

Vertigo®

Registration No. L8851 (Act 36 of 1947)

Microbial inoculant

Active ingredient *Bacillus subtilis* B6 5 x 10⁸

5 litres



Microbial inoculant for the suppression of *Verticillium* wilt in potatoes

microbial
solutions

Applied to the soil by all methods of irrigation.

When used under unfavourable soil and climate conditions, or if not applied according to directions, the manufacturer cannot guarantee colony formation on the roots and in the soil.

Verticillium dahlia.

Verticillium wilt of potato in South Africa was first identified in 1952 in a single location in the Western Cape. Until 1994 few cases were identified, but since then *Verticillium* wilt has increased to such an extent that it is now of major concern to the potato industry. Yield losses can be as high as 50% in susceptible cultivars and 20% to 30% in tolerant cultivars if control is inadequate. It is estimated that *Verticillium dahlia* may be responsible for losses of up to 100,000 tons of market tomatoes per annum.

Verticillium wilt is a vascular disease occurring in both irrigated and non-irrigated potato and tomato production areas throughout the world. Infection causes loss of turgor in leaves followed by chlorosis and necrosis, resulting in premature senescence of the foliage, thereby shortening the growth period. Depending on severity, time of occurrence and season, the number and size of progeny tubers and fruits may be substantially reduced. The earlier the onset of senescence the greater the reduction in yield.

The main causal agent of *Verticillium* wilt is *Verticillium dahlia*. It has a world-wide distribution, causing vascular wilt diseases in more than 160 plant species, including vegetables such as artichoke, brinjal, Brussels sprouts, cauliflower, cabbage, cucumber, potato, tomato & sweet pepper, fruit & nut crops such as apricot, avocado, cherry, vine, olive, pistachio, raspberry, strawberry and watermelon; field crops such as cotton, groundnut, hops and Lucerne; various forest & shade trees; and woody and herbaceous ornamentals such as *Antirrhinum* and rose. In South Africa *V. dahlia* isolates from cotton, potato, and avocado all caused typical *Verticillium* wilt symptoms in tomato seedlings and were successfully re-isolated from seedlings.

Managing *Verticillium dahlia*

A key to managing *Verticillium* wilt is to reduce the number of microsclerotia in soil to levels too low to cause disease in susceptible crops. Because *Verticillium dahlia* is a weak competitor in the rhizosphere and disease development and plant growth are influenced by temperature and other environmental factors such as the availability of water and mineral nutrients, the disease has a wide range of threshold levels. The infection rate therefore not

only depends on the inoculum density but also on interactions with soil microorganisms and effects of abiotic factors. Reduction in soil borne microsclerotia within an acceptable period can therefore be accomplished with cultural methods and the addition of a high strength microbial preparation that is antagonistic to *Verticillium*.

Disease suppression.

In a new technological breakthrough, with research performed by the ARC and the CSIR Microbial Solutions has developed a biological suppressant for *Verticillium dahlia* which is registered under Act 36 of 1947 under the trade name of "Vertigo". Vertigo comprises *Bacillus* B6 a strain of beneficial bacteria well recognised as broad spectrum anti-fungal disease competitor with the ability to colonise well on plant root systems. As a spore forming bacteria it can be co-applied in the same tank together with most known agricultural chemicals and fertilisers.

For more information please contact Microbial Solutions on 0114754362, or on info@microbial.co.za.

Vertigo® applications

- (i) Used for both soil and foliar applications for the suppression of *Verticillium dahlia*.
- (ii) Used as a soil drench at rates of –
 - Apply 200 ml / ha as a soil drench from 1 week after emergence in 150 to 500 litres of water.
 - Repeat as 200ml / ha / week until harvest.
- (iii) Can be applied as a tuber/seed application, and/or in-furrow, through pivots, high pressure spray, micros and drippers.
- (iv) Can be co-applied from the same mix-tank with almost all known fertilisers, fungicides, herbicides and insecticides.

Vertigo® preparation

Vertigo® is ready to use, no special preparation required.

Warnings

- Handle with care.
- Keep out of the reach of unauthorized persons and children.
- Store away from food and foodstuff.
- Store at room temperature.
- Safe to apply in the same tank mix with other products such as pesticides, insecticides and herbicides.

Precautions:

- Do not inhale spray mix.
- Use protective clothing such as gloves and boots when mixing and during application.
- If skin or eye contact occurs rinse with copious amounts of water.
- Destroy empty containers and do not use for any other purpose.

Toxicity and First Aid

- (i) No adverse cases of either respiratory or eye irritation have been reported with exposure to Vertigo®. However in the interests of good farming practices use safety goggles and an approved respiratory device when spraying, and do not inhale mist.
- (ii) Skin contact – wash with soapy water; eye contact – flush with clean water, consult physician.
- (iii) Clean spill with soapy water. No special restrictions on disposal of wash water. If desired disinfect spill area with clean water to which household bleach is added at the rate of one half cup per 20 litres water.

Please consult your Microbial Solutions dealer for further details. A comprehensive MSDS for Vertigo® is available on request on: Tel: 011 475-4362, Fax: 011 675-7504, or Email info@microbial.co.za.