

FOR WHEAT

Label expansion for pulse crops, barley and oats is under Environmental Protection Agency (EPA) review

Lumivia[®] CPL insecticide seed treatment is a new mode of action that raises the industry standard for the protection of wheat against yield-robbing pests, with approval for pulse crops, barley and oats coming soon. Insect damage to seeds and seedlings is one of the most significant yield-impacting problems that farmers face each year.

Lumivia[®] CPL insecticide seed treatment combats a wide spectrum of insects including wireworm, cutworm, armyworm, seedcorn maggot and more. As chewing insects attack establishing seedlings, **Lumivia[®] CPL insecticide seed treatment** impairs their muscle function, stopping feeding almost immediately.



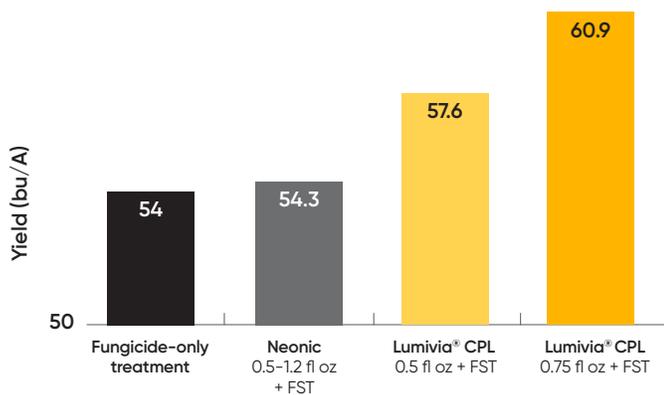
Key attributes of Lumivia[®] CPL insecticide seed treatment:

- The first insecticide seed treatment to use chlorantraniliprole, an anthranilic diamide chemistry (IRAC Group 28)
- **Pending EPA approval for utilization on pulse crops, barley and oats**
- Rapid feeding cessation
- Systemic uptake and translocation through seeds and roots into shoots
- Excellent activity against key early-season insect pests
- Highly efficacious at low use rates
- Outstanding seed safety profile
- Highly compatible with other commercial seed treatment technologies
- Negligible effects on non-target arthropods

Key benefits of Lumivia[®] CPL insecticide seed treatment:

- Uniform and healthy plant stand establishment
- Improved protection against wireworm, cutworm, armyworm, seedcorn maggot and other key insect pests
- Unique mode of action with systemic uptake and translocation protects more than just the seed
- Immediate protection of seed and seedlings with fast-acting properties

Yield Benefits with Lumivia[®] CPL insecticide seed treatment in wheat
Twelve replicate trials targeting wireworm 2016-2019



Pest	Lumivia [®] CPL insecticide seed treatment	Neonicotinoid insecticide
Wireworm	+++	++
Cutworm	++++	-
Armyworm	++++	-
Aphid	-	++
Hessian Fly	-	++
Pea leaf weevil larvae	Currently under evaluation	++
Seedcorn maggot	+++	++

Table 1*

Key

- No control or not labeled
- + Feeding reduction
- ++ Average protection
- +++ Above average protection
- ++++ Excellent protection

Chickpea Research Trials in Leland, Idaho:



Fungicide-only seed treatment



Lumivia[®] CPL insecticide seed treatment 0.75 fl oz/cwt

Insecticidal Action:

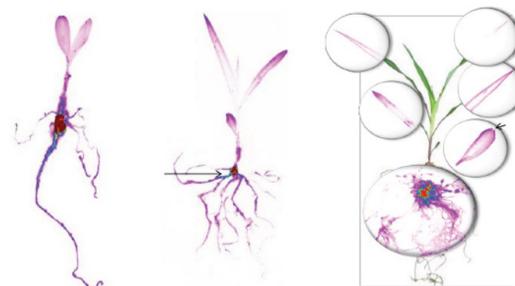
Absorption and Translocation

When applied as a seed treatment, **Lumivia® CPL insecticide seed treatment** is systemically translocated upward, protecting the seed, roots and the developing seedling stem and leaves. As demonstrated with the seedling in Fig. 1, **Lumivia® CPL insecticide seed treatment** is present in the treated seed, root system and above-ground plant parts from seed germination to the V5 growth stage.

Mode of Action

Lumivia® CPL insecticide seed treatment is the first insecticide seed treatment using chlorantraniliprole, within the anthranilic diamide class of chemistries. This mode of action acts on the ryanodine receptors in insect muscle fibers, resulting in rapid feeding cessation, lethargy, regurgitation and muscle paralysis, ultimately leading to death.

Fig. 1



Environmental Profile

When used according to the label, **Lumivia® CPL insecticide seed treatment** has minimal impact on the environment, beneficial insects and pollinators. High specificity to target sites in pest species results in low to no impact on non-target beneficial insects, including parasitoids, parasites and pollinators. The

impressive selectivity, combined with robust pest control and excellent environmental profile, establishes **Lumivia® CPL insecticide seed treatment** as a sound tool for Integrated Pest Management and complimentary partner or alternative to neonicotinoid insecticides.

Spring Wheat Research Trials in Walla Walla, Washington:



Fungicide only,
no insecticide seed
treatment

**Lumivia® CPL insecticide
seed treatment 0.5 +
Imidacloprid 1.5 fl oz/cwt**

**Teraxxa™ F4 +
Imidacloprid
0.5 fl oz/cwt**

Lumivia® CPL Insecticide Seed Treatment Efficacy Against Cutworms on Wheat, Lentils and Peas (order of potted plants from front to back)



Lumivia® CPL insecticide seed treatment



Standard neonic insecticide seed treatment



Untreated check

Protection That Offers Peace of Mind

By protecting vulnerable seeds and seedlings during critical early development, **Lumivia® CPL insecticide seed treatment** provides better stand establishment and helps to reduce the risk of yield-limiting factors. By protecting yield potential, farmers will benefit from not only peace of mind, but a greater return on investment.