



# PHOSPHITES

Plant Defense Inductors

# Phosphites

The phosphite molecule contains three oxygen atoms that give high mobility in the plant tissue and soil. They are systemic compounds, easily absorbed and translocated through the xylem and phloem to all areas of the plant.

The phosphite is highly mobile within plants, unlike many fungicides. This means that you get protection throughout the plant.

PLAN INDUCTOR DEFENSE (PIS) is easily absorbed by leaves, roots and also through bark of trees. Due to its up and down

## INDIRECT ACTION

Increasing the host resistance against fungi attacks

## DIRECT ACTION

Slowing the growth of the pathogen and inhibiting the formation of spores.

It stimulates the production of Phytoalexins, which enhance host natural defences against Oomycets fungi: *Phytophthora* spp., *Plasmopara viticola*, *Bremia*, *Pseudoperonospora*, *Peronospora*, *Pythium* and also some bacteria: *Pseudomonas* and *Erwinia*.



Phytophthora

Effects on plant

Pseudoperonospora

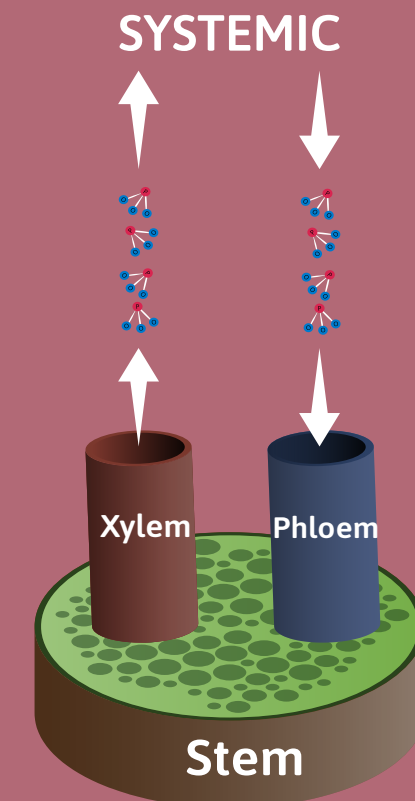
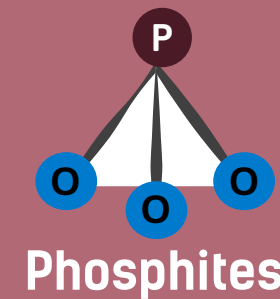
Effects on plant

Erwinia

Effects on plant

It is specially recommended to prevent diseases caused by these pathogens, such as:

- Water spot and brown rot in citrus (fruits).
- Foot rot and trunk-branch canker (Gummosis) in avocados, citrus, top fruits and ornamental trees.
- Fire blight in top fruits.
- Downy mildew in table and vine grapes, lettuces and onions.
- Blight of pepper.
- Root rot and downy mildew in: strawberries, tomatoes, cucurbits, vegetables and ornamentals.
- Brown blight of conifer fences.
- Damping-off in turf and lawns.



# Fertilizer or fungicide?

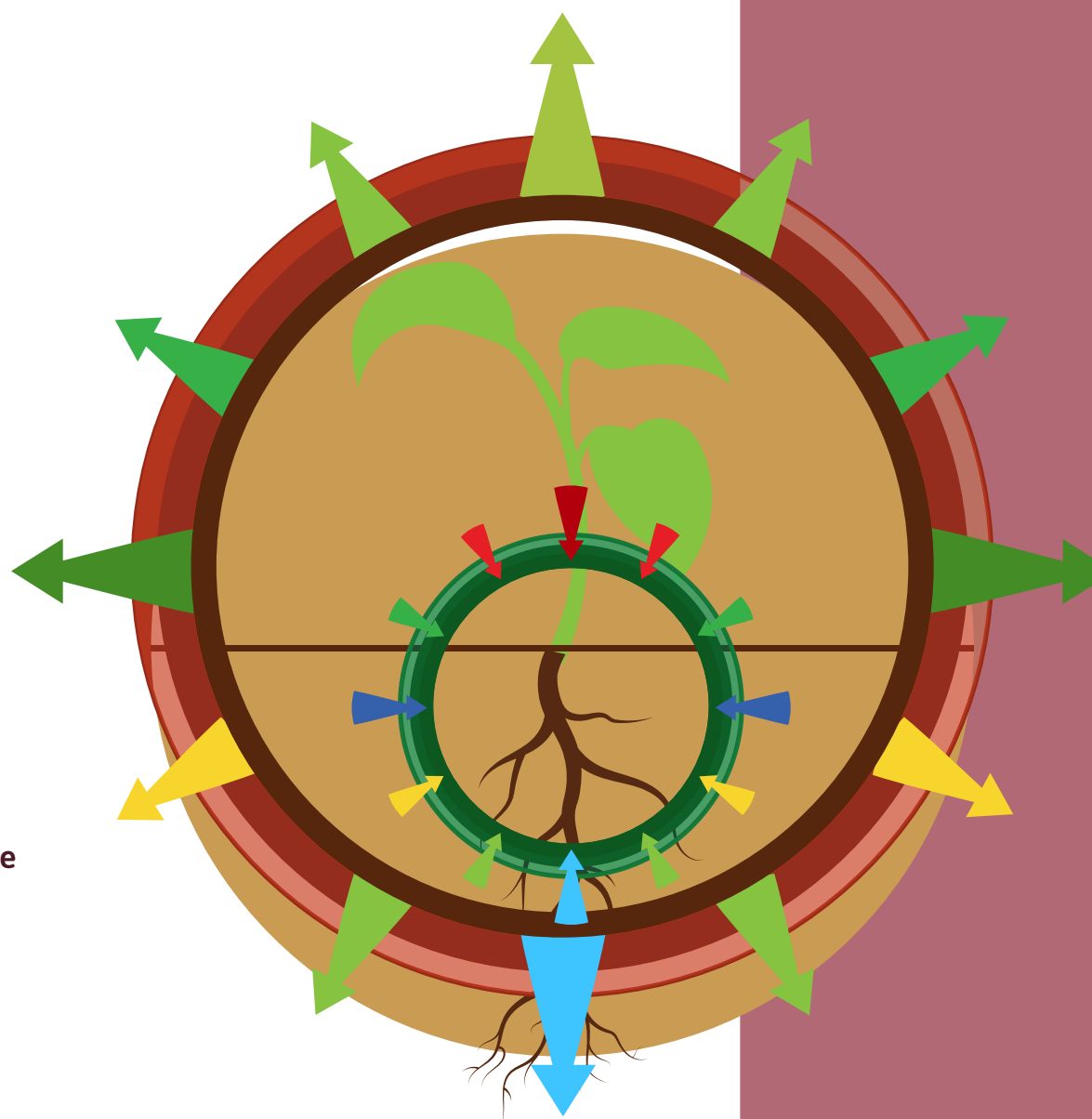
Phosphite based plant treatments have produced remarkable results not only in terms of disease control but also in terms of the nutrition

## DISEASE CONTROL

- ☐ Effective control of Phytophthora , Downy Mildew and Pythium, as well as other diseases.
- ☐ Increased production of the natural fungicides (phytoalexins) effectively providing organic disease control.
- ☐ Multiple sites of action inhibiting the development of phosphite resistant strains.
- ☐ Low environmental toxicity.

## NUTRITIONAL

- ☐ Rapid Phosphorous Uptake, compared with conventional phosphates.
- ☐ Controlled release of phosphorous through various growth stages of the crop.
- ☐ Enhanced plant and root development.
- ☐ Better yields and fruit quality.
- ☐ Improved plant health.



Pythium

Effects on plant



Downy Mildew

Effects on plant



Phytophthora

Effects on plant

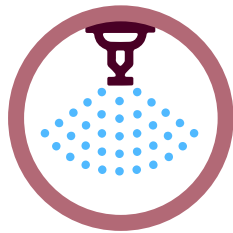


Plasmopara

Effects on plant

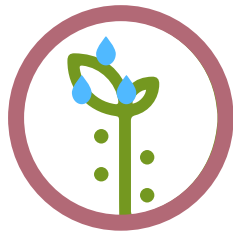
# How do I apply phosphite?

Aspe phosphite products are particularly flexible and can be applied to the plant in at least seven different ways.



## FERTIGATION

Fertigation is the application of nutrients using a crop irrigation system. The nutrients are introduced into the water flowing through the system. Both solutions and suspension can be injected into irrigation systems using calibrated injection pumps that ensure precision over both space and time.



## FOLIAR AND SPRAY

Foliar spray is the application of treatments to the leaves using appropriate spray equipment and sufficient water to provide adequate penetration and coverage. Equipment settings and water volume may need to vary, depending on the growth stage of the crop. Foliar solutions can be applied with the aid of conventional spray equipment i.e. fan sprayer, backpack sprayer, hi-boy, low or high volume ground sprayer, aerial sprayer etc.



## TRUNK SPRAY

Trunk spray is the application of treatments to the bark using appropriate spraying equipment. For tree crops it is highly recommended that trunk application is made in conjunction with Agrichem's patented basal translocation agent Pentrabark.



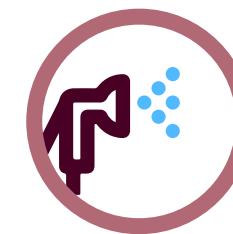
## TRUNK INJECTION

Trunk injection is the application of treatment injected via a syringe into a driller hole at the stem or trunk of a tree. There is an art and a science to properly injecting chemicals. This treatment should only be conducted by a skilled tree care specialist who has been trained in the procedure.



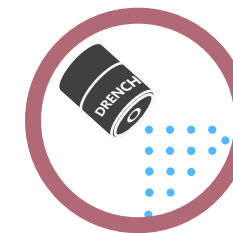
## TRUNK PAINT

Trunk painting is the process of painting the trunk and lower limbs of a tree with a chemical solution and should be conducted only during weather. The trunk paint treatment is used mainly to clean up wounds and infections.



## IN-FURROW

In-furrow is a chemical application that occurs during the seeding process. A tractor is used to plough a furrow in the ground. As the furrow is being dug seeds are dropped and chemical treatment is applied at the same time. After treatment application is complete the furrow is covered over with soil.



## SOIL DRENCH

Soil drench is the technique whereby a liquid (fertilizer, fungicide or other) is applied to the soil around a plant or seed. It can be applied at seeding or early planting or later, using a hand spray, boom spray or watering can depending on the size of area requiring treatment.

# Aspe Phosphite products

## inmunor

Inductor of the natural  
plant defense  
Crystalline potassium  
phosphonate



## KELO PHOS 30 20

Plant defense inductor



## KELO PHOS CU

Plant defense inductor



## KELO PHOS MN ZN

Plant defense inductor



# Aspe Phosphite products

# immunor

## Characteristics

INMUNOR is a greater activator of the natural defense of the plant against certain pathogenic fungi and bacteria.

It stimulates the production of Phytoalexins, which enhance the host's natural defences against Oomyces fungi: Phytothora spp., Plasmopara viticola, Bremia, Pseudoperonospora, Peronospora, Pythium and also bacteriae: Pseudomonas and Erwinia.

It is specially recommended to prevent diseases caused by these pathogens, such as:

- Water spot and brown rot in citrus fruits.
- Foot rot and trunk-branch canker (Gummosis) in avocados, citrus, top fruits and ornamental trees.
- Fire blight in top fruits.
- Downy mildew in table and vine grapes, lettuces and onions.
- Blight of pepper.
- Root rot and downy mildew in: Strawberries, toma toes, cucurbits, vegetables and ornamentals.
- Brown blight of conifer fences.
- DAMPING-OFF in turf and lawns

## Composition

%w/w

Potassium Phosphonate	95,0
Phosphorus (P <sub>2</sub> O <sub>5</sub> )	57,0
Potassium (K <sub>2</sub> O)	38,0

## DOSAGE AND APPLICATION

Crop	Application	Doses/treatment	Spray volume	Remarks
CITRUS AVOCADO TOP FRUITS	Foliar spray (H.V.)	250 g/hl	1.000 - 3.000 l/ha	Three (3) preventive treatments per season are recommended: in the beginning of Spring, Summer and beginning of Autumn. In top fruits, treat once or twice in pre-blossom or/and petal fall, to prevent Fire blight.
	Foliar spray (mistblower)	600 g/hl	300 - 1.200 l/ha	
	Trunk painting	300 g/l	-	Scratch the infected part of the stem and paint the affected area. In case of high pressure of the disease, make three (3) treatments per season.
	Soil (through drip irrigation)	5 - 7 kg/ha	-	Make 2 preventive treatments: 1st in spring; 2nd in autumn.
STRAWBERRIES	Soil (through drip irrigation)	2,5 - 5 kg/ha	-	Make 2-3 treatments from rooting to flowering to prevent attacks of Phytophthora cactorum
	Foliar spray	250 g/hl	800 - 1.000 l/ha	From the start of flowering to the end of harvesting, make 3-4 treatments.
VINEYARD	Foliar spray (mistblower)	500 g/hl	300 - 500 l/ha	Treat every 15 days from flowering to ripening. A tank mix with preventive fungicides as Folpet or Mancozed are recommended.
TABLE GRAPES	Foliar spray	250 g/hl	600 - 1.000 l/ha	
LETTUCE and leaf crops	Foliar spray	2,5 Kg/ha	600 - 1.000 l/ha	Two (2) treatments are recommended: 1st: 7-10 days after transplanting. 2nd: 15 days later.
ONIONS	Foliar spray	1,5 - 2,5 Kg/ha	300 - 500 l/ha	Three (3): preventive treatments per season are recommended: 1st: three (3) true leaves stage. 2nd: 15 days later. 3rd: 15-21 days later.
FENCES OF CONIFERS	Foliar spray	250 g/hl	600 / 1.000 l/ha	Make 4 treatments every month from Spring to mid Summer.
	Soil (drip irrigation or drenching)	10 g/m of fence	-	Use up to 20-30 g in case of isolated big trees (soil drenching).
TOMATOES/ CUCURBITS	Foliar spray	150 - 250 g/hl	800 - 1.000 l/ha	To prevent attacks of Phytophthora infestans / Pseudoperonospora cubensis fortnightly (15 days) from flowering until mid-end harvesting. A tank mix with Aliado is recommended to also control Alternaria.
PEPPERS	Soil (through drip irrigation or drenching)	2,5 Kg/ha	-	To prevent Phytophthora capsici attacks, treat every 15-21 days from one week after transplanting to harvesting. A tank mix with Hymexazol is recommended to also control Pythium.
TURF & GOLF COURSES	Foliar or sprinkler irrigation	0,75 - 1 Kg/1000m <sup>2</sup>	-	Monthly treatments from beginning of Spring to mid Autumn are recommended. To control also Helminthosporium sp. and Rhizoctonia, treat (in tank mix) with Chlorothalonil Flutolanil.



**INDUCTOR OF THE NATURAL PLANT DEFENSE. CRYSTALLINE POTASSIUM PHOSPHONATE**

# Aspe Phosphite products

# KELOM PHOS 30 20

## Characteristics

Solution of potassium phosphite at 50%, free of chloride. The presence of phosphorus as a phosphite ion provides a prophylactic effect against oomycosis:

- Gummosis and watery in citrus.
- Root rot diseases. Pythium, Phytophthora.
- Mildius foliar.

As a source of PK, it should be used in a stage of high uptake of these nutrients: formations of the root system, flowering and fruit set.

Kelom PHOS 30 20 Phosphite generates defensive molecules in the plant. Phytoalexins and PR Proteins that attack on the pathogen. These defensive molecules send alarm signs to the cells that haven't been attacked yet.

Best flowering and fruiting

Greater weight and fruit size

Increase in fruit quality

## Crops

CITRUS VEGETABLES OLIVE ORNAMENTALS  
FRUIT TREES VINE POTATO

## Composition

%w/w

Phosphorus (P <sub>2</sub> O <sub>5</sub> )	30
Potassium (K <sub>2</sub> O)	20
Density	1,4 g/cc
pH (1% solution)	4 - 5

## Foliar application

- Avocado, citrus, orchards, gardens, ornamentals and potato: 200-300 cc/hl.
- Strawberries and vegetables: 250-350 cc/hl.
- Olive and vine: 200-400 cc/hl.

## Fertirrigation

- Avocado, citrus, orchards, gardens, ornamentals, potato and fruit trees: 6-15 L/ha. Post harvest, and before flowering in citrus; in the spring, early summer and early autumn wet well and the skirt of the trunk.
- Strawberries and vegetables: 4-10L/ha every 20 days.

## Injuries desinfectant

Apply with a brush on the wound area a broth at a concentration of 350-700 cc / l (3.5-7 liters L/10). Before preparing the final mixture, a compatibility test has to be done.

Do NOT mix directly with acid products of strong reaction, neither emulsifiable



## POTASSIUM PHOSPHITE



IMPORTED FROM UE

# Aspe Phosphite products

# KELOM PHOS CU

## Characteristics

Kelom PHOS CU is a plant defense inductor and copper deficiency corrector enriched with phosphorus in the form of phosphite ion. The combined application of copper and phosphite ion allows on a single application to prevent copper deficiency at the same time strengthens the plant against the presence of parasitic fungi. Besides its high phosphorus content makes it an ideal complement for fertilization in flowering time or transplantation .

Increases the resistance of plants to environmental, nutritional and/or pathological critical situations.

Kelom PHOS CU provides the proper amount of high energy phosphorus and copper, obtaining:

Best flowering and fruiting

Greater weight and fruit size

Increase in fruit quality

Protection against pathogens

## Composition

%w/w

Phosphorus (P <sub>2</sub> O <sub>5</sub> )	25,0
Aluminum (Al)	6,0
Density	1,4 g/cc

## Foliar application

- Avocado, citrus, orchards, gardens, ornamental plants and potatoes: 300-450 cc / hl  
2 applications:
- Strawberries and vegetables: 250-350 cc / hl
- Olive and Vine: 200-400 cc / hl.

## Fertirrigation

- Avocado, citrus, orchards, gardens, ornamental plants and potatoes: 7-20 L / ha  
In 2 consecutive irrigations; at the end of irrigation:
- Strawberries and vegetables: 6-9 L / ha
- Olive and Vine 10 cc/m2.



## Injuries disinfectant

Brushing in the injury area broth at a concentration of 500-700 cc / L.

Before preparing the final mixture, a compatibility test has to be done.

Do NOT mix directly with acid products of strong reaction, neither emulsifiable product or a product with alkaline reaction.



## COPPER PHOSPHITE



IMPORTED FROM UE



# Aspe Phosphite products

# KELOM PHOS MN ZN



## Characteristics

Kelom PHOS MN ZN is a soluble liquid that has in its formulation phosphites of manganese (Mn) and zinc (Zn) used as contribution of these elements and in the correction of shortcomings due to deficiencies or imbalances in the assimilation of them by the plants in all vegetable crops.

Kelom PHOS MN ZN is manufactured under strict quality standards by KELOM - Spain, ensuring his composition as well as its effect on all crops.

## Mode of action

The perfect balance that Kelom PHOS MN ZN makes is that it stimulates self-defense Kelom PHOS MN ZN mechanisms (phytoalexins), giving the plants a strengthening in trunk, neck and root on any type of horticultural, fruit cultivation, citrus or floriculture.

It has an excellent solubility which allows an immediate incorporation to the sap flow of the plant through the roots, stems, leaves, etc. Foliar and root applications are recommended and fertigation, while the addition of adjuvants is not necessary.

- Performs the following functions:  
Controls and corrects the deficiencies of Mn and Zn due to deficiencies or imbalances of these elements which are very necessary for a proper development in different cultures.

- Due to the character, which is attributed, as inhibitor of the reproductive cycle of fungi, it prevents fungal attacks such as watering and rot (Phytophthora, downy mildew, etc).
- Balanced phosphorus contribution, macro element indicated and recommended for a proper nutrition from the plant in all of their vegetative periods.



## Dose and application

Crop	Dose	Application time
Citrus, fruit	3-4 cc/L. in foliar application 4-9 l/ha soil application at the end of	Period of maximum vegetative development. Make 2 treatments every 7-9 days.
Vegetables, strawberries, ornamental	3-4 cc/L. in foliar application 4-9 l/ha down at the end of irrigation	Period of higher vegetative development. Make 2-5 applications every 7-10 days.
Climbing vine, vine	1.5-3 cc/L. in foliar application	Period of higher vegetative development.
Saplings	1.5 cc/L. immersion	All crops: fruit trees, citrus, strawberries, vegetable transplant plants, ornamental
Painting	500 cc/L.	Painting and impregnated the trunk and the branches on the affected parties

## Composition

	%w/w
Phosphorus (P2O5)	14,5
Zinc (Zn)	5,0
Manganese (Mn)	3,0
Density at 20°C	1,3 g/cc
pH	2 - 3

## Precautions

Do not mix with oils, copper compounds or alkaline reaction products. Mixtures with fungicides, insecticides, organic products etc, are recommended first to test compatibility.

- Precautions:
- In case of accidental ingestion go to a medical center.
  - It is recommended to take normal precautions in application of the product, use gloves and protect your eyes.
  - If there is direct contact with eyes or prolonged contact with skin, wash the affected area with plenty of water.



## ZINC AND MANGANESE PHOSPHITE



IMPORTED FROM UE



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**PHOSPHITES**