



BIOPROTECTORS

BROCHURE





BIOPROTECTORS INTRODUCTION



The intensive use of synthetic pesticides in pest control activities can cause resistance and therefore resurgence of target pests. Undesirable effects on the environment, including reduction in natural enemies (predators and parasitoids) and beneficial insects, are also possible.

A major concern is the effects of synthetic pesticides on human health. In the last few decades, bioprotectors have emerged as a potential alternative to synthetic pesticides.

The information contained in these data sheets is result of the work of the people that make up the Department of Research and Development of ASPEAGRO. His experience acquired from the bibliography, laboratory and field experiences, have allowed us to design the products included in this section.

“Botanicals are future potential sources for development of ecofriendly products for crop protection and nutrition”

- Nagappan Raja 2014.

BIOPROTECTORS ALL PRODUCTS



ARANKA



NATUREX



**nematural
Botanical**



Q-SAN

BIOPROTECTORS ALL PRODUCTS

ARANKA

CHARACTERISTICS

ARANKA is a Bio-insecticide / acaricide of natural origin. It's highly recommended for the Red Spider mainly those belonging to the genera Tetranychus and Eutetranychus.

ARANKA is a liquid formulation which contains an active molecular fraction obtained from leaves fractionation from Umbelliferae family. Synergy of different active molecules with different mechanisms of action that disrupt various phases of the insect's life cycle. Aranka manages to get a delay in the appearance of resistance.

This product has a mixture of lipid and organic surfactants as complements. Within each of them there is a formation of polymeric and biodegradable microspheres.

All of them enhance the product dispersion and adhesion, showing its high efficiency.

It reaches 80% of adult mortality after 3 hours of application ("Knock down" effect), due to its powerful contact action. This direct efficacy is complemented by a long-term effect on the spiders feeding behavior.



ARANKA



COMPOSITION

%w/v

Active molecular fractions obtained by Umbelliferae leaves fractionation	96
Zinc (Zn)	2
Manganese (Mn)	2



ACTIONS

- ▶ Instant death by asphyxiation due to the filling of a tracheal Stigma.
- ▶ The protective layer of the insect is destroyed, causing dehydration and subsequent death by suffocation.
- ▶ Anti-inflammatory effect: Inhibition of feeding through the interaction of the formulation components with the gustatory receptors of the spider.
- ▶ Repellent effect: Strong repellent effect due to the interaction of the volatile components with the olfactory receptors of the spider.



APPLICATION

CROPS

Extensive crops, Fruit Tree corn, cotton, vegetables.

DOSE

2-4L / 1000L(2-4 cc/L) Every 7-14 days depending on the pest initial infestation level.

Aranka is compatible with auxiliary insects and bees.



RECOMMENDED FOR RED SPIDER MITES AND OTHER PLAGUES

BIOPROTECTORS ALL PRODUCTS NATUREX

CHARACTERISTICS

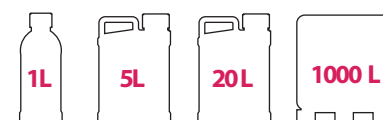
NATUREX is a natural biofungicide based on Zinc, Tea tree (*Melaleuca alternifolia*) oil and terpenic alcohols which prevents oxidative stress, and in particular, the

NATUREX contains *Melaleuca Alternifolia* Tea Tree Oil and anti-disease agents as well as other adjuvants to **NATUREX** is a natural Biofungicide that acts in a preventive and curative way, by inhibiting the development of spore germination, inhibition of mycelial growth and expansive lesion; inhibition in the production of sporangia, by suppression and eradication of colonies of pathogens present in fruits and leaves.

With its unique mode of action, **NATUREX** is an excellent tool for Resistance Management. It can be applied throughout the year without resistance and is non-toxic to crops, users and the environment.



NATUREX



COMPOSITION

%W/W

Melaleuca Alternifolia extract	20,0
Vegetable Oils	76,0
Zinc (Zn)	1,5
Manganese (Mn)	0,5

BIOFUNGICIDE AND BACTERICIDE

BENEFITS

- Multiple modes of action
- Control of a wide range of plant pathogens, particularly bacterial and ascomycete diseases
- Preventive and curative action
- Resistance management
- No residues; no MRL
- Zero toxic load
- No measurable affect on beneficial insects and bees
- Easily adapted sustainable and IPM practices
- Non-Persistent in the environment



APPLICATION

Crop	Disease	Latin name	Dose ml/Ha
Bananas	Black sigatoka	<i>Mycosphaerella fijiensis</i>	350-900
	Yellow sigatoka	<i>Mycosphaerella musicola</i>	
Berries	Alternaria	<i>Alternaria spp.</i>	800-1500
	Anthracnose	<i>Colletotrichum spp.</i>	
	Fruit rot	<i>Rhizopus stolonifera</i>	
	Grey mold	<i>Botrytis cinerea</i>	
	Powdery mildew	<i>Sphaerotheca macularis</i>	
Cucurbits	Powdery mildew	<i>Sphaerotheca fuliginea</i> <i>Erysiphe cichoracearum</i>	800-1500
Leafy greens	Powdery mildew	<i>Erysiphe cichoracearum</i>	500-1000
	White mold	<i>Sclerotinia sclerotiorum</i>	
Peanuts	Early leaf spot	<i>Cercospora arachidicola</i>	800-1000
Peppers	Alternaria rot	<i>Alternaria alternata</i>	800-1500
	Anthracnose	<i>Colletotrichum spp.</i>	
	Bacterial canker	<i>Clavibacter michiganensis</i>	
	Bacterial spot	<i>Xanthomonas campestris</i>	
	Frog-eye leaf spot	<i>Cercospora capsici</i>	
	Grey mold	<i>Botrytis cinerea</i>	
	Powdery mildew	<i>Leveillula taurica</i>	
	Syringae leaf spot	<i>Pseudomonas syringae</i>	
Rice	Blast	<i>Pyricularia oryzae</i>	500-1000
	Grain complex	<i>Bipolaris oryzae</i>	
	Sheath blight	<i>Rhizoctonia solani</i>	
Tomato	Bacterial diseases	<i>Pseudomonas syringae</i>	800-1500
		<i>Xanthomonas spp.</i>	
		<i>Clavibacter michiganensis</i>	
Vines	Early blight	<i>Botrytis cinerea</i>	800-1200
	Grey mold	<i>Cladosporium fulvum</i>	
	Leaf mold	<i>Oidium spp.</i>	
	Powdery mildew	<i>Leveillula taurica</i> <i>Erysiphe poligony</i>	
	Sour rot complex	<i>Botrytis cinerea</i> <i>Erysiphe necator</i> <i>Botrytis cinerea,</i>	

BIOPROTECTORS ALL PRODUCTS

NEMATURAL BOTANICAL

CHARACTERISTICS

NEMATURAL Botanical is an organic product that must be applied to the soil by irrigation (drip, flood, spraying).

At the time of its application, **NEMATURAL Botanical** causes nematode immobilization subsequently causing its death.

NEMATURAL Botanical fully respects beneficial soil microorganisms.

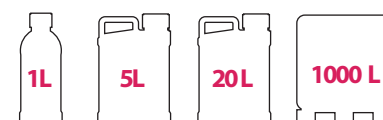
The biostimulating effect of **NEMATURAL Botanical** L-Amino Acids makes the plant to grow new roots and will not suffer stress like in other chemicals application.

Due to its mode of action by contact, **NEMATURAL Botanical** has the advantage of not causing resistance to the application of the product, that is, by using an all-natural active principle.

NEMATURAL Botanical controls plant parasites nematodes at the soil.



nematural Botanical



COMPOSITION

%w/v

Plant extract (Gramineae Sp.)	70,0
Phosphorus (P ₂ O ₅)	8,0
Potassium (K ₂ O)	2,0
L-Amino Acids	5,0
Organic Matter	41,0

BIONEMATICIDE



Meloidogyne sp.



Ditylenchus sp.



Rotylenchulus sp.



DOSES AND APPLICATION

Crop	L/Ha	Applications (1,2 or 3)
Garlic	10-20	Transplant - at 30 days
Aubergine	10-30	Transplant - at 30 days
Zucchini	10-20	At the beginning of crop
Onion	10-20	Transplant - at 30 days
Lawn	10-20	After cut - at 21 days - at 21 days
Citrus	20-40	After fruit curd - at 30 days - at 45 days
Ornamental	10-40	After cutting - at 30 days - at 30 days
Strawberry	20-40	Transplanting - at 21 days
Fruit	10-20	After fruit set - at 30 days
Green bean	10-25	Beginning of crop
Melon, watermelon	10-25	Transplant - at 21 days
Potato	10-25	Seeding - at 21 days
Cucumber,	10-20	Transplant - at 30 days - at 30 days
Pepper	15-30	Transplant - at 30 days - at 30 days
Pineapple	40-60	February - July
Banana	40-60	April - September
Tobacco	20-30	Transplant - at 30 days
Tomato	20-40	Transplant - at 30 days - 30 at days
Grape	15-40	After flowering - at 30 days

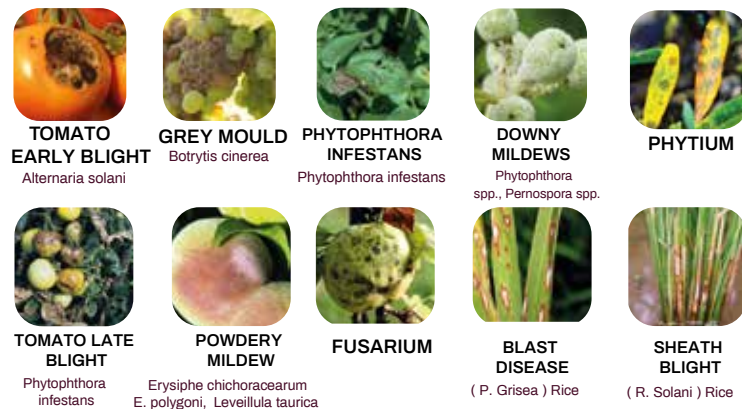
BIOPROTECTORS ALL PRODUCTS

Q-SAN

CHARACTERISTICS

Q-SAN is a biopesticide composed of biochemicals obtained from natural sources (Chitin). Chitosan (poly-D-glucosamine) is a derivative of chitin obtained from the exoskeleton of marine crustaceans. It is a potent inducer of systemic acquired resistance against disease attacks. Q-SAN creates a biofilm around the plant tissue, preventing disease attacks while inducing the synthesis of fungistatic compounds. Plants treated with Q-SAN undergo biochemical and structural changes that lead to increased production, mediated by improved tolerance to water and heat stress. Q-SAN has fungistatic properties against both airborne and root diseases. When applied to plants, cells receive the same stimulus as if they were being attacked by a disease. This promotes the activation of the Systemic Acquired Resistance (SAR) mechanism, providing an immune response against diseases.

DEFENSE INDUCER. VACCINE EFFECT. CHITOSAN OLIGOMERS ACT TO PROTECT PLANTS FROM THE MOST COMMON FUNGAL DISEASES.



FUNGICIDE & BACTERICIDE. ELICITOR



COMPOSITION

%w/w

Chitin (Poly-D-glucosamine) 3,0
Density:1,01
pH: 5



- It has fungicidal effects.
- Significantly increases plant resistance and lignification.
- Stimulates the synthesis of biochemical compounds.
- Enhances balanced development of the aboveground and root systems.
- Stimulates the chitinolytic antagonist microflora of phytopathogenic nematodes.
- Reduces transpiration in plants and enhances physiological water use efficiency.
- Improves seed germination and emergence. Has positive effects on food storage.



APPLICATION

CROPS	DOSE	NUMBER OF APPLICATIONS	TYPE OF APPLICATION	METHOD OF APPLICATION
APPLE, PEAR	10L/ha new plantations / 20L/ha adult plantations	1 – 2 depending on the general condition of the plants.	In the peak of root activity.	Drip irrigation, injection, or soil spraying.
AVOCADO	10L/ha new plantations / 20L/ha adult plantations	1 – 2 depending on the general condition of the plants.	In the peak of root activity	Drip irrigation, injection, or soil spraying.
BLUEBERRY, RASPBERRY, BLACKBERRY	10L/ha new plantations / 20L/ha adult plantations	1 – 2 depending on the general condition of the plants	In the peak of root activity	Drip irrigation, injection, or soil spraying.
CITRUS	10L/ha new plantations / 20L/ha adult plantations	1 – 2 depending on the general condition of the plants.	In the peak of root activity.	Drip irrigation, injection, or soil spraying.
GARLIC	5L / 100L	1	In seed condition.	Immersion (15 minutes).
GREENHOUSE TOMATO	15 L / 100L	1	Pre-planting	Immersion during 30 seconds in speedling
	5 – 10 L / ha	4	10 days after plantation every 7 days.	Irrigation
	5 – 10 L / ha	4	At the beginning of physiological maturity, every 7 days.	Irrigation
NURSERIES (GRAPEVINES AND AVOCADOS)	Dilution at 1 or 2% (*)	2-3	Every 15 days, starting from the formed root.	Drip irrigation, injection, or soil spraying.
OLIVE TREE	10L/ha new plantations / 20L/ha adult plantations	1 – 2 depending on the general condition of the plants.	In the peak of root activity.	Drip irrigation, injection, or soil spraying.
ONION	1 L / 100L	3	30 days before transplanting. Weekly applications.	Soil spraying (beds).
	3 L / 100L	1	Before transplanting.	Root immersion (30 seconds).
PEACH, NECTARINE, APRICOT, CHERRY	10L/ha new plantations / 20L/ha adult plantations	1 – 2 depending on the general condition of the plants	In the peak of root activity	Drip irrigation, injection, or soil spraying.
POTATO	From 3 to 7,5 L/ha	4	Every 10 days. Starting at 30 days after planting.	Irrigation.
STRAWBERRY	5 L/ha	2	In the peak of root activity.	Drip irrigation, injection, or soil spraying.
VINE, TABLE GRAPES, KIWI	10L/ha new plantations / 20L/ha adult plantations	1 – 2 depending on the general condition of the plants.	In the peak of root activity.	Drip irrigation, injection, or soil spraying.
WALNUT, ALMOND, EUROPEAN HAZELNUT	10L/ha new plantations / 20L/ha adult plantations	1 – 2 depending on the general condition of the plants.	In the peak of root activity.	Drip irrigation, injection, or soil spraying.

Q-SAN is compatible with most commonly used phytosanitary products. When making an unknown mixture, it is recommended to perform a prior compatibility and miscibility test or consult with our Technical Department.



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BIOPROTECTORS

CROP NUTRITION AND BIOPROTECTION