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DiPel®

Some commonly asked questions on the use of DiPel:

1. What is DiPel?

DiPel is the biological insecticide based on a naturally occurring compound *Bacillus thuringiensis*, subsp. *Kurstaki*. DiPel contains a balanced blend of five bacterial protein toxins and a spore, which enhance efficacy and assist in resistance management.

cry1Aa	cry2Aa
cry1Ab	cry2Ab
cry1Ac	Spore

2. How Does DiPel Work?

DiPel must be eaten to be effective. DiPel contains protein endotoxin crystals and living spores. Protein endotoxin is a selective stomach poison. Spores contribute to toxicity by causing blood poisoning and providing environmental persistence.

- Larvae ingest DiPel's crystal proteins from treated leaves.
- Feeding stops within minutes after crystals are solubilized in the gut and gut cells are damaged.
- After toxin damage to gut, spores enter through gut wall and germinate rapidly in body cavity causing blood poisoning.
- Larvae stop feeding in as little as half an hour and die in 1-3 days.

3. Why should I use DiPel?

Simply put, growers use *Btk* because it works. DiPel has proven to be highly effective against crop-damaging lepidoptera pests. Additionally, DiPel can be used as a stand-alone insecticide or in your tank mix or as part of your crop protection rotation program. DiPel is an environmentally friendly, *Bt*-based compound that has not been observed to be harmful to wildlife. In addition, studies have shown that DiPel is not harmful to beneficial insects, including bees. DiPel can be handled by workers efficiently without the use of costly protective gear normally associated with other pesticides. DiPel can also play an integral part of a grower's IPM program, offering extraordinary relief when the pests build up resistance to other chemicals.



4. What are the effects of DiPel on bees and other beneficial insects?

Tests have shown DiPel won't harm bees, birds, fish or other wildlife. Studies have shown that DiPel will NOT harm beneficial insects that help keep secondary insects in check.

5. Is DiPel harmful to humans or animals?

Because of DiPel's specific mode of action, DiPel is not harmful to humans or animals. The biological compounds put less stress on the environment than many synthetic chemicals and have not been observed to be harmful to fish, wildlife or livestock.

Workers are also able to handle DiPel with considerably more ease than chemical-based compounds. EPA has granted the minimum allowable safety requirements for use with DiPel, both in terms of application and re-entry. As with any insecticide, applicators are required to wear gloves, long sleeves and long trousers when handling DiPel. Workers are permitted to re-enter fields in as little as 4 hours after DiPel has been applied and crops can be harvested the same day they are treated.

6. What kind of application equipment is necessary for DiPel?

Because of DiPel's mode of action, achieving good coverage during Bt application is also extremely important. Motorized boom sprayers (self-propelled or mounted on tractors or trucks) are used for band and broadcast treatments in vegetable fields, in orchards, and on row crops such as corn, cotton, and soybeans. Aerial applications are also commonplace in many crops.

Air blast sprayers, primarily used in fruit operations, use a combination of air and liquid rather than liquid alone to deliver the insecticide.

Further application tips:

- Foliar application of DiPel will provide excellent worm control. Be certain to cover the part of the plant the pests will eat. To maximize the effectiveness, sprays should thoroughly cover all plant surfaces, even the undersides of leaves.
- Always select a nozzle type that is appropriate for the crop you are treating, positioning the boom and using enough pressure to penetrate the foliage entirely.
- To maximize coverage, spray when the wind speeds are 10 mph or less.

7. Is DiPel certified as organic by OMRI (Organic Material Review Institute)?

Yes, DiPel DF is certified by OMRI for use on organic crops.

8. What formulations of DiPel are available?

DiPel is available in the following formulations:

- DiPel DF (Dry Flowable)
- DiPel ES (Emulsifiable Suspension)
- DiPel 10G (Corn Grit)
- DiPel SG Plus (Sand Granule)

9. When should DiPel be applied?

Treat the larvae when they are young (early instars), before crop damage occurs. Apply when larvae are actively feeding on treated exposed plant surfaces. Repeating the applications at an interval sufficient to maintain control, usually 3 to 14 days depending on plant growth rate, moth activity, rainfall after treating and other factors. If necessary, a spreader-sticker should be added for hard-to-wet crops, such as cabbage, to improve weather fastness.



10. Why is DiPel the leading biological insecticide on the market today?

While a number of biological insecticides have come and gone in recent years – with considerable hype and overblown claims – DiPel continues to lead the rest. In fact, 2 out of 3 vegetable growers and consultants use or recommend DiPel.

There are a number of reasons why DiPel is still on top, but it really comes down to delivering on a simple promise: If you're using DiPel, you're using the best biological insecticide available. To ensure that DiPel stays in the lead, we are making certain that DiPel continues to feature:

- the most balanced blend of five bacterial protein toxins for effective, broad-spectrum worm control in vegetables,
- the highest quality standards in the industry to ensure consistent field performance, and
- a leading product formulation that's convenient to use and an experienced sales and technical staff for product support you can trust.