

## | Frequently Asked Questions for Potatoes |

**1. How is Clutch<sup>™</sup> Insecticide different from other neonicotinoid insecticides?**

The active ingredient in *Clutch* is clothianidin, a 3rd generation neonicotinoid. *Clutch* provides the longest lasting control of key potato pests such as Colorado potato beetle, aphids and leafhoppers in potato.

*Clutch* Insecticide is labeled for maximum flexibility: in-furrow and foliar uses, as well as aerial application, are on the *Clutch* Insecticide label.

Clothianidin has longer residual activity and less water solubility than other neonicotinoids. *Clutch*'s physical and chemical characteristics means that it stays where you put it, and remains available for plant uptake in all soil types.

**2. Does Clutch get tied up in soil?**

No, *Clutch* does not get tied up with soil colloids like imidacloprid and thiamethoxam, which can be observed in those soils with moderate to high percentages of clay and organic matter. *Clutch* gets adsorbed by the colloids but it is still available for plant's uptake. Thus, *Clutch* offers the best of both worlds, extremely low leaching potential through the soil's profile and the most available to the crop. You do not need to use higher rates in heavier soils.

**3. What are the best early-season application methods for Clutch?**

In-furrow applications at cultivation provide equivalent, excellent control.

**4. How does Clutch move in the soil? Mobility? Half-life?**

*Clutch* does not move dramatically in the soil profile because of its lower water solubility. Most neonicotinoid insecticides available for soil applications have an average half-life in aerobic conditions of 34 days. This can vary dramatically given different soil conditions and temperature. Generally, clothianidin will provide the longest residual and is favored in the broadest variation of soil pH and soil type.

**5. How does Clutch move in the plant? Is it translaminar and/or systemic?**

*Clutch* moves through the xylem of the plant when applied to a potato seed-piece or as an in-furrow spray application. *Clutch* also has (local) translaminar and systemic movement following a foliar spray.

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**6. How long does it take for *Clutch* to start moving in the plant?**

Actively growing plants tend to move *Clutch* faster and more efficiently.

In-furrow: *Clutch* is absorbed by the root system and moves into the plant as soon as the roots become functional. Also, the areas of the tuber that were exposed to the seed-piece application or in-furrow spray are protected.

Foliar: Results have shown translaminar movement 30 minutes after application.

**7. Can I apply *Clutch* by air?**

Yes, *Clutch* has been approved for aerial application.

**8. What are the crop rotational restrictions?**

Corn, canola and potato may be replanted at any time. A one year plant-back interval is required for leafy, root and tuber vegetables (except potato). Soybeans may be planted at a 30-day plant-back interval.

**9. Can I make a foliar application following a soil application?**

No, for resistance management purposes, the *Clutch* label prohibits a foliar application following a seed-piece or soil application.

**10. Can *Clutch* be tank mixed or mixed with fertilizers, insecticides or herbicides?**

Fertilizers: Yes.

Herbicides: According to limited data available, there is no indication of antagonism when Sencor<sup>®</sup>, Eptam<sup>®</sup>, Matrix<sup>®</sup> or Outlook<sup>®</sup> are tank mixed with clothianidin.

Fungicides: According to limited data available, there is no indication of antagonism when Quadris<sup>®</sup>, Ridomil<sup>®</sup> or Ultra Flourish<sup>®</sup> are tank mixed with *Clutch*.

When tank mixing, please review the label for the best mixing sequence of products.

**11. Are there any adjuvant restrictions?**

*Clutch* is not labeled for use with adjuvants in Canada.

**12. Can I leave *Clutch* in the tank over night?**

No, it is best to make sure that your spray tank is empty and your hoses are flushed at the end of the day.

**13. How does pH affect *Clutch*?**

Water pH could affect clothianidin's performance if it is less than 5.5 and higher than 8.5.

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**14. How does *Clutch*'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.

**16. If I have Colorado potato beetle and aphids that are resistant to imidacloprid, can I expect equal levels of resistance among those pests to *Clutch*?**

The answer varies by region. University studies have shown that Colorado potato beetle populations that express high levels of insensitivity to imidacloprid and thiamethoxam had lower level of insensitivity to *Clutch*. However, *Clutch* still might not effectively control those populations under field conditions.

**17. Does *Clutch* break down in sunlight?**

Yes, like the majority of insecticides, clothianidin is affected by sunlight.

**18. What is the rain fastness for *Clutch* when applied as a foliar insecticide?**

Extremely good, approximately 3 hours.

**19. How does *Clutch* affect bees?**

*Clutch* is acutely toxic to bees. It is labeled to minimize harm to the environment, including beneficial insects such as bees.

**20. 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 *Clutch*. 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.

**21. What is a 3rd generation neonicotinoid?**

Third generation neonicotinoids are the latest innovation in this important class of insecticides. New neonicotinoids have unique physical and chemical properties that are different from older neonicotinoids. Clothianidin was first developed in 2001–2002.

