

Lumiverd™

Active Ingredient: Spinosad

Seed Applied Technology
Technical Data Sheet



Lumiverd™ insecticide seed treatment contains spinosad, an **insecticidal natural product** with proven protection against fly maggot damage in onion crops. Seedcorn (*Delia platura*) and onion maggots (*Delia antiqua*) can cause severe seedling damage resulting in more than 50% yield loss in onion crops. Lumiverd works directly at the site of feeding from the start, to safeguard growing roots, stem, and bulb tissues from insect damage. By protecting seedlings below the soil, Lumiverd provides key support for healthy and productive onion crops.



Seedcorn maggot trial (2022). Dr. Timothy Waters, Washington State University, Pasco, Washington.

Lumiverd seed treatment promotes robust stand establishment, reducing the risk of other yield-limiting factors such as weather and disease. By protecting yield potential, farmers will benefit not only from confidence in planting, but a greater return on investment.

Lumiverd Key Attributes

- Contains spinosad, a proven active ingredient with a track record of efficacy in several crops
- Insect Resistance Action Committee (IRAC) Group 5 mode of action
- Active ingredient, spinosad, is derived from a naturally occurring soil bacterium (*S. spinosa*)
- Limited systemic movement keeps active ingredient in the root zone
- Highly compatible with other seed treatment technologies

Lumiverd Key Benefits

- Trusted protection against two primary below ground onion pests, seedcorn and onion maggot
- Protects yield potential via improved seedling health and stand establishment
- Key component for insect resistance management strategies
- Active ingredient EPA Green Chemistry award winner for favorable environmental profile and excellent field performance
- Pending registration by the Organic Materials Review Institute (OMRI) for use in certified organic production systems



Lumiverd is a commercial insecticide seed treatment designed to be used as a component in seed coating blends to protect germinating seeds and seedlings. Follow label instructions for Lumiverd seed treatment to achieve 0.2 mg of active ingredient per seed in the final product.

Onion Flies (*Delia platura* and *Delia antiqua*)

Onion fly larvae are the cause of significant economic loss in onion crops in temperate North American farming regions. Two species are most prevalent; *Delia platura* (seedcorn maggot) and *Delia antiqua* (onion maggot) are closely related species that can only be discerned at the microscopic level. *Delia* maggots are typically pale white and grow to a length slightly less than 0.5 in (9-11 mm). Seedcorn maggots are more abundant in western regions while onion maggots are more common in eastern North American onion crops. Both species produce 3-5 generations of flies starting from pupae that have overwintered in the soil. Mature flies deposit their eggs near plant stems or in field residue. Larvae emerging in this initial generation are most devastating to onion seedlings by feeding on roots to cause quick wilt and subsequent death of onion plants.



Above ground symptoms of onion maggot feeding including rapid wilting prior to plant death. Left - a healthy onion plant compared to a plant wilted from maggot feeding. Right - onion maggots feeding on onion roots. Photo credit: Eric Moretti and Leonardo Salgado, Cornell University

Onion Fly Management

Mature onion flies are attracted to organic matter, including rotting onions, for oviposition. Therefore, utilizing herbicides to reduce weeds or cover crops 3-4 weeks prior to planting is recommended and rotation with non-onion (allium) crops is preferred. Insecticidal sprays can be helpful towards reducing adult fly populations prior to egg laying. Seed treatments are amongst the most effective means for maggot control due to the below ground feeding behavior. In addition, seed treatments often utilize lower total amounts of insecticides and exposure (environmental and human) is minimized.

Responsible Pest Management

Lumiverd contains the active ingredient spinosad, an award winning insecticide recognized for its effectiveness, natural origin, and favorable environmental profile. Lumiverd is also highly compatible with other crop protection products and practices. Therefore, combining the positive biological attributes of spinosad with the precision application and reduced use rates of seed treatment technology is an excellent opportunity to protect yields in a responsible way that will preserve farm resilience for this season and the next.



Corteva onion maggot trial (2022). Photo credit: Leonardo Salgado, Cornell University

Insecticidal Activity and Safety

•Absorption and Translocation

Unlike other seed treatments, spinosad is retained in the root zone and does not move readily throughout the plant, providing extended protection to root and bulb tissues.

•Mode of Action

Spinosad is an allosteric activator of nicotinic acetylcholine receptors in the nervous system (nAChR, Site I) designated as a IRAC Group 5 insecticide. Lumiverd™ insecticide seed treatment causes hyperexcitation of the nervous system and eventual insect death. This unique mode of action is compatible with other modes of action to prevent selection of resistant insect populations.

•Safety

Lumiverd is supplied as a wettable power containing 80% spinosad active ingredient (80WP). When used according to directions, Lumiverd is safe to humans and domestic animals. Spinosad has minimal impact on pollinators and beneficial arthropods when used according to label. Lumiverd is toxic to aquatic invertebrates and care should be taken to avoid water contamination when cleaning equipment after treating.