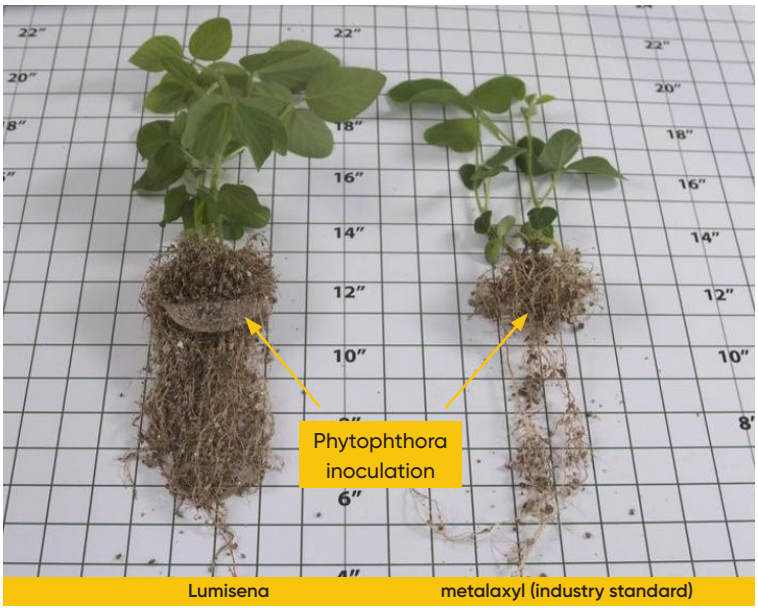
Lumisena™

FUNGICIDE SEED TREATMENT

Technical Data Sheet

Lumisena™ fungicide seed treatment brings a new mode of action that delivers best-in-class protection against diseases caused by oomycete fungal pathogens, such as Phytophthora and downy mildew. Lumisena consistently demonstrates improved emergence, vigor, and healthier stand establishment to help maximize yields. It delivers effective seedling protection by affecting multiple stages of the pathogen's life cycle, resulting in better efficacy and length of control.



Soybean seedlings inoculated with *Phytophthora sojae* disease disk. Lumisena remains in the root system, offering protection even in a Phytophthora "hot zone" as demonstrated with the roots growing through the diseased disk. Metalaxyl translocates upward, so roots die or are severely injured upon contact with the diseased disk.

Lumisena Key Attributes

- First fungicide seed treatment using oxathiapiprolin, classified under FRAC Group 49
- Affects a novel target site of action (inhibits oxysterol binding protein) in oomycete pathogens
- Utilized as a seed treatment on tropical corn (maize), soybean, sunflower
- No cross-resistance to existing fungicides
- Systemic uptake and translocation through seeds and roots, into plant shoots
- Excellent seed safety profile
- Highly efficacious at very low active ingredient use rates
- Favorable environmental profile
- Very low toxicity to non-target organisms
- When managing for downy mildew, partner an alternative mode of action with Lumisena
- Product registrations will differ by country

Lumisena Key Benefits

- Best protection against *Phytophthora sojae* damping off, the #1 yield-limiting soybean disease in North America
- Reduced incidence of downy mildew pathogens in tropical corn and sunflower
- Uniform plant stand establishment
- Larger, healthier plants with improved vigor, when in presence of disease
- Systemic action protects root and plant health
- Provides new tool for integrated disease management
- Active at every stage of the fungal life cycle, resulting in healthier plants and greater crop productivity
- Protects yield potential through improved early season stand and root health

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Pest Spectrum

Lumisena™ fungicide seed treatment targets soil-borne oomycete pathogens including *Phytophthora sojae* (Phytophthora, soybean), *Peronosclerospora* species (downy mildew, corn), and *Plasmopara halstedii* (downy mildew, sunflower).

Fungicidal Action

- **Absorption and Translocation**

  When applied as a seed treatment, oxathiapiprolin is systematically taken up and translocated upward in the plant.

- **Mode of Action**

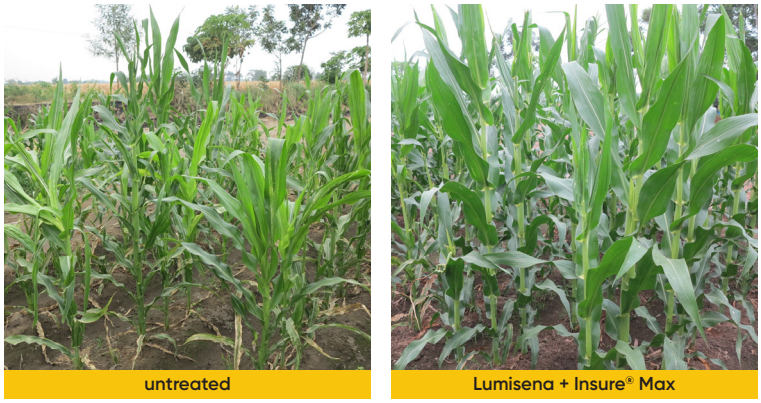
  A member of the piperidinyl thiazole isooxazoline chemical family, oxathiapiprolin protects against oomycete infection by binding to the oxysterol-binding protein (classified as FRAC Group 49). Lumisena is active on multiple stages of the pathogen's life cycle, providing preventative, curative, eradicant, and antisporulant activity. It prevents zoospore and sporangial germination, stops mycelial growth, and inhibits spore production and viability.

Environmental Profile

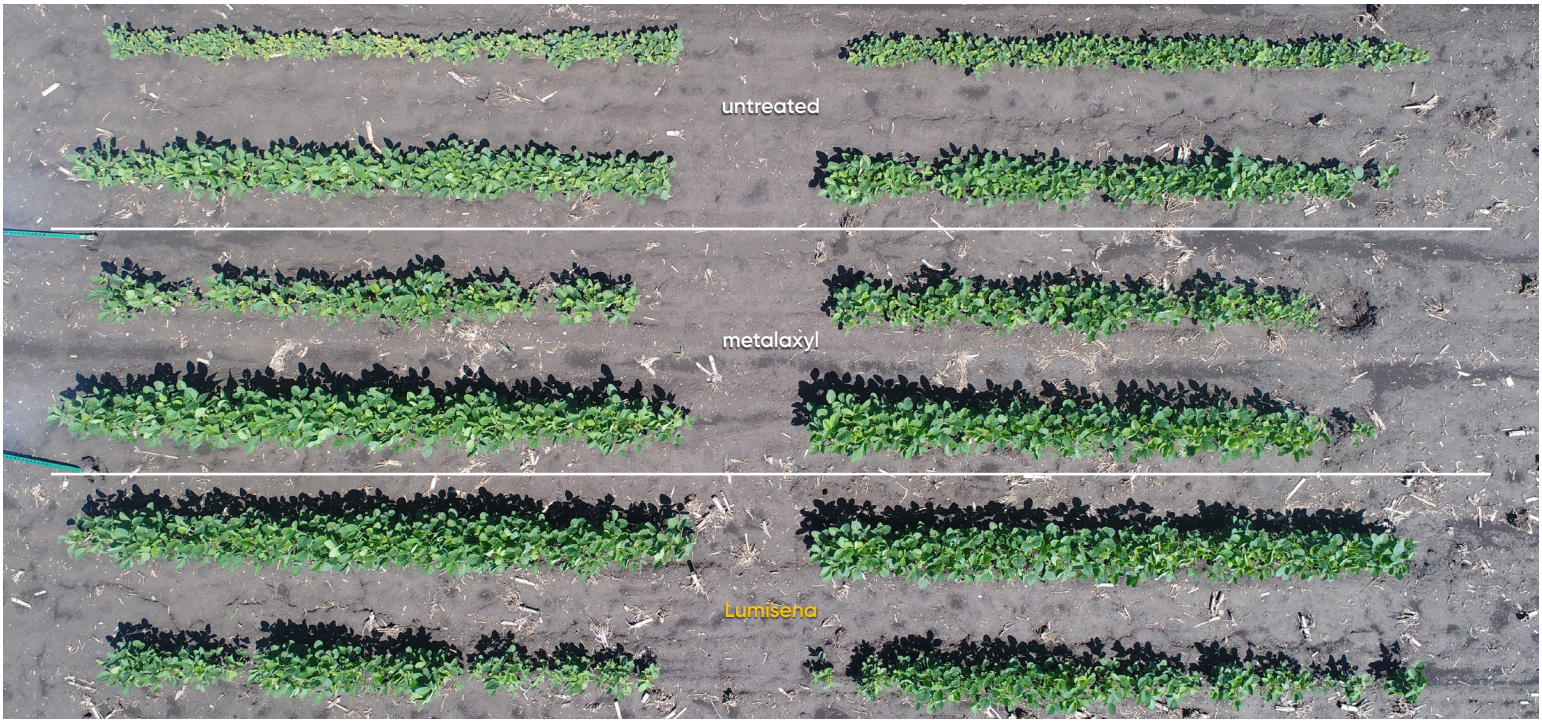
Lumisena has a favorable environmental profile if applied according to label recommendations. It is very effective on target organisms at extremely low use rates and has very low toxicity to non-target organisms. Mammalian oral, neurological, developmental, and dermal toxicity is low, as is avian and bee toxicity.

Crop	Scientific Name	Common Name
soybean	*Phytophthora sojae*	Phytophthora
corn	*Peronosclerospora spp.*	downy mildew
sunflower	*Plasmopara halstedii*	downy mildew

Disease pathogens susceptible to Lumisena seed treatment when used according to label. Not all uses and pathogens are registered in all markets.



Control of *Peronosclerospora maydis* (downy mildew) in Kediri, East Java, Indonesia.



Lumisena fungicide seed treatment at 53 days after planting. Lumisena provided greater biomass than untreated or metalaxyl seed treatments throughout the growing season.

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