BELAY® INSECTICIDE Smarter Control.™

Frequently Asked Questions

Summary	Belay® Insecticide is a uniquely effective insecticide. *Belay* is known for its control of plant bugs (including Lygus species), stink bugs, beetles, aphids and a broad spectrum of chewing and sucking pests.
EPA registered crops	Blueberry* (low bush), leafy brassica vegetables, cotton*, cranberry, cucurbits, fig*, fruiting vegetables, grapes, leafy vegetables, peach*, pome fruit*, pomegranate*, potato, rice*, soybean, sweet potato, tree nuts* (except pistachio) and tuberous and corm vegetables. (* Denotes foliar label only, other crops have soil and foliar on label. *Belay* is labeled for seed piece, soil and foliar applications in potatoes.)
Key pests	Lygus and other plant bugs, stink bugs (including brown marmorated stink bug, harlequin bug), aphids, beetles, weevils, leafhoppers, spotted wing drosophila
Active ingredient	Clothianidin
Formulations	*Belay* Insecticide: 2.13 SC (contains 23.6% clothianidin, 2.13 lb ai/gal) *Belay* 50 WDG: (contains 50% clothianidin) is available in certain states for use on vegetables

1. **How does the performance of *Belay* compare with products in the same chemical class?**

   There are differences in the spectrum and level of activity among IRAC Group 4A Insecticides. In general, *Belay* is more active on plant bugs, stink bugs, beetles and weevils, while offering comparable control of aphids. *Belay* is not as effective on whiteflies as Venom® Insecticide. *Belay*, when applied to the soil, is more available for plant uptake than imidacloprid or thiamethoxam in almost all soil textures because it is less likely to be “tied up” in the soil or leach.

2. **How long does *Belay* control key pests?**

   Belay typically provides 14 days of residual control, and in some cases up to 21 days of control, for lygus, aphids (adults and nymphs), stink bug nymphs (with adult control, suppression and/or disrupting feeding depending on the species), and plant bug nymphs (with adult control, suppression and/or disrupting feeding depending on the species). Length of control depends on the use rate and application timing. *Belay* works best when plants are actively growing.

3. **How does *Belay* move in the plant? Is it translaminar and/or systemic? How long will it take to see knockdown of pests?**

   Belay has translaminar movement following a foliar spray. Translaminar movement is uniform throughout the leaves’ tissue. Speed of knockdown depends on the pest, but *Belay* Insecticide starts working immediately. If the plant has reached maturity and is no longer actively growing, *Belay* translaminar movement can be limited. When applied to soil, *Belay* moves systemically through the xylem of the plant to protect the foliage.

4. **How long does it take for *Belay* to start moving in the plant?**

   Results have shown translaminar movement 30 minutes after application. *Belay* can move through the xylem of the plant, so if the plant is actively growing *Belay* will move more efficiently.

5. **How soon is a foliar Belay application rainfast?**

   Based on field use on actively growing plants, typically 3–4 hours after application.

6. **How does *Belay* work on insects?**

   Belay is an agonist of insect nicotinic acetylcholine receptors, and controls insects on contact and by ingestion. In many cases, pests stop feeding and oviposition before they die.

7. **Does *Belay* cause any crop response?**

   Belay Insecticide can promote greener and denser foliage. When *Belay* is sprayed during the early stages of the crop, that response will be more obvious.

8. **How many applications of *Belay* can be made on the same crop per season?**

   Typically two when applied to foliage, and one if applied to soil. See label for details. For resistance management purposes, the *Belay* label recommends that a foliar application following a soil application does not take place in the same season in crops with both use-patterns on the label.

9. **Is it safe to use *Belay* in tank mixes with fertilizers, insecticides, fungicides or herbicides?**

   Belay has been tested under a wide variety of conditions and in tank mixes with many different products. While it is impossible to test all the different potential tank mixes of agrichemicals, no incompatibilities are known at this time. *Belay* is a soluble concentrate (SC) formulation. As with any SC, do not use liquid fertilizers as a sole carrier; always include water in the mix. If liquid fertilizer is to be added to the tank mix, add after water and *Belay* have mixed thoroughly and *Belay* is already in solution. When tank mixing, always review the labels of products to be included in the tank mix. For best results follow the WALES sequence recommendation, which can be found on Extension websites. When the tank mix involves a flowable formulation (F) add *Belay* to the tank before the flowable, particularly flowable formulations that have higher concentrations of active ingredient (e.g. 3 lb ai/gal or higher). Always ensure that the tank has adequate agitation and that all products in the tank mix are in solution or suspension before adding the next product. When in doubt, conduct a jar compatibility test.

10. **Is it okay to leave *Belay* in the tank overnight?**

    No, it is best to make sure that the spray tank is empty and hoses are flushed at the end of the day. Results can vary if you leave the mix in the tank overnight depending on the other chemicals in the tank. The mix can change from liquid to a thicker paste and/or gelatinous mix because of extreme temperature changes, chemical hydrolysis, lack of agitation, pH changes. This is especially true if the tank mix includes buffering agents and fertilizers, including micronutrients.

11. **Are there any "handling" issues – if so, what?**

    Make sure that continuous agitation is present from the moment *Belay* is poured into the tank. Add *Belay* gradually with at least 1/3 of the tank filled with water.

12. How does *Belay* affect beneficial insects and predators?

Belay is useful in Integrated Pest Management programs, and is typically softer on insect predators than older classes of chemistries such as pyrethroids, carbamates and organophosphates. Researchers are known to say that *Belay* leaves predators behind to do their jobs. In general, *Belay* at higher rates (above 5 oz/A) impacts beneficials similarly to other neonicotinoid insecticides.

13. How does pH affect *Belay*?

The optimum pH for a spray tank mix with *Belay* is between 5.5 and 8.5. Water pH outside of this range will reduce chemical half life and ultimately negatively affect performance in the field.

14. How does *Belay* Insecticide's mode of action compare with other neonicotinoids?

Clothianidin has the same mode of action of those products in the neonicotinoid group (IRAC MoA Group 4A).

15. What are the risks of cross-resistance with other neonicotinoids such as imidacloprid, thiamethoxam and acetamiprid?

Cross-resistance development among insecticides that have the same mode of action and similar sites of action is always faster. Always use *Belay* at the recommended label rates and spray intervals. When using mixtures containing a neonicotinoid as one of the components, always use the full recommended rates of the individual active ingredients.

16. Does *Belay* break down in sunlight?

Yes, like the majority of insecticides, the active ingredient in *Belay* is affected by sunlight. *Belay* is formulated to diminish that risk for foliar applications, because it promotes plant uptake before photodegradation becomes an issue. Photodegradation is an important consideration when *Belay* is applied to bare ground. For best results, incorporate *Belay* into soil by machinery or via chemigation.

17. How does *Belay* affect bees?

Belay is acutely toxic to bees. It is labeled to minimize harm to the environment, including beneficial insects such as bees. The acute toxicity of *Belay* to bees is similar to other chemistries in its class.

18. Do neonicotinoid insecticides cause colony collapse disorder?

The cause of CCD is unknown at this time, with speculation about a number of potential factors. There is no known causal evidence linking CCD to any crop protection product, including clothianidin, the active ingredient in *Belay*. It appears that the more recent the registration of a neonicotinoid, the more stringent the bee language, although this is not a function of toxicity. Newer chemistries such as dinotefuran, clothianidin and thiamethoxam have more bee precautionary language on their labels than older compounds in the same class.

19. Are there crop rotation restrictions?

Minimal. See label for details.

20. Can *Belay* be applied by air?

Yes in cotton, potato, rice and soybean at this time.

21. What grazing restrictions are there with treated soybean crops?

Do not graze or feed soybean forage or hay to livestock.

22. How does *Belay* move in the soil? Mobility? Half-life?

Belay does not leach through the soil profile. It is a relatively long-lasting compound. As with most crop protection products, factors such as weather (temperature, sunlight) and the type of application (bare ground vs. incorporated) can affect the length of the half life.

Generally, *Belay* will provide long residual and is favored in the broadest variation of soil pH and soil type.