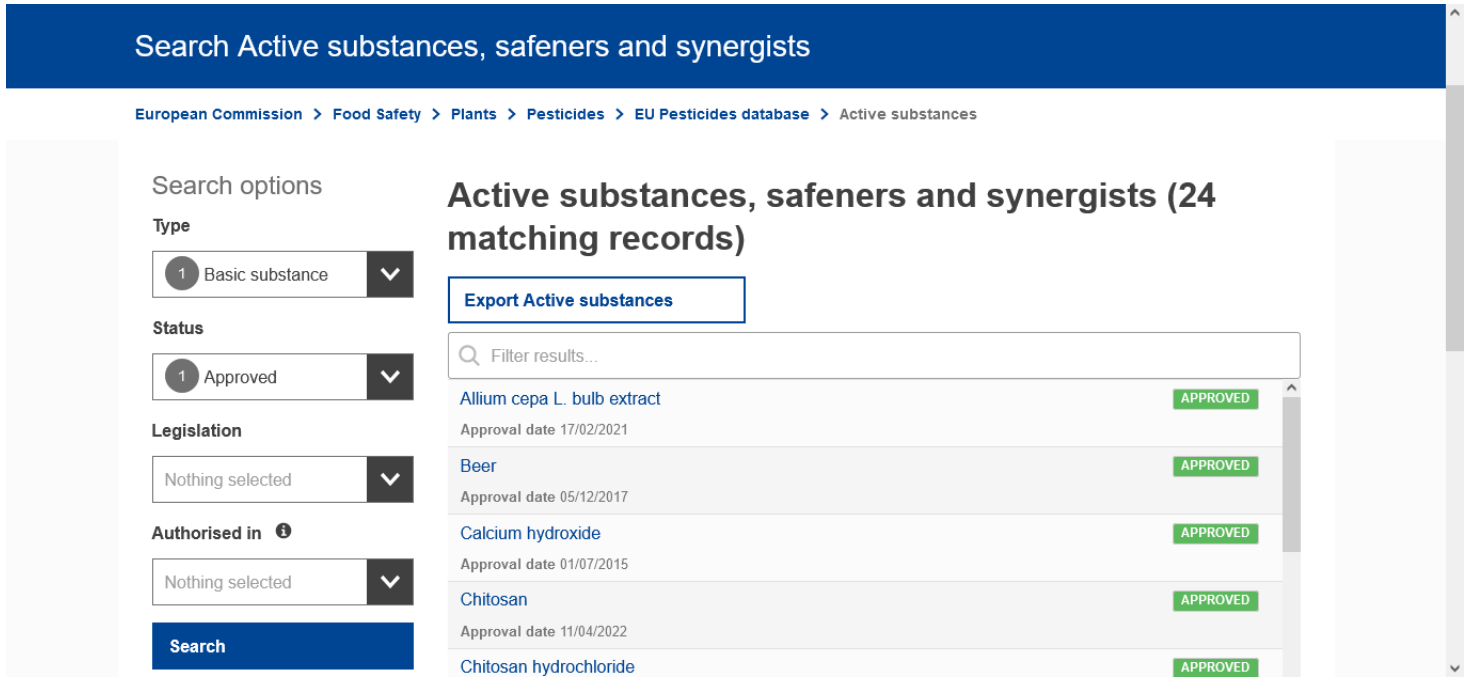
Origin of basic substances

The first informative list of basic substances was published by DG SANCO in 2013, with an initial proposal of 50 substances, based on a proposal drawn up by the French ITAB in 2009. Under this legislation, the list evolved and, with the main support of France, the availability of basic substances in Europe is guaranteed. The approved uses are increased frequently.

The list of authorized substances can be consulted on the website “EU Pesticide Database ”



BASIC SUBSTANCES APPROVAL PROCEDURE - EFSA

EFSA Approval submission Manual:
https://zenodo.org/records/6418582
This is a step-by-step guide

ANNEX I - Flowchart and timelines of the process of approval as basic substance

Process	Applicant	Commission	EFSA	Member States	Other parties	Timeline
Pre-submission (case-by-case)	Request for pre-submission advice (optional) Notification of studies (mandatory if commissioned or carried out)		Pre-submission advice Notification in database			Request: recommended 6 months before submission; Provision: max. 35 days When relevant
Submission and validity check	Submission of application Re-submission (if necessary)	Validity check Confirmation of acceptance, registration in Pesticide Database	Consultation (case- by-case) Publication of initial application (non-confidential version) and summary of pre-submission advice (if any)			Case-by-case Resubmission: (1) in case of request to complete application :3 months deadline; (2) in case of non-compliance with obligation of study notification: 6 months delay
Confidentiality assessment	Implementation of confidentiality decision		Decision on confidentiality Publication of initial application (updated to implement confidentiality decision)			up to 10 weeks
Public consultation			Public consultation Publication of comments	Commenting + Information on additional uses		3 weeks
MS consultation and Technical Report	Response to comments + update of application	Specific mandate to EFSA	Launch of MS commenting Consolidation of comments Publication of updated application Technical Report	Commenting		2 months 3 weeks 60 days 3 months
Peer review (case-by-case)		EFSA consultation (case-by-case)	Full or focused peer review EFSA Conclusion	Expert consultation (if needed)		Negotiated deadline
Decision	Comments on Review Report	Review Report Publication in Official Journal, Pesticide Database		Vote at SCoPAFF		Review Report: 6 months after EFSA outcome Vote: case-by-case

https://www.efsa.europa.eu/sites/default/files/2023-08/pesticides-application-basic-substances-art-23.pdf

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BASIC SUBSTANCES

PART 2. FUNCTIONALITY

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REGULATORY SITUATION

PRODUCT	REGULATIONS	CULTURE	EFFECT OR ACTION
Horsetail herb *Equisetum arvense*	SANCO/ 12386/ 2013	Fruit plants (General), vines, cucumbers, tomato and ornamentals	Fungicide and promoter of the natural defense mechanism
Chitosan hydrochloride – Chitosan	SANCO/ 12388/ 2013	Small fruits (Berries), fodder, cereals, vegetables (General) and cereal seeds, potato seed and beet seed and aromatic plants	Promoter of natural plant defense mechanism (antifungal)
Sucrose – Sugar Food grade	SANCO/ 11406/ 2014	Apple Tree – *Cydya pomonella* Maize – *Ostrynia nubialis*	Promoter of the natural defense mechanism of plants
Calcium Hydroxide – Food quality	SANCO/ 10148/ 2015	Pome fruits and prunoids – *Neonectria galligena* and others wood diseases	Fungicide
Lecithin	SANCO/ 12798/ 2014	Fruit trees (General), vines, ornamentals and others	Fungicide

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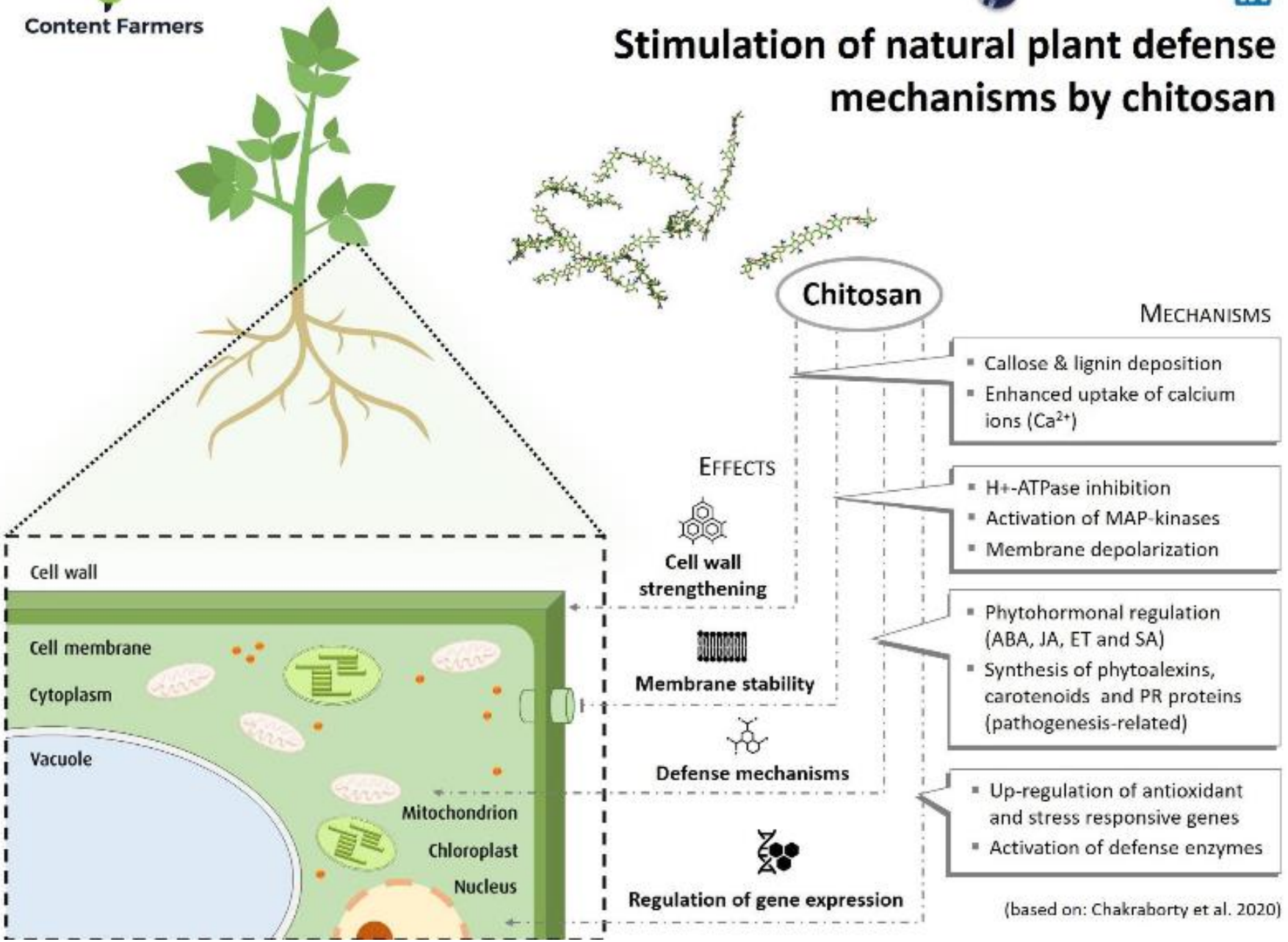
Horsetail herb - *Equisetum arvense*.

Mode of Action: It is used as a fungicide (fungal control) due to its high silica content and the presence of a saponin toxic to fungi called **Equisetonin**, which are effective for the control of various types of fungi. Its main mechanism of action consists of promoting the thickening of cell walls, which prevents the penetration of the hyphae. Its use is recommended both for prevention as well as for protection.

Content Farmers

Michał Słota | Follow me on

Stimulation of natural plant defense mechanisms by chitosan



(based on: Chakraborty et al. 2020)

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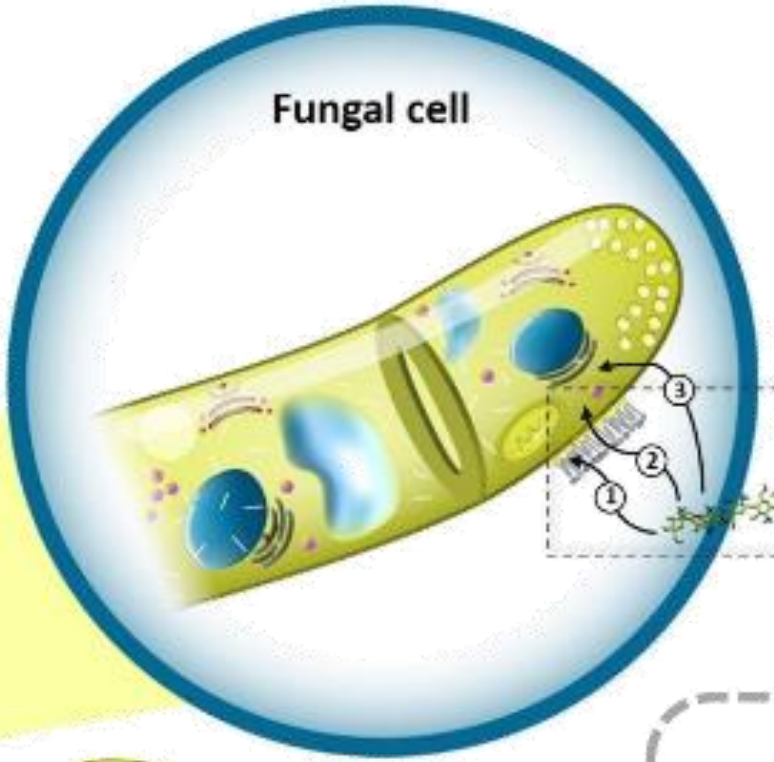
Antifungal activity of chitosan

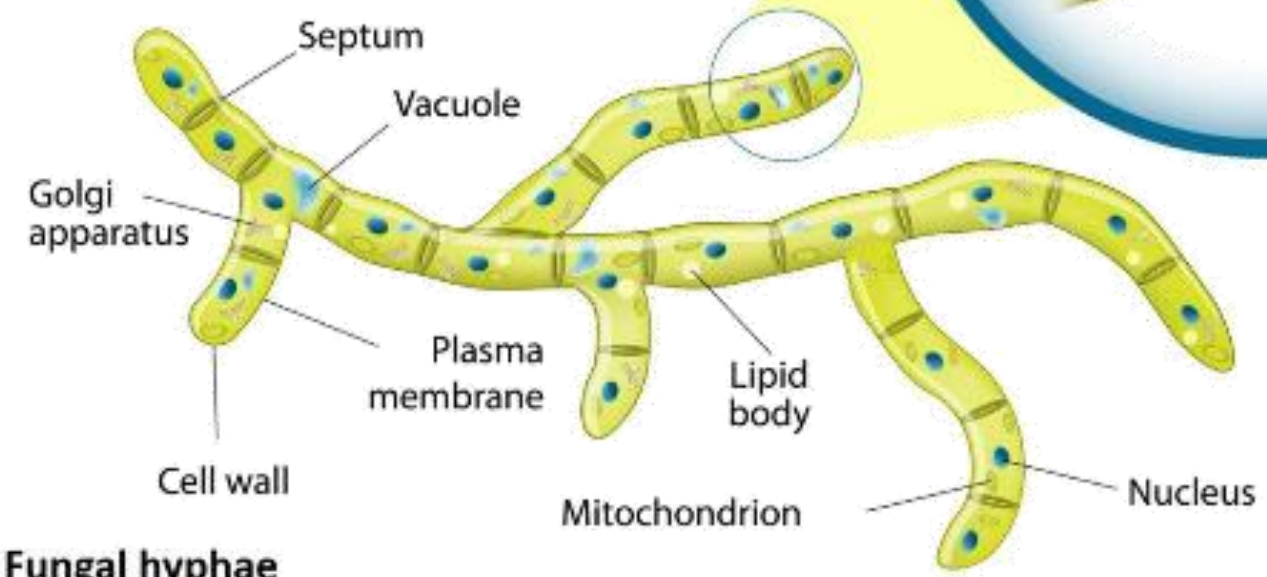
1. **Negatively charged phospholipids** of fungal cell membrane interacts with **positively charged chitosan** molecules.
2. Chitosan passes through the phospholipid barrier, leading to **membrane destruction**.
3. Fungal cells undergo **cell death**.

(based on Verlee et al. 2017)



Content Farmers

Chitosan



Fungal hyphae

Membrane composition determines chitosan sensitivity of certain fungi strains.

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REGULATORY SITUATION

PRODUCT	REGULATIONS	CULTURE	EFFECT OR ACTION
Willow bark *Salix spp.* cortex	SANCO/ 12173/ 2014	Peach tree – *Taphrinia deformans* Apple Tree – *Venturia inaequalis* & *Podosphaera leucotricha* Vine – *Plasmopara viticola* & *Erysiphe necator*	Fungicide
Vinegar – Food quality	SANCO/ 12896/ 2014	1. Cereal and vegetable seeds. 2. Cutting tools. 3. Medicinal plants and perfumery industry.	Fungicide and bactericide: 1 + 2 Herbicide: 3
Fructose – Food quality	SANCO/ 12680/ 2014	Apple tree – *Cydia pomonella* Maize – Symphylans *Scutigerella immaculata* Vine – *Scaphoideus titanus* & *Plasmopara viticola*	Promoter of the natural defense mechanism of plants

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PRODUCT	REGULATIONS	CULTURE	EFFECT OR ACTION
Sodium hydrogen carbonate – Food quality	SANTE/ 10667/ 2015	Vegetables (General), Small fruits, ornamental – *Spaerotheca spp* & *Oidium spp.* Vine – *Uncinula necator* Apple Tree – *Venturia inaequalis*	Fungicide (Spore dissecation)
Diammonium phosphate	SANTE/ 12351/ 2015	Fruit Fly Attractant: Fruit trees – *Ceratitis capitata* Cherry tree – *Rhagoletis cerasi* Olive tree – *Bactrocera oleae*	Trap attractant
Whey	SANCO/ 12354/ 2015	Cucurbits – Powdery mildew & mildew Vine – *Erysiphe necator* Tomato plant – *Begomovirus* Gloves and sharp instruments	Fungicide and dissinfectant

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PRODUCT	REGULATIONS	CULTURE	EFFECT OR ACTION
Sunflower Oil – Food grade	SANCO/ 10875/ 2016	Tomato – *Oidium neolycopersici*	Fungicide
Hydrogen peroxyde	SANTE/ 11900/ 2016	Cutting tools – Solanaceae crops Lettuce seed treatment and cut flowers	Fungicide and bactericide
Charcoal with bentonite	SANTE/ 11267/ 2016	Vine – (White) Trunk disease	Protective
Sodium chloride – Food quality	SANTE/ 10383/ 2017	Vine – *Erysiphe necátor* Mushrooms – Fungal diseases Vine – *Lobesia botrana*	Fungicide and insecticide
Mustard Seed Powder – Food Grade	SANTE/ 11309/ 2017	Wheat seeds	Fungicide

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REGULATORY SITUATION

PRODUCT	REGULATIONS	CULTURE	EFFECT OR ACTION
Urtica dioica	SANCO/ 11809/ 2016	Pome and Prunoids – Aphids Beans – *Aphis fabae* Potato – *Mysus persicae* Hardwoods and Ornamentals – Aphids Brassicas – Beetles and caterpillars Pome fruits – *Cydia pomonella* Beans and Vine – Tetraniq mites . Brassicas – *Alternaria spp.* Cucurbits – Mildius and alternaria Tomato – *Alternaria solani, Septoria lycopersici.* Cucumber – *Podosphaera xhantii, Pythium spp.* Pome fruits and prunoids – Alternaria, Moniliosis, Botrytis and Rhizopus Vine – *Plasmopara viticola* Potato – *Phytophtora infestans*	Insecticide, acaricide, fungicide

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But why *Urtica* can do all this?

Numerous mineral salts	• Iron, calcium, silica, potassium, sodium, sulfur, manganese, phosphorus
Vitamins	• A, group B and C, beta-carotenes
Flavonoids	• Derivatives of kenferol and quercetol . • Phytosterols in leaves and roots.
Organic acids	• Caffeic, formic, gallic, chlorogenic, linoleic (+ seeds)
Amino acids	• Histamine, serotonin, acetylcholine in stinging hairs or trichomes.
Complex proteins	• Lectin, phenylpropanes, ceramides, lignans and tannins in the roots. Mucilages in seeds
Polyphenols , polysaccharides and agglutinin also in the roots.	

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PRODUCT	REGULATIONS	CULTURE	EFFECT OR ACTION
Beer – Food quality	SANTE/ 11308/ 2017	ALL - (**do not** drink while working ☺)	Mollusquicide – Snails & slugs
Talc E553B – Food quality	SANTE/ 11639/ 2017	Pomoideae , Olive grove . Aphids, psyllids and dipterans such as: *Cacopsila pyri, C. fulguralis, D. suzukii, Panonychus ulmi, Bactrocera oleae*	Physical barrier, wettable dust.
Onion oil – Food quality	SANTE/ 10615/ 2018	Umbeliphers – *Psila rosae*	Repellent
L-Cysteine (Hydrochloride)	SANTE/ 11056/ 2019	Leafcutter ants – as bait on anthills	Supporting substance, mix with flour max 8 %
Quassia amara L. wood extract	PENDING	Under Evaluation	Fungicide
Sodium hypochlorite	PENDING	Under Evaluation	Dissinfectant

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CANDIDATES DISCARDED 2022

ID Sust. activa	Substancia
1418	Achillea millefolium L. (Milenrama ES / Milefólio PT)
1236	Arctium lappa L. (aerial parts) (Bardana ES/PT)
871	Artemisia absinthium L. (Ajenjo ES/PT – Wormwood EN)
872	Artemisia vulgaris L. (Hierba San Juan ES / Artemige PT)
1277	Capsicum annuum L. var. annuum, cayenne, extract (Oleoresins capsicum)
1454	Carbon Dioxyde (sustancia básica)
1449	Comfrey decoction (Symphytum officinale) (Confrei PT / Consuelda ES)
1428	Sulfide dimethyl
1252	Grape cane tannins (Vitis vinifera)
1303	Landes pine tar
1425	Origanum vulgare L. essential oil(Orégano ES / PT)
1417	Paprika extract (capsanthin, capsorubin E 160 c)
55	Potassium Sorbate
706	Propolis (Water-soluble extract)
873	Rheum officinale Root Extract (Rhubarbo ES / PT, Rubarb EN)
1276	Saponaria officinalis L. roots (Jabonera ES / Erva-Savoeira PT)
1254	Satureja montana L. Essential oil(Ajedrea ES / Segurelha PT, Savory EN)
875	Tanacetum vulgare L. (Tanaceto ES / Atanasia PT)

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Basic substances can be synergistic with each other, as with other biostimulants and biological agents. They respect beneficial insects and have a very low environmental impact. They are essential for Residue-Free Agriculture.

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THANK YOU VERY MUCH

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