

PRESTOP® biofungicide in integrated pest management

PRESTOP® is a biological fungicide for the control of damping-off and root diseases (*Pythium*, *Fusarium*, *Phytophthora* and *Rhizoctonia*) as well as for the control of the *Botrytis* grey mould and *Didymella* (*Mycosphaerella*) gummy stem blight on cucumber. Prestop is used as a soil application or as a foliar spray. It is based on the *Gliocladium* fungal strain J1446 which colonizes effectively the roots and foliar parts of plants preventing the attack of plant diseases.

Combining biological and chemical methods is a standard practice in modern plant protection. Prestop is an ideal partner in IPM programs providing many benefits: low risk for the development of resistance by pathogens, wide-range and long-lasting efficacy against pathogens, and safety for the user and the environment.



PRESTOP® and chemical pesticides

Because the active ingredient of Prestop, *Gliocladium*, is a fungus, its efficacy can be disturbed by the simultaneous use of certain chemical fungicides. In practice, simultaneous use is not usually necessary, and Prestop can be easily combined with chemicals in rotational use.

The compatibility of Prestop with certain chemical active substances has been tested in a laboratory. The results are shown in Table 1.

PRESTOP® in IPM programs

1. Root applications

Certain chemical products can be used in soil applications with Prestop even during the same day. However, in practice the best results are achieved by using different products in rotation. In the case of a severe disease Prestop can be applied at the same time with a compatible chemical product. The chemical product responds quickly to the problem, and the biological product gives a long-lasting effect against the disease.

2. Foliar applications

Sometimes a crop that is sprayed with Prestop must be simultaneously sprayed with a chemical fungicide, for instance against powdery mildew. In that case it is especially important to make sure that the substances are compatible, because the *Gliocladium* fungus will be in direct contact with the chemical substance on leaf surface. On the other hand, foliar insecticides do not usually affect the efficiency of Prestop.

PRESTOP® in combination with other biocontrol agents

The *Gliocladium* fungus is able to colonize the same root system as the *Streptomyces* ray bacterium, which is the active ingredient of the MYCOSTOP® biofungicide. In spite of this, it is recommended that in combination use in root applications different microbial products be applied in rotation, at different growth stages. For instance, Prestop applications can be done at seedling stage, and Mycostop applications can be begun after transplanting stage.

Prestop is an ideal product for crops when insect pests are controlled by biological methods. Prestop does not cause any harm to beneficials, pollinators or nematodes.

Table 1. Examples of the recommended intervals (days) between PRESTOP[®] and pesticide treatments.

Fungicides		Fungicides	
Active ingredient	Recommended interval (days)	Active ingredient	Recommended interval (days)
Azoxystrobin	2	Tolclofosmethyl	2
Benomyl	4	Thiram	4
Boscalid-kresoxim-methyl	0	Triflumizol	0
Carboxin	4	Vinclozolin	4
Fenhexamid	0	Insecticides	
Fludioxonil-cyprodinil	4	<i>Bacillus thuringiensis</i>	0
Guazatine	2	<i>Beauveria bassiana</i>	0
Hymexazole	7	Buprofezin	0
Imazalil	2	Cypermethrin	2
Iprodione	4	Deltamethrin	0
Krezoxym-methyl	0	Diazinon	0
Mancozep	4	Diclorvos	7
Mepanipyrim	0	Fenbutatin oxide	2
Metalaxyl-M	0	Malathion	0
Myclobutanil	0	<i>Metarhizium anisopliae</i>	0
Penconazole	1	Mevinphos	0
Phosetyl-aluminium	0	Permethrin	2
Prochloraz	7	Pirimicarp	0
Prozimidone	0	Pyrethrins	0
Propamocarb-hydrochloride	0	Beneficials and nematodes	
Pyraclostrobin+boskalid	2	PRESTOP [®] is compatible with beneficials and nematodes	
Pyrimethanil	1	Disinfectants	
Sulphur	0*	Prestop is compatible with Resiclean (concentration below 100 ppm). The recommended interval between the applications of other disinfectant products and Prestop is 1 day.	
Tiophanate-methyl	2		

0* Reduced activity may appear in the immediate vicinity of the sulphurizer

- **The recommended interval between applications of PRESTOP[®] and a chemical product not mentioned in the list is 7 days.**
- **PRESTOP[®] can be applied in mixtures with compatible products. However, the mixture should be applied immediately after preparation.**
- **Do not tank mix PRESTOP[®] with concentrated solutions of pesticides or fertilizers.**