INFOLETTER

MYCOSTOP® biofungicide in integrated pest management

MYCOSTOP® is a biological fungicide for the control of seed- and soil-borne plant pathogens (*Fusarium*, *Alternaria*, *Phytophthora* and *Pythium)* which cause damping-off and root diseases. Mycostop can be applied to the growth substrate for instance via drip irrigation systems and it can be used as a seed treatment. Mycostop contains the *Streptomyces* ray bacterium. When applied to the growth substrate it colonizes the plant roots preventing the attack of plant pathogens.

Combining biological and chemical methods is a standard practice in modern plant protection. Mycostop is an ideal partner in plant protection 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.

MYCOSTOP® and chemical pesticides

MYCOSTOP® can be easily combined with integrated pest management programs. The active ingredient of Mycostop, the *Streptomyces* ray bacterium, tolerates many chemical active ingredients. The ray bacterium colonizes the plant root system and is thereby partly protected from the negative effects of chemical products applied simultaneously in the same growth substrate. Pesticides that are used in the foliage do not disturb the effect of Mycostop, because the active substances are not in direct contact.

The compatibility of Mycostop with certain chemical pesticides has been tested in a laboratory. The results are shown in Table 1.

MYCOSTOP® in IPM programs

Certain chemical products can be used with Mycostop even during the same day. However, the best results are achieved by using Mycostop and chemical products in rotation. In exceptional situations, for example in the case of a severe attack of root pathogens Mycostop and a chemical product can be used simultaneously. The chemical product responds quickly to the problem, and the biological product gives a long-lasting effect against the disease.

MYCOSTOP® in combination with other biocontrol agents

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

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Table 1. Examples of the recommended intervals (days) between MYCOSTOP® and chemical fungicide treatments.

Fungicides			
Active ingredient	**Recommended interval (days)**	**Active ingredient**	**Recommended interval (days)**
Benomyl	0	Propiconazole	0
Bupirimate	2	Pyrazophos	1
Captan	3	Quintozene	1
Carbendazim	1	Thiophanate-methyl	0
Carboxin+oxine-copper	1	Thiophanate-methyl-oxine copper	2
Chinomethionate	0	Triadimenol	0
Chlorothalonil	1	Triflumizol	0
Dichlofluanid	1	Triforine	3
Etridiazole	1	Thiram	2
Fenarimol	0	Vinclozolin	0
Fludioxonil	0	**Insecticides**	
Furalaxyl	1	Insecticides that are sprayed to the foliage are compatible with the MYCOSTOP® growing media treatment.	
Hymexazole	0	**Other**	
Imazalil	2	Chlormequat chloride	0
Iprodione	3	Indolylbutyric acid (IBA)	0
Mancozep	3	1-naphthylacetic acid (NAA)	0
Maneb	3	**Nematodes**	
Metalaxyl	0	MYCOSTOP® is compatible with nematodes.	
Phosetyl-Al	0	**Disinfectants**	
Procloraz	2	MYCOSTOP® can be used simultaneously with Resiclean (concentration below 50 ppm). The recommended interval between applications of other products and Mycostop is 1 day.	
Propamocarb	0		

- **The recommended interval between applications of MYCOSTOP® and a chemical product not mentioned in the list is 3 days.**

- **MYCOSTOP® can be applied in a mixture with compatible products (interval 0). The mixture should be applied immediately after preparation.**

- **Do not tank mix MYCOSTOP® with concentrated solutions of pesticides or fertilizers.**

- **Seed coating with MYCOSTOP® is recommended only for seeds not treated with chemicals.**

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