

KAFOM Mg DEMONSTRATED RESULTS FOR MILDEW CONTROL IN POTATO

PRODUCT BASED ON MAGNESIUM PHOSPHITE

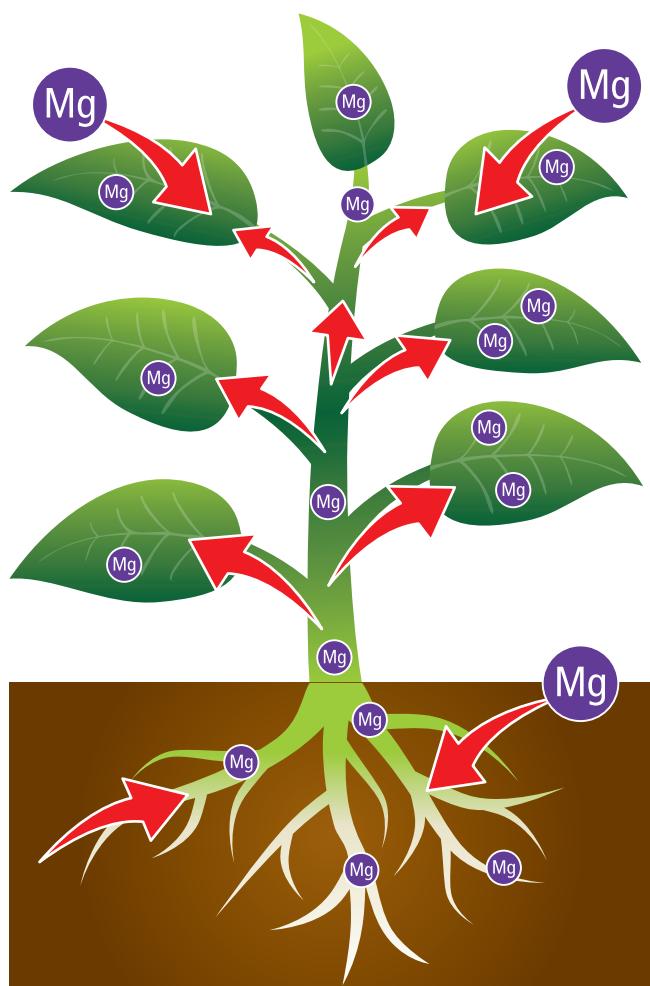


KAFOM Mg is a product based on magnesium phosphite that activates the mechanisms of defense of the plant and at the same time constitutes a source of magnesium for cultivation.

KAFOM Mg minimizes symptoms caused by infection of *Phytophthora infestans*, such as rotting or drowning, which hinder the proper development and performance of the crop. Phosphites also have a high systemic capacity, which increases the efficiency of magnesium distribution and assimilation in the cultivation, and thus avoid the physiopathies derived from their lack, such as curvatures in leaves and chlorosis that decreases crop yield.

DECLARED CONTENTS

Phosphorus (P ₂ O ₅)	40% w/w
Magnesium (MgO)	10% w/w



ACTION MODE

MAGNESIUM PROVIDING

Magnesium is one of the main components of chlorophyll molecules and therefore actively participates in photosynthesis. It is also cofactor in several enzymes reactions in the process of creating ATP, a source of energy for the plant.

The lack of magnesium causes deficiencies in the synthesis of chlorophyll, leading to chlorosis that hinders process of photosynthesis, leading to a significant loss of crop yield.

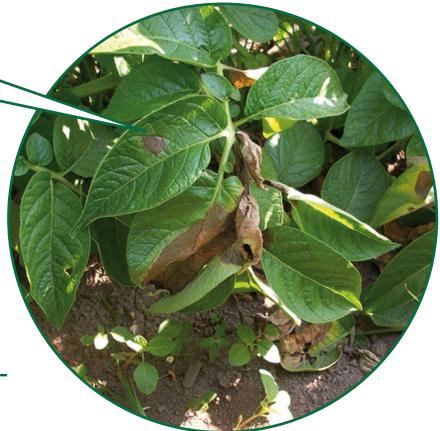
The addition of magnesium also improves the quality of the skin of the tuber and increases the resistance of the potato to possible diseases as well as the content of matter dry and tuber starch.

KAFOM Mg supplies magnesium to the crop in the form of magnesium phosphite. Phosphites are rapidly absorbed and once they have penetrated the plant, thanks to its high systemic capacity, they are translocated within the plant tissues, providing an efficient distribution and assimilation of nutritional elements chemically united.

RESISTANCE IN FRONT OF POTATOE MILDEW

Potato mildew causes severe losses in the crop. This disease is caused by the infection of the oomycete *Phytophthora infestans*. This pathogen is very invasive and resistant so it is devastating and very difficult to control.

Its infection causes dark spots and whitish dust on leaves and stems. In advanced infections, the tissue becomes necrotic and causes the complete collapse of the plant. Symptoms in tubers appear as brown spots that evolve to the rotting of them.



At the beginning of the infection there are no visible symptoms, so it is necessary take preventive action when optimal climatic conditions occur for the pathogen, before the onset of symptoms.

KAFOM Mg slows infection of *Phytophthora infestans* through several mechanisms:

- Interferes in metabolic processes of the oomycete, which prevents its normal development.
- Activates genes involved in the stress response of the plant.
- Promotes the formation of phytoalexins, antimicrobial compounds produced by plants in response to a pathogen which help to limit their dispersion.

In this way, KAFOM Mg is able to give the crops greater resistance in favorable conditions for the infection by *Phytophthora infestans*.

DEMONSTRATED EFFECTIVENESS

The results set forth below have been obtained from a trial completed in a **commercial field of potato grown outdoors**, of the commercial variety Fábula, located in Conil de la Frontera (Cádiz-Spain). The test was carried out by an **accredited testing company** (EOR No. 2/96).

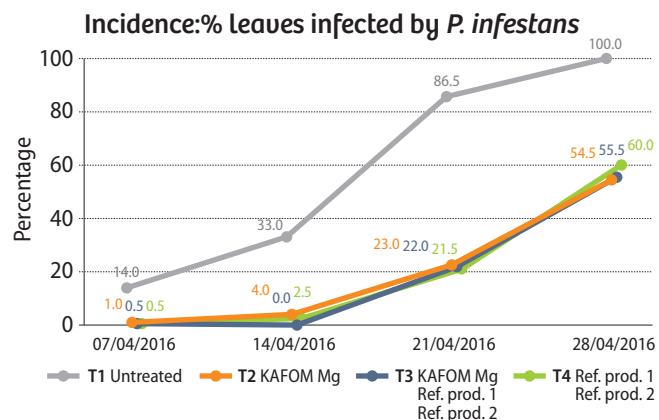
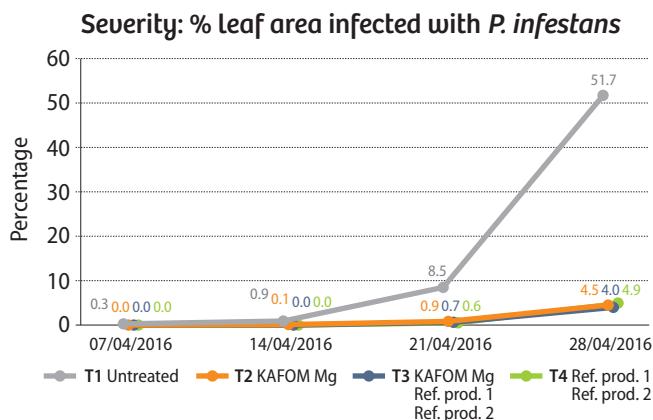
In order to evaluate the effectiveness of KAFOM Mg against the attack of *Phytophthora infestans*, 4 different treatments have been compared:

	ACTIVE MATERIA	DOSE	Nº APPLICATIONS
T1 Control	---	---	---
T2 KAFOM Mg	Magnesium phosphite (40%)	300 ml/100 L	8 (A-H)
T3 KAFOM Mg Reference product 1 Reference product 2	Magnesium phosphite (40%) Ciazofamide (160 g/L) [4% cymoxanil + 25% folpet + 50% fosetyl-Al]	300 ml/100 L 500 ml/Ha 3 g/L	3 (ABF) 3 (CEG) 2 (DH)
T4 Reference product 1 Reference product 2	Ciazofamide (160 g/L) [4% cymoxanil + 25% folpet + 50% fosetyl-Al]	500 ml/Ha 3 g/L	4 (ACEG) 4 (BDFH)

Being an endemic zone of the disease, the treatments began in a preventive way during the occurrence of mildew. In each treatment, a total of 8 applications have been performed, at 7-day intervals, between March 3, 2016 and April 21, 2016. The symptoms of mildew were not visible until the sixth application in Control treatment.

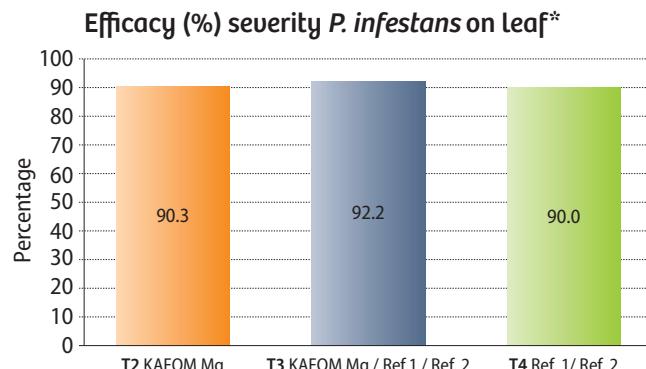
✓ High efficiency in control of *P. infestans*

The unique application of KAFOM Mg in weekly applications, or in combination with standard fungicides, managed to control the percentage of infected leaf area at levels lower than 4.5% at the end of the trial, while in the untreated control plots the percentage of infected area was greater than 51%. The results were similar to those obtained in the thesis that included the standard fungicides.

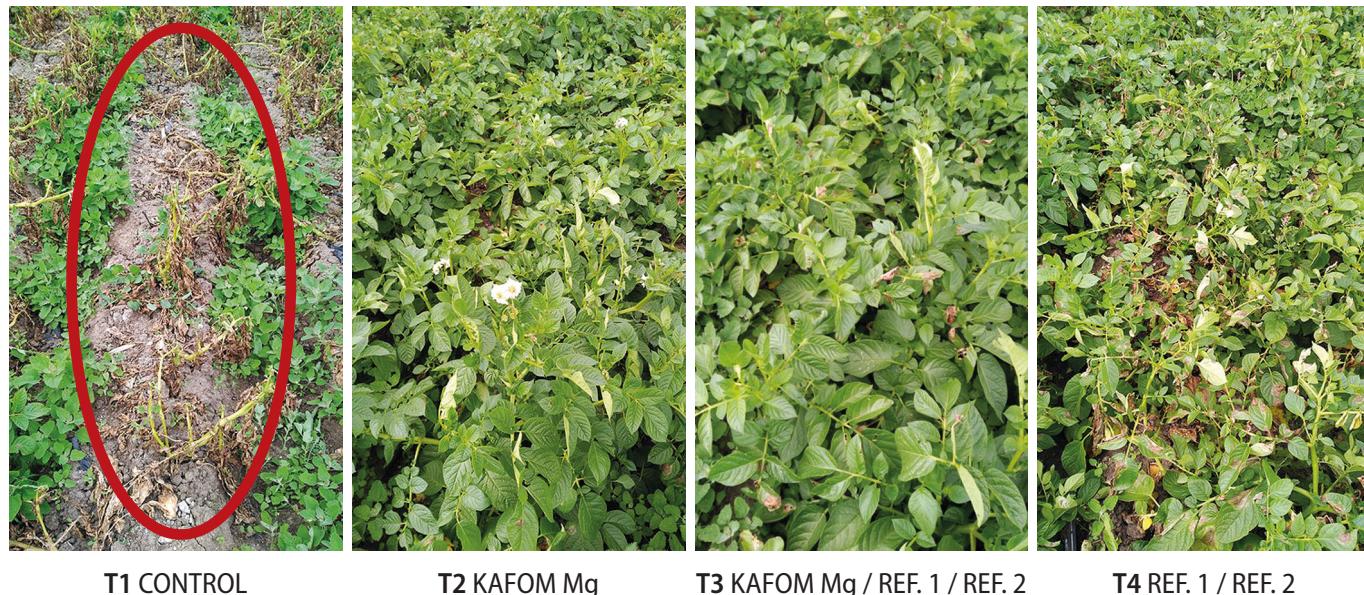


Efficacy in the control of the disease was very high in the thesis that included KAFOM Mg. In the thesis of weekly applications of KAFOM Mg efficacy was 90%, similar to the program that included the fungicides of reference. In the case of including applications of KAFOM Mg in the program with reference fungicides the efficacy increased to 92%.

(*) Efficacy: measured as the control of *P. infestans* in leaves compared to severity of disease in control plants.



✓ Comparative of plots at the end of the trial



APPLICATION MODE

KAFOM Mg is an ideal product to include in the control programs of *P. infestans* in potato. Because of its systemic character and its eliciting effect of plant defense mechanisms, it is recommended to apply it preventively when conditions of onset of the disease occur.

KAFOM Mg should be applied preferably by foliar spray at a dose of 300 ml/100 L, using a sufficient amount of water to drench properly the crop. For optimum results, it is recommended to repeat applications in intervals of 5-7 days, depending on the level of the disease.

In cases of high disease pressure, alternate with curative fungicides to obtain synergistic effects and achieve thus increasing control of mildew in the crop.

KAFOM Mg DEMONSTRATED RESULTS FOR MILDEW CONTROL IN CUCUMBER

PRODUCT BASED ON MAGNESIUM PHOSPHITE

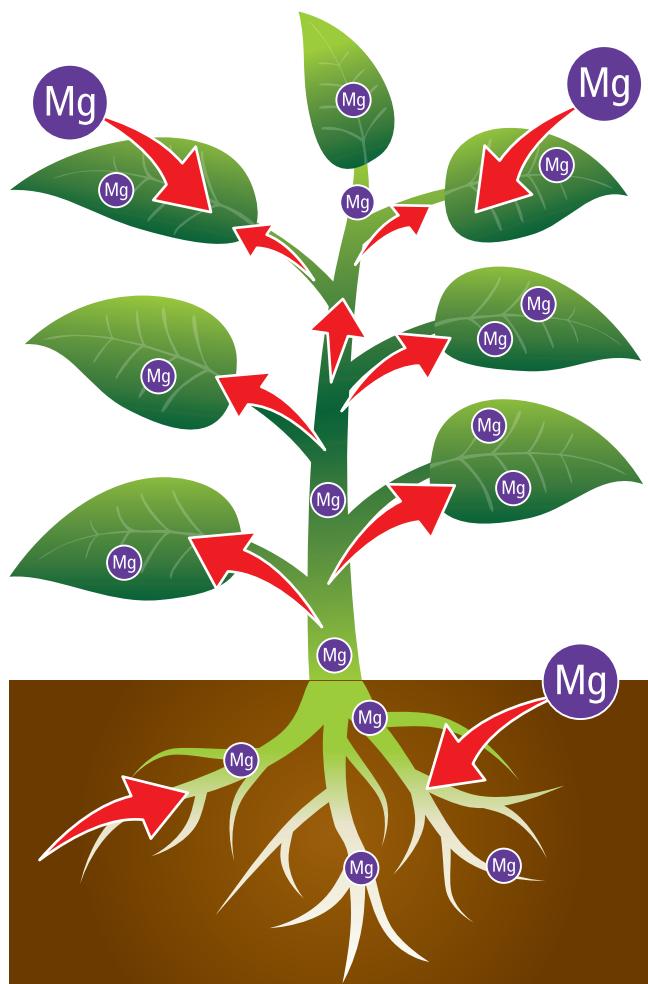


KAFOM Mg is a product based on magnesium phosphite that activates the defense mechanisms of the plant and at the same time constitutes a source of magnesium for cultivation.

KAFOM Mg minimizes symptoms caused by *Pseudoperonospora cubensis* infection, such as necrosis of leaves, which in more severe cases can cause the death of plants. The phosphites also have a high systemic capacity, which increases the efficiency of the distribution and assimilation of magnesium in the crop, and avoids the physiopathies derived from their lack, such as curvatures in leaves or chlorosis, which decrease crop yield.

DECLARED CONTENTS

Phosphorus (P ₂ O ₅)	40% w/w
Magnesium (MgO)	10% w/w



ACTION MODE

MAGNESIUM PROVIDING

Magnesium is one of the main components of chlorophyll molecules and therefore actively participates in photosynthesis. It is also cofactor in several enzymes reactions in the process of creating ATP, a source of energy for the plant. The lack of magnesium causes deficiencies in chlorophyll synthesis, leading to chlorosis that makes the process of photosynthesis difficult, which implies a significant loss of crop yield.

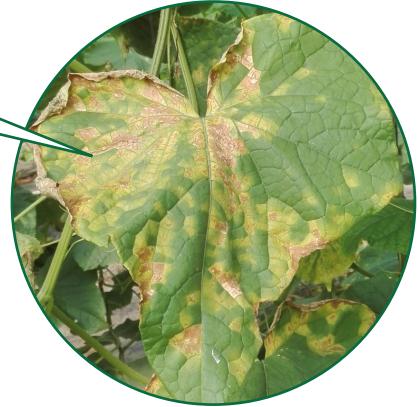


KAFOM Mg supplies magnesium to the crop in the form of magnesium phosphite. Phosphites are rapidly absorbed and once they have penetrated the plant, thanks to its high systemic capacity, they are translocated within the plant tissues, providing an efficient distribution and assimilation of nutritional and chemical elements united.

RESISTANCE IN FRONT OF CUCUMBER MILDEW

Cucumber mildew is a disease that causes severe losses in cucumber cultivation. This disease is originated by infection of *Pseudoperonospora cubensis*. In optimal conditions it is very invasive and has a rapid spread, so if it is not controlled on time can be devastating, as it comes to destroy the crop.

Its infection causes mosaic-like blotches on the leaves, as they are limited by the nerves, which evolve from yellow to brown, and end up necrosing the tissue. On the underside of the leaves, the spots correspond with the appearance of hairy masses that turn gray.



Given the rapid spread of the disease, it is necessary to carry out preventive measures when the climatic conditions are appropriate before symptoms appear.

KAFOM Mg slows the infection of *P. cubensis* through different mechanisms:

- It causes dysfunctions in metabolic processes of oomycete such as oxidative phosphorylation.
- Activates genes involved in the stress response of the plant.
- Promotes the formation of phytoalexins, antimicrobial compounds produced by plants in response to a pathogen which help to limit their dispersion.

In this way, KAFOM Mg is able to give the crops greater resistance in favorable conditions for the infection by *P. cubensis*.

DEMONSTRATED EFFECTIVENESS

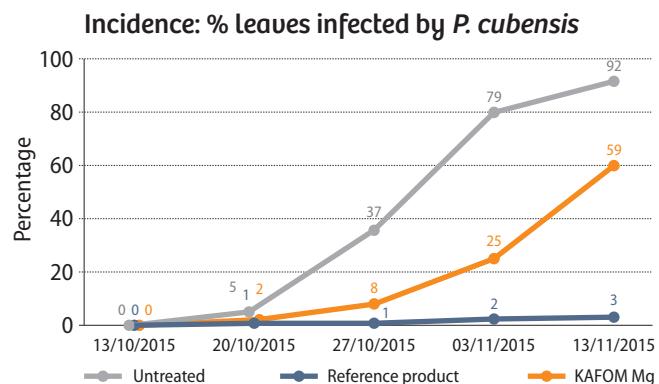
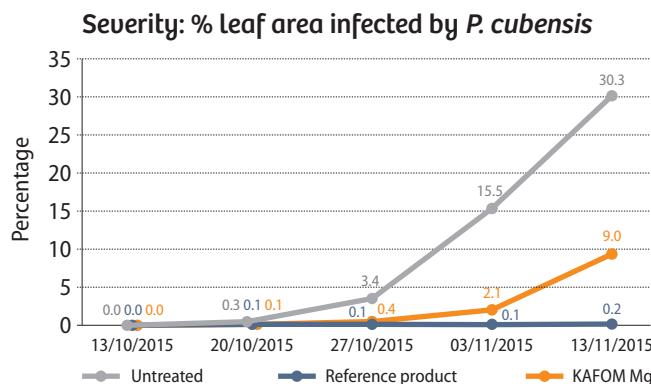
The results presented below have been obtained from a trial completed in a commercial greenhouse of **Dutch cucumber, var. Jungla**, located in Motril (Granada-Spain). The trial was conducted by an **external company** (EOR No. 2/96). In order to evaluate the effectiveness of KAFOM Mg against the attack of *P. cubensis* 3 different treatments have been compared:

	ACTIVE MATERIA	DOSE	Nº APPLICATIONS
T1 Control	---	---	---
T2 KAFOM Mg	Magnesium phosphite (40%)	300 ml/100 L	4
T3 Reference Product	Ciazofamide (160 g/L)	500 ml/Ha	4

In the T2 and T3 treatments, a total of 4 applications have been performed, at 7-day intervals, between October 13, 2015 and November 3, 2015, being the first preventive application, before the onset of the disease. Symptoms of mildew were not visible in the CONTROL treatment until the date of the second application.

✓ High efficiency in control of *P. cubensis*

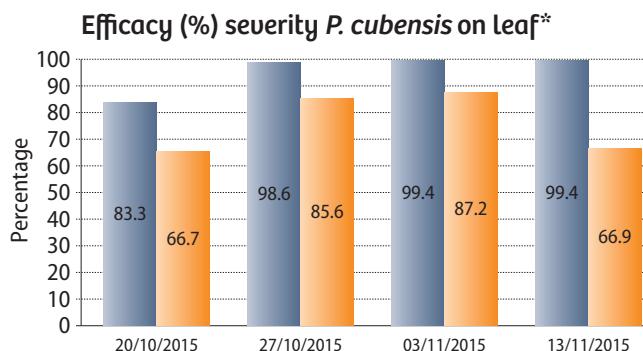
Foliar treatment of KAFOM Mg, in weekly applications, was able to control significantly the infection and dispersion of *P. cubensis* in cucumber plants. At the end of the test, in plants treated with KAFOM Mg, it was observed only 9% of leaf area affected, while in the untreated control plants this percentage was higher than 30%.



The trial showed that KAFOM Mg had a very good control of the disease during the first three weeks of development of the disease, with percentages of control of *P. cubensis* in leaves superior to 85%. At the end of the trial, the efficacy of the product was close to 70%.

■ Reference product (500 ml/Ha) ■ KAFOM Mg (300 ml/100 L)

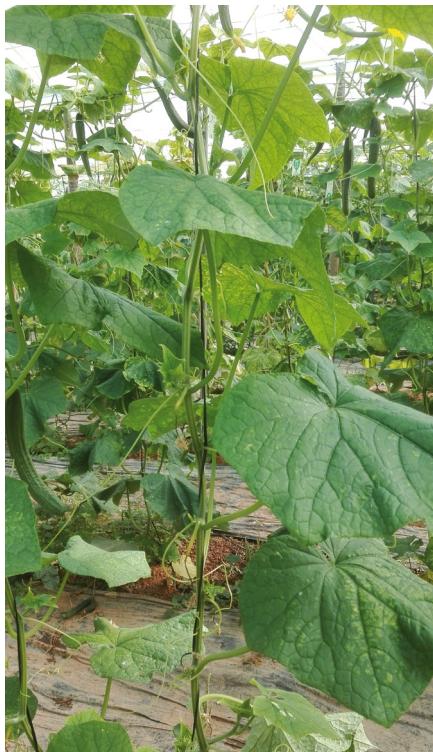
(*% Efficacy: measured as control of *P. cubensis* in leaves compared to severity of disease in control plants.



✓ Aspect of culture at the end of the test (10 days after application D)



CONTROL



REFERENCE PRODUCT



KAFOM Mg

APPLICATION MODE

KAFOM Mg is an ideal product to include in the control of *P. cubensis* in cucumber in greenhouse. By its systemic character and its effect of eliciting the mechanisms of defenses of plant, it is recommended to **apply it preventively** when conditions of onset of the disease occur.

It is recommended for foliar application at a dose of 300 ml/100 L, using a sufficient amount of water to drench properly the crop. To maintain a good defense system of the plant at throughout the crop it is advisable to **repeat the applications of KAFOM Mg at intervals of 5-7 days**, depending on the level of disease.

To obtain optimal results of control of mildew in cucumber in Integrated Production programs, it is recommended to realize applications of KAFOM Mg at the beginning of disease and in case of high disease pressure, interspersing applications of curative fungicides.

