



*Delfin*®

Biomanagement



**Andermatt**



## ***Delfin***<sup>®</sup>

A granule formulation of *Bacillus thuringiensis* subspecies *kurstaki* strain SA-11, solids, spores and lepidopteran active toxins, for the suppression of a wide range of lepidopteran pests. *Delfin*<sup>®</sup> is a biological larvacide for resistance and residue management.

### Why use *Delfin*<sup>®</sup>?

A natural biological larvicide highly effective for management of lepidopteran larvae.

Features	Benefits
<i>Bacillus thuringiensis</i> (Bt) is a beneficial soil bacteria highly adaptive to different environments	<i>Delfin</i> <sup>®</sup> can be used in a wide range of areas and environments
Based on one of the first commercialised biocontrol actives	Well established and recognised biocontrol active
Manufactured by bioproduct specialists Certis USA	Excellent formulation and extensively researched and tested. Ensures a high quality isolate with proven successful results
Internationally recognised product	<i>Delfin</i> <sup>®</sup> has an extensive international label for the suppression and management of a wide range of lepidopteran larvae
Versatile application, excellent compatibility and shelf life	<i>Delfin</i> <sup>®</sup> is very user friendly and easy to integrate into existing spray programs
Isolate SA-11 contains an extensive cry toxin profile and potency factors	<i>Delfin</i> <sup>®</sup> is faster acting and more effective than Bt products with a less extensive profile
Active compounds produced by Bt in <i>Delfin</i> are specifically toxic to lepidopteran larvae	<i>Delfin</i> <sup>®</sup> is target specific and has no effect on non-target beneficial insects
Unique mode of action different from synthetic chemistry	<i>Delfin</i> <sup>®</sup> is an ideal tool for resistance management and IPM programs
Non-toxic, completely natural and OMRI listed	Safe for applicators, consumers and the environment, has no withholding period and can be used in organic operations

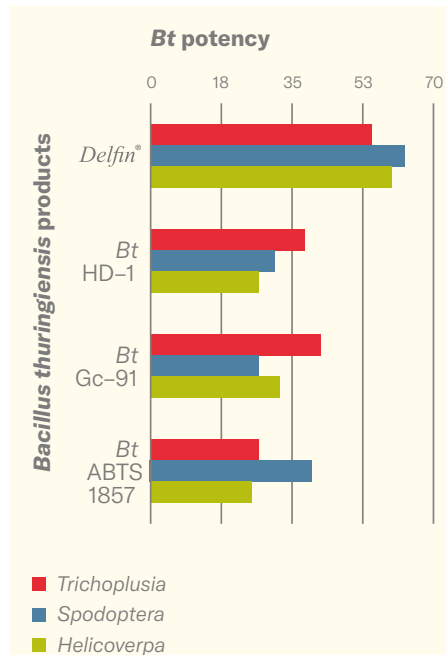
### How does *Delfin*<sup>®</sup> work?

Biological insecticides, or Bt bio-larvicides (based on *Bacillus thuringiensis*), are the most proven, widely used and successful of the known biological pesticides. Each Bt cell produces a unique crystalline proteins known as Cry toxins. These toxins cause mortality when ingested by pest larvae. Very specific gut enzymes, which only function in the alkaline conditions of the caterpillar gut, dissolve the crystals to form the toxin. This disrupts the pest's digestive tract causing the pest to stop eating and then die due to paralysis of the mid gut, osmotic shock and septicaemia. This process is depicted on the right.



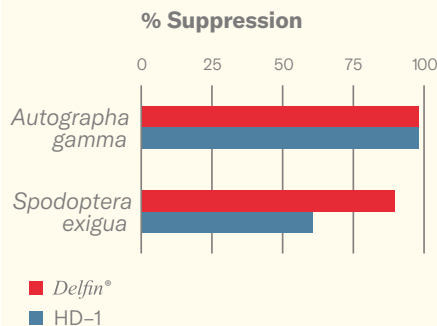
## Trial data:

**With regards to potency per *Bt* product, *Delfin*<sup>®</sup> outcompetes all other products tested when used against *Trichoplusia* (e.g. Cabbage looper), *Spodoptera* (e.g. Armyworm) and *Helicoverpa* (e.g. Bollworm) species.**



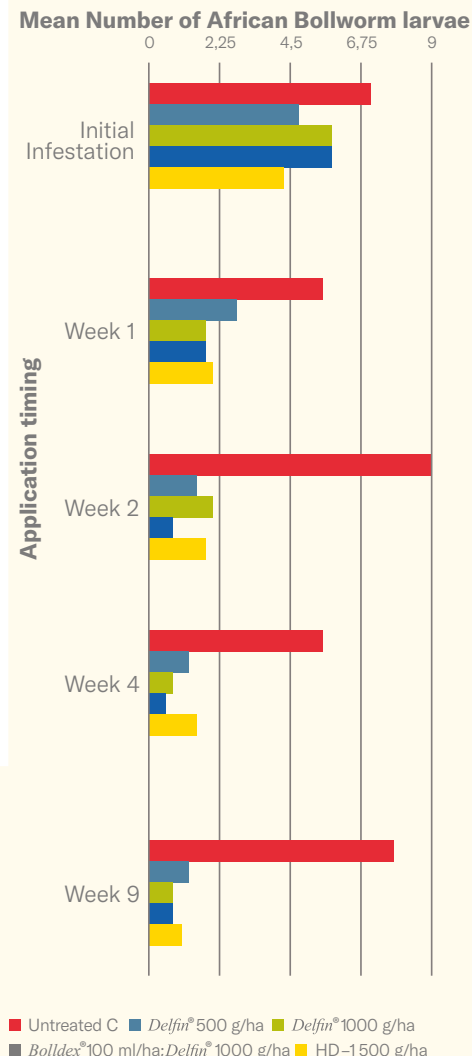
**Figure 1:** Relative potency of *Delfin*<sup>®</sup> against different Lepidoptera larvae compared to a range of other *Bt* active strains. Data supplied by Certis USA.

*Delfin*<sup>®</sup> performed above average in the control of *Autographa gamma* (Silver Y Moth) and *Spodoptera exigua* (Beet armyworm/Lesser Armyworm) lepidoptera larvae.

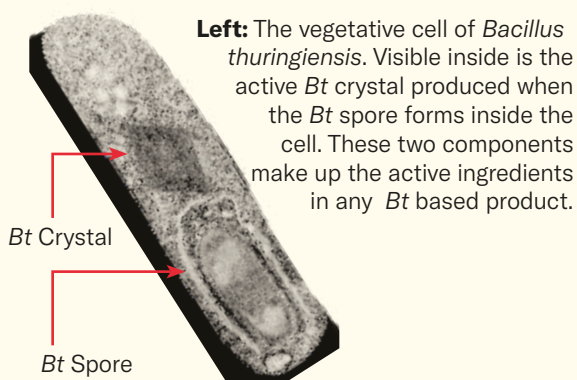


**Figure 2:** Control of Lepidoptera in veggies with commercially used *Bt* products in Spain, both products applied at 100 g/100 L. Data supplied by Certis USA.

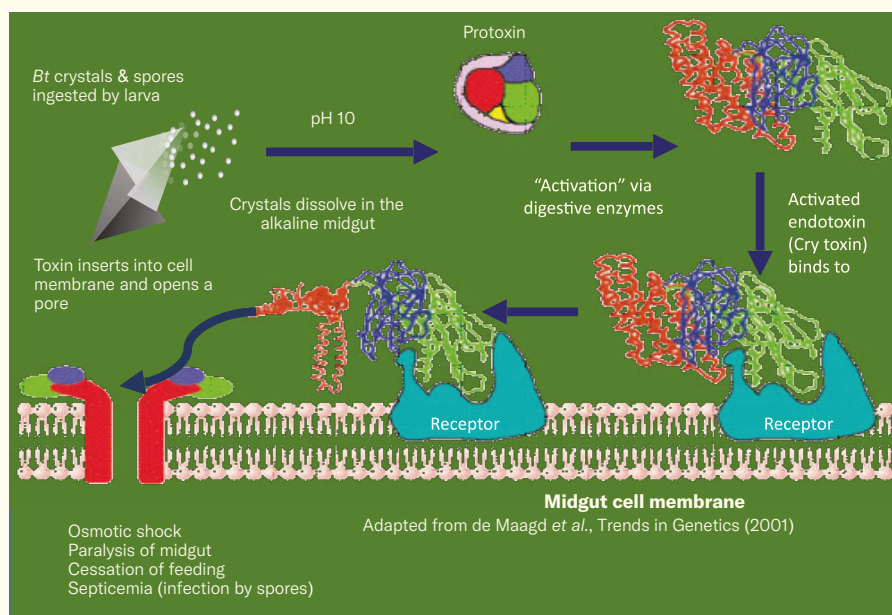
**Figure 3 (right):** Use of *Bolldex*<sup>®</sup> in a combination with *Bt* products for suppression of Bollworm on lettuce. In this trial *Delfin*<sup>®</sup> was applied on its own and in combination with *Bolldex*<sup>®</sup>. The results demonstrate the impact that a combination approach can have. Where the *Delfin*<sup>®</sup> application on its own achieved 88% suppression, when combined with *Bolldex*<sup>®</sup> control was increased to 90%



**Pictured above:** A target organism for *Delfin*<sup>®</sup> African Bollworm larvae.



**Image below:** The mode of action of Cry toxins within *Delfin*<sup>®</sup>



## Registered uses:

Pest	Crop	Dose rate
African Bollworm ( <i>Helicoverpa armigera</i> )	Lettuce	General application rate is 1 kg/ha. Apply with detection of pest eggs and continue every 7–10 days. Refer to <i>Delfin</i> <sup>®</sup> label for detailed instructions.
<i>Tuta absoluta</i>	Tomato	
Available in: 100 g, 1 kg, 30 kg		

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