

# AQ10<sup>®</sup> WG Biofungicide

A biofungicide containing a naturally occurring hyperparasitic fungus for reducing powdery mildew on protected crops of *aubergine, courgette, cucumber, melon, pepper, pumpkin, tomato, strawberry, and winter squash*.

A water dispersible granule formulation containing 58% w/w *Ampelomyces quisqualis* strain M-10 (minimum of  $5.0 \times 10^9$  spores/g).

- A parasite of, and active against, a wide range of powdery mildew species.
- Naturally occurring fungus with a zero harvest interval.
- Compatible with biological pest control and a wide range of other crop protection and production agents

The biofungicide AQ10<sup>®</sup> is a powdery mildew management tool that offers growers an opportunity to rationalise their use of chemical fungicides, help manage pesticide residues and reduce the threat of resistance development to conventional fungicides. AQ10<sup>®</sup> has a zero day harvest interval. AQ10<sup>®</sup> should always be used as a component of an integrated disease management strategy incorporating chemical and cultural techniques where possible.



**AQ10<sup>®</sup> is safe to all beneficial insects and mites and bees used for pollination**



White powdery mildew growth of *Sphaerotheca fuliginea* on a cucumber leaf which is partially hyperparasitised with *Ampelomyces quisqualis* (discoloured areas).

## Disease Control

Powdery mildew diseases are among the most devastating diseases of cultivated crops infecting a broad spectrum of host species including protected vegetables, cucurbits and strawberry. The disease will attack all plant parts including fruit, stems and leaves with new growth being most susceptible. AQ10<sup>®</sup> will reduce powdery mildew on protected crops of aubergine, courgette, cucumber, melon, pepper, pumpkin, tomato, strawberry, and winter squash.

AQ10<sup>®</sup> is based on the *Ampelomyces quisqualis* isolate M-10, originally isolated from a powdery mildew species (*Oidium* sp) infecting the slow growing flowering shrub *Catha edulis* in Israel by the Hebrew University of Jerusalem. To preserve the genotype of M-10 for future years, a pure culture was deposited with the Biological Resources Centre at the Institut Pasteur in Paris. AQ10<sup>®</sup> is a water dispersible granule (WDG) formulation containing  $5 \times 10^9$  spores per gram of product; spores make up 58% of the AQ10<sup>®</sup> formulation. The remaining 42% of the formulation consists of an inert carrier which plays an important role in maintaining long term shelf-life. AQ10<sup>®</sup> is supplied in airtight foil sachets which maintain product dryness and thus prevents premature spore germination. If stored in the original sachet AQ10<sup>®</sup> has a guaranteed shelf-life of 1 year at room temperature and at least 2 years at temperatures between 4 & 8°C.

## Mode of Action

*Ampelomyces quisqualis* is a hyper parasite of a wide range of powdery mildew fungi which penetrate the hyphal wall of a host cell and grows inside causing degradation of the cytoplasm. The rate of development within the host can be slow (5-7 days), so multiple applications of AQ10<sup>®</sup> are recommended to generate multiple infection points on the developing pathogen colony. The hyper parasitic activity leads to the collapse of hyphal strands and death. In order to demonstrate the effects of *Ampelomyces quisqualis* against powdery mildew (*Podosphaera aphanis*), pre-infected detached strawberry leaves (cv. Elsanta) were sprayed with AQ10<sup>®</sup> or water (control). The leaves were collected from a commercial glasshouse strawberry crop in early April at first signs of the powdery mildew outbreak which ensured that colonies were fresh and actively growing. In the AQ10<sup>®</sup> treated leaves, microscopic assessments identified areas of mycelium which had completely collapsed and these areas were completely devoid of conidia.



Powdery mildew hypha hyperparasitised by *Ampelomyces quisqualis*. Infection hyphae (stained blue) can be seen growing inside the larger hypha of *Podosphaera aphanis*.

## Crop Recommendations

AQ10<sup>®</sup> can be used at all crop stages on protected crops of aubergine, cucumber, courgette, melon, pepper, pumpkin, strawberry, tomato and winter squash.

## Application Rate and Frequency

AQ10<sup>®</sup> can be applied up to twelve times to a crop right up to harvest, at rates of between 35 and 70g/ha (see label for details).

AQ10<sup>®</sup> is formulated as a water dispersible granule and can be applied with conventional spray equipment with sufficient water to ensure uniform coverage, including the underside of leaves.

Treatments should be applied preventatively before disease appears in the crop, when conditions are conducive to powdery mildew infection and development. AQ10<sup>®</sup> should not be used as a curative treatment. Application should be repeated every 7-10 days, with at least two successive applications at the rates indicated in the following table.

| Protected crop | Plant height / growing system | AQ10 <sup>®</sup> application rate |
|----------------|-------------------------------|------------------------------------|
| Aubergine      | Up to 50cm                    | 35g/ha                             |
| Cucumber       | 50–125cm                      | 53g/ha                             |
| Pepper         | Above 125cm                   | 70g/ha                             |
| Tomato         |                               |                                    |
| Courgette      | Crops not grown vertically    | 70g/ha                             |
| Melon          | Up to 50cm                    | 35g/ha                             |
| Pumpkin        | 50–125cm                      | 53g/ha                             |
| Winter squash  | Above 125cm                   | 70g/ha                             |
| Strawberry     | All growing systems           | 70g/ha                             |

AQ10<sup>®</sup> works best if applied when the humidity is high, such as early morning or late evening. It is recommended that AQ10<sup>®</sup> is applied with a suitable adjuvant as the efficacy of AQ10<sup>®</sup> may be improved when applied using an adjuvant.

## Mixing and Spraying

Half-fill the spray tank with water. Add the required quantity of AQ10<sup>®</sup> granules and leave for a minimum of 30 minutes without agitation. After the pre-soaking, continuously agitate the suspension whilst adding water to achieve the final target volume. Use entire content of mixture within the same day of mixing. The viability of *Ampelomyces quisqualis* spores may decline if left in water for more than 12 hours.

## Cleaning Equipment

Wash out spray tank, pipes and nozzles at least twice with water immediately after application and dispose of washings safely.

## Compatibility

AQ10<sup>®</sup> is a biological fungicide and may be affected by residues of, or subsequent applications of, other pesticide products. Consult Fargo regarding compatibility of other chemical or microbial products within a pest or disease control programme.

Do not tank mix AQ10<sup>®</sup> with any chemical pesticide or concentrated fertiliser solution without consulting Fargo Ltd.

AQ10<sup>®</sup> has been used on a wide range of crops under a range of conditions and no phytotoxicity has been observed.

Marketing Company



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Use plant protection products safely. Always read the label and product information before use.

Approval Holder  
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