

Mode of Action Data Sheets

Group 11 Microbial disruptors of insect midgut membranes

Protein toxins that bind to receptors on the midgut membrane and induce pore formation, resulting in ionic imbalance and septicemia

Group 11: Microbial disruptors of insect midgut membranes

Includes transgenic crops expressing *Bacillus thuringiensis* toxins (however, specific guidance for resistance management of transgenic crops is not based on rotation of modes of action)

Different *B.t.* products that target different insect orders may be used together without compromising their resistance management.

Rotation between certain specific *B.t.* microbial products may provide resistance management benefits for some pests. Consult product-specific recommendations.

* Where there are differences among the specific receptors within the midguts of target insects, transgenic crops containing certain combinations of these proteins provide resistance management benefits.

Bacillus thuringiensis and the insecticidal proteins produced
B.t. israelensis, *B.t. aitzawai*, *B.t. kurstaki*, *B.t. tenebrionis*
Bt crop proteins *
Cry1Ab, Cry1Ac, Cry1Fa, Cry1A.105, Cry2Ab, Vip3A,
mCry3A, Cry3Ab, Cry 3Bb, Cry34Ab1/Cry35Ab1

11A *Bacillus thuringiensis*

Bacillus sphaericus

11B
Bacillus sphaericus

Key to Targeted Physiology

■ Nerve & Muscle

■ Growth & Development

■ Respiration

■ Midgut

■ Unknown or Non-specific