Renewal Assessment Report

Bacillus thuringiensis subsp. aizawai strain GC-91

Volume 3 – B.3 Data on application

July 2018

Rapporteur Member State: The Netherlands

Co-Rapporteur Member State: Germany

Version history

When	What
July 2018	Initial RAR

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B Summary of the data and information

B.3 Data on application

B.3.1 Function

Insecticide through ingestion (stomach poison)

B.3.2 Field of use envisaged

Bacillus thuringiensis subsp. *Aizawai*, strain GC-91 is used as an insecticide. For the representative uses please refer to the GAP in volume 3MP (plant protection product) paragraph 3.3

B.3.3 Crops or products protected or treated

Bacillus thuringiensis ssp. aizawai strain GC-91 is intended to be used in glasshouse and field production of agriculture, horticulture, orcharding, viticulture, tree nursery crops and forestry. General treatment is a dose rate of 1000 g as/ha (5×10^{10} IU/ha) for protection against larvae of Lepidoptera.

B.3.4 Method of production and quality control

Please refer to Volume 4 (Confidential Volume).

B.3.5 Information on the occurrence or possible occurrence of the development of resistance of the target organism(s)

Bacillus thuringiensis subsp. *aizawai* Strain GC-91 is a microbial disruptor of insect midgut membranes. As with any insecticide, too frequent use of one type of Bt strain or one type of Bt delta-endotoxin can result in resistance of the insect to the active ingredient. Bacillus thuringiensis is a biological non-persistent insecticide thus reducing the chances of resistance build up. No cross-resistance has been reported between chemical insecticides and Bt products (Sarnthoy et al., 1997: Smirle et al., 2003). Certain insect species have developed a resistance to particular Bt products caused by prolonged use resulting in a reduction in binding of specific Cry toxins to the gut membrane binding site. However, indications are that certain pest species are susceptible to more than one Cry toxin produced by different Bt subspecies.
Previously, development of resistance under field conditions was reported for *Plutella xylostella* and *Trichoplusia ni* in various countries. Besides these two species, the literature research revealed one record on resistant field-populations of *Helicoverpa armigera* in India. It is noteworthy, that not a single report on resistant insect populations in Europe was obtained. Development of resistance has not been reported for Bta GC-91.Therefore, resistance management strategy of altering applications of Bt products can prove effective.
Development of resistance has not been reported for Bta GC-91.

In conclusion, Bt products like any other insecticide should be used in IRM (Insecticide Resistance Management) or IPM (Integrated Pest Management) programs and not used over and

over as the only insecticide of choice. IRM and IPM cultural practices are commonly in place already.

While resistance to B*acillus thuringiensis* does occur, it can be concluded that the proposed GAP for the representative uses is still realistic. Resistance management will have to be evaluated by memberstates during product renewal or authorisation, as it can depend on local resistant populations, agricultural practices and other variables.

B.3.6 Methods to prevent loss of virulence of seed stock of the micro-organism

The loss of effectiveness on target organism can occur whenever the plasmid DNA encoding the cry-protein is lost. A method to monitor such loss has been reported (Chen & Hargrove, 2003). Methods to prevent loss of virulence are not reported

B.3.7 References relied on

No references were used.