



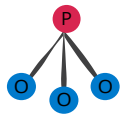
# PHOSPHITES PLANT DEFENSE INDUCTORS



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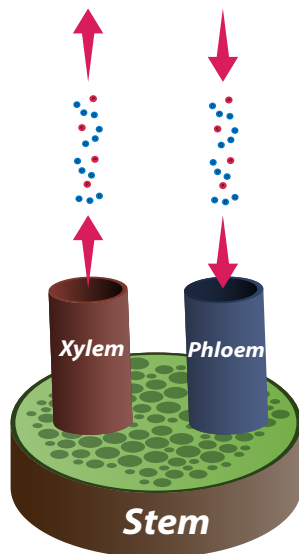
# PHOSPHITES

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.



Phosphites

## SYSTEMIC



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 systemic action, it acts readily over sensitive tissues:

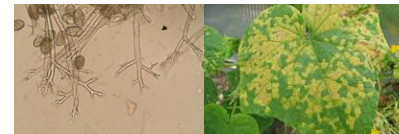
**1) INDIRECT ACTION.** Increasing the host resistance against fungi attacks.

**2) DIRECT ACTION.** Slowing the growth of the pathogen and inhibiting the formation of spores.

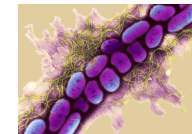
It stimulates the production of Phytoalexins, which enhance host natural defences against Oomycetes fungi: *Phytophthora* spp., *Plasmopara viticola*, *Bremia*, *Pseudoperonospora*, *Peronospora*, *Pythium* and also some bacteria: *Pseudomonas* and *Erwinia*.



Phytophthora - Effects on plant



Pseudoperonospora - Effects on plant



Erwinia - Effects on plants



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.

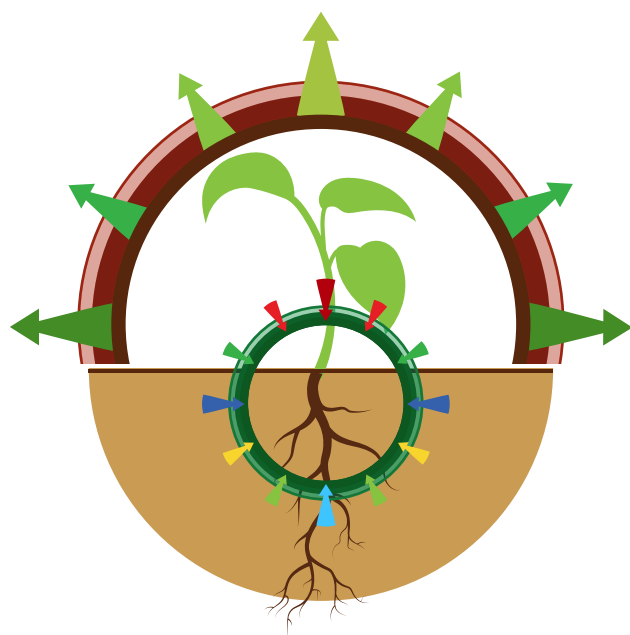
Root rot and downy mildew in: strawberries, tomatoes, cucurbits, vegetables and ornamentals.

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 results.



## 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 plants



Downy Mildew - Effects on plants



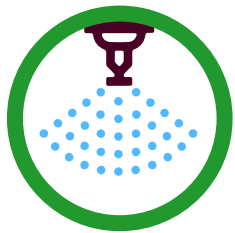
Phytophthora - Effects on plants



Plasmopara - Effects on plants

# 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.



**KELOM Phos<sup>30/20</sup>**  

PLANT DEFENSE INDUCTOR

**KELOM PhosCu**  

PLANT DEFENSE INDUCTOR

**KELOM PhosAl**  

PLANT DEFENSE INDUCTOR

**KELOM PhosMnZn**  

PLANT DEFENSE INDUCTOR

**KELOM PhosORG**  

PLANT DEFENSE INDUCTOR



# ASPE PHOSPHITE PRODUCTS

## immunor



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



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 ornamenta 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	98,0
Phosphorus (P <sub>2</sub> O <sub>5</sub> )	52,0
Potassium (K <sub>2</sub> O)	42,0

## 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.
VINEYARD	Foliar spray	250 g/hl	800 - 1.000 l/ha	From the start of flowering to end of harvesting, make 3 - 4 treatments.
	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. Use up to 20-30 g in case of isolated big trees (soil drenching).
TOMATOES/ CUCURBITS	Soil (drip irrigation or drenching)	10 g/m of fence	-	To prevent attacks of <i>Phytophthora infestans</i> / <i>Pseudoperonospora cubensis</i> fortnightly (15 days) from flowering until mid-end harvesting. A tank mix with Aliado is recommended to also control Alternaria.
	Foliar spray	150 - 250 g/hl	800 - 1.000 l/ha	
PEPPERS	Soil (through drip irrigation or drenching)	2,5 Kg/ha	-	To prevent <i>Phytophthora capsici</i> 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 <i>Helminthosporium</i> sp. and <i>Rhizoctonia</i> , treat (in tank mix) with Chlorothalonil and Flutolanil.



# ASPE PHOSPHITE PRODUCTS

**KELO**  **Phos** <sup>30</sup>/<sub>20</sub>



**PLANT DEFENSE INDUCTOR**



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.
- Mildew 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.

It provides the right amount of very high energy phosphorus, and available potassium for crops is then achieved.

## 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).

## COMPOSITION %w/w

Phosphorus ( $P_2O_5$ )	30
Potassium ( $K_2O$ )	20
Density	1,4 g/cc
pH (1% solution)	4 - 5

**Best flowering and fruiting**

**Greater weight and fruit size**

**Increase in fruit quality**



CITRUS

VEGETABLES

OLIVE

ORNAMENTALS

FRUIT TREES

VINE

POTATO

# ASPE PHOSPHITE PRODUCTS

**KELO**  **PhosCu**  

**PLANT DEFENSE INDUCTOR**



It 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.

## 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/m<sup>2</sup>.

## INJURY DISINFECTANT

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

## COMPOSITION %w/w

Phosphorus (P <sub>2</sub> O <sub>5</sub> )	25
Copper (Cu)	6

Density 1,4 g/cc

**Best flowering and fruiting**

**Greater weight and fruit size**

**Increase in fruit quality**

**Protection against pathogens**



CITRUS

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# ASPE PHOSPHITE PRODUCTS

**KELO**  **PhosAl**  

PLANT DEFENSE INDUCTOR

**Aspe** 

It is a liquid fertilizer suitable for the treatment of citrus, fruit and vegetables, which stimulates growth and improves the quality of the fruit.

The phosphite ion is a relatively simple compound but of great importance in plant health: it has a fungicidal effect against the type of Oomycete fungi and it's also an excellent nutrient.

Its fungal activity is twofold:

On the one hand, it is involved in activating natural plant defense systems. The phosphite ion causes changes in the cell wall of the Oomycete, resulting fractions that act as external elicitors, triggering all the process of activation of defenses.

The phosphite ion exerts a direct effect on fungal metabolism. This ion competes with phosphorus in different metabolic pathways catalyzed by various enzymes fosforilativas. In this way, the processes involved in energy transfer of the fungus suffer a considerable delay and may even be blocked.

## FOLIAR APPLICATION:

-Avocado, citrus, orchards, gardens, ornamental plants and potatoes:

300-400 cc/hl

Make 2 applications

-Strawberries and vegetables: 250-300 cc/hl

-Olive and vine: 200-400 cc/hl.

## FERTIRRIGATION:

-Avocado, citrus, orchards, gardens, ornamental plants and potatoes:

10-20 L/ha

In two consecutive watering; at the end of the irrigation

-Strawberries and vegetables: 5-10 L/ha

## INJURIES DESINFECTANT

Apply with a brush in the wound area in a broth concentration of 500-800 cc/l broth.

## Excellent preventive and curative

activity against: Citrus Gummosis, Root rot and neck in fruit, Peronospora of grape, Mildew of onions and garlic, Phytophthora

## COMPOSITION %w/w

Phosphorus (P <sub>2</sub> O <sub>5</sub> )	21,4
Aluminum (Al)	4,2
Density	1,32 g/cc
pH	2 - 3

The richness in phosphorous and Aluminum promotes migration of sugar to the fruit.

Fertilizer rich in phosphorus and Aluminum which promotes flowering and the roots of plants and corrects deficiencies thereof.



# ASPE PHOSPHITE PRODUCTS

**KELO**  **Phos Mn Zn**  

PLANT DEFENSE INDUCTOR

**Aspe** 

It 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.

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 MnZn** makes is that it stimulates self-defense 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.

COMPOSITION %w/w	
Phosphorus ( $P_2O_5$ )	14,5
Zinc (Zn)	5,0
Manganese (Mn)	3,0
Density at 20°C	1,3 g/cc
pH	2 - 3



CITRUS

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POTATO

# ASPE PHOSPHITE PRODUCTS

**KELOM**  **PhosORG**  

**PLANT DEFENSE INDUCTOR**

**Aspe** 

It is a water solution of phosphorus ( $P_2O_5$ ) and potassium ( $K_2O$ ) supplemented with organic acids. The action of phosphorus and potassium plus encouragement of organic acids enhance activation of the immune system of the plant and biostimulates the growth.

The continued use of **KELOM Phos ORG** improves health status of the crop and reduce the incidence of bacteria and fungi on plants.

COMPOSITION %w/w	
Phosphorus ( $P_2O_5$ )	28,4
Potassium ( $K_2O$ )	3,2
Organic acids	22,8
Density	1,3 g/cc
pH (1% solution)	4 - 5

CROPS	Doses cc/hL	APPLICATION
Tomatoes and peppers	200 - 300	Fertirrigation. In transplanting 15 days before and 15 days after
Vine and table grapes	150 - 300	Fertirrigation. Preventive and curative every 15 days every 7 days
Strawberry, blackberry, raspberry	200 - 350	Fertirrigation. Preventive and curative every 15 days every 7 days
Rose tree	200 - 300	Fertirrigation. Every 7-14 days preventively with volumes 1000L/ha
Lettuce	150 - 300	Fertirrigation. Preventive and curative every 15 days every 7 days
Onion	150 - 300	Fertirrigation. Preventive and curative every 15 days every 5 days in integrated production programs in mixture with other fungicides
Cucurbits	150 - 300	Fertirrigation. Volumes of water in early stages of 200L/ha and later 400L/ha are suggested
Rice	150 - 250	Fertirrigation. At tillering and pre-flowering foliar treatments 2-3 times
Banana	150 - 300	Via foliar
Citrus	200 - 300	Via foliar and root
Olive	150 - 250	Via foliar
Mango and avocado	200 - 300	Via foliar

**SYSTEMIC**

**ZERO RESIDUE**

**WITH ORGANIC ACIDS**



# 2019

PLANT DEFENSE INDUCTORS



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