

## Protect Wheat Seedlings with Dividend Extreme

*Pythium* is one of the most prevalent disease pathogens attacking wheat fields. It is so common, that it is often misdiagnosed as winter injury, poor soil fertility or toxicity from crop residue. Since *Pythium* infects cereal crops prior to emergence, the best way to control the disease is to prevent it from developing in the first place. Luckily, Dividend Extreme® seed treatment fungicide can be applied before planting to prevent infection during the most susceptible, early season development period. In addition, Dividend Extreme is the only seed treatment fungicide that offers growers the benefit of Apron® XL at a labeled rate three times the norm for added protection against *Pythium*.

### Damage

*Pythium* infects the seed at or before germination, attacking the young seedling before or just after emergence. The disease feeds on the root system causing damping-off, which results in poor germination and spindly plants with shortened or distorted leaves, fewer tillers and smaller heads.

*Pythium* is difficult to control once rot has begun, and rapid death of crops occurs when infected. Economic impact can result from stand loss, poor vigor, delayed emergence and poor plant development.



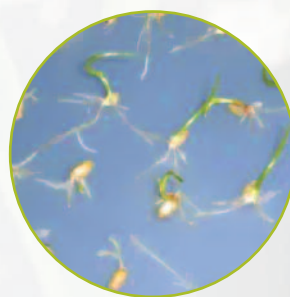
*Pythium* damping-off

#### Impacts of *Pythium*:

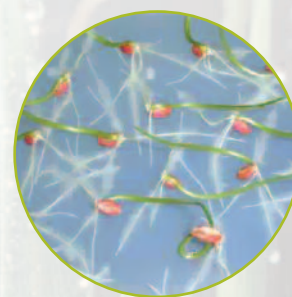
- Delayed emergence
- Damping-off
- Restricts nutrient uptake due to disintegrated root tips
- Stunts plant growth
- Uneven plant development
- Thin plant stands
- Significant yield loss

### Disease Cycle

The fungus can be found in soil, sand, pond and stream water and their sediments, as well as dead roots of previous crops. *Pythium* is a particular problem in poorly drained soils, as the fungus prefers wet and especially cool conditions for releasing spores. The disease can develop most easily in seedlings, when plants are most vulnerable.



*Pythium*-infected seeds, untreated



*Pythium*-infected seeds, treated with Dividend Extreme

### Symptoms

Symptoms produced by *Pythium* are often confused with other types of root rot. Early season symptoms, commonly known as damping-off, develop as a result of compacted soils and water-soaked conditions. Disease symptoms may include one or all of the following and develop prior to emergence:

- Seed decay
- Decay of the seedling before emergence
- Seedling root rot characterized by a soft, watery root
- Root tips that are brown and dead in appearance
- Brown tissue on the outer portion of the root that easily pulls off
- Root cells containing fungal spores

Plants that are able to emerge are pale and stunted, become yellow and die within a few days. Surviving plants are less vigorous and competitive during early season growth development.

## Management

Most soils contain some level of *Pythium*, ensuring the potential for infections in fields if environmental conditions become favorable. Some cultural recommendations for preventing *Pythium* attacks or reducing its impact include:

- Planting certified seed; seed companies thoroughly clean seed to deliver the highest quality seed to the grower
- Monitoring soil levels; balanced soil fertility is extremely important
- Rotating to a non-host crop, such as a legume
- Planting into well-drained soils
- Delayed seeding may slow disease progression in wet conditions

## Chemical Recommendations

For the most simple and complete protection against *Pythium*, plant seed treated with Dividend Extreme. Fungicide seed treatments serve as the first line of defense against *Pythium* and other seed-borne and soil-borne diseases by reducing the probability of infection when planted. As a result, disease risk can be lowered, germination and stand establishment are greatly improved and yield potential is protected.

Dividend Extreme has shown industry-leading performance against *Pythium* damping-off, making it an integral part of an overall management program for protection against *Pythium* in wheat. Protecting against 16 early season seed-borne, soil-borne and fall foliar diseases, Dividend Extreme aids in the development of strong, uniform stands and helps enhance yield performance.

## Benefits of Dividend Extreme

- Contains Apron XL for unsurpassed control of *Pythium* damping-off
- Protects against 16 early seed-borne and soil-borne diseases
- Offers excellent seed safety for optimal seedling development and root growth
- Potential for good return on investment vs. untreated and competitors
- Fully compatible with Cruiser® seed treatment insecticide to protect wheat seedlings from diseases and insects at the same time

Research from Washington State University indicates that wheat seeds left unprotected are likely to become infected by *Pythium* within the first 24 to 48 hours after planting in moist soils. Dividend Extreme protects seeds and young seedlings from day one, while aiding the development of a strong, uniform stand and enhancing yield potential.

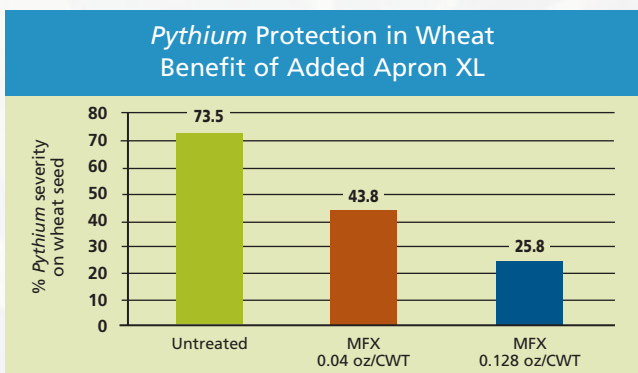
## Dividend Extreme + Cruiser = A Winning Combination

For added insect protection, Dividend Extreme can be combined with Cruiser seed treatment insecticide. Cruiser brings superior protection, especially during the early stages of the crop, against some of the most destructive insects, including aphids and wireworms. With this insecticide-fungicide combination, seed is protected from insects and diseases from the beginning, ensuring that the crop gets off to a vigorous start.

Besides protecting against diseases, seed treatments offer growers a variety of benefits, which include:

- Protecting the seed and seedling through emergence and stand establishment
- Delivering better stands to avoid replanting
- Convenient protection of genetic potential
- Protection for early planting in cooler soils

For more information, visit  
[www.farmassist.com/crops/cereals](http://www.farmassist.com/crops/cereals)  
or call the Syngenta Customer Center  
at 866-SYNGENTA (866-796-4368).



MFX = mefenoxam, the active ingredient in Apron XL  
Wheat seed was treated with Dividend brand fungicides.  
Syngenta trial conducted under very high *Pythium* pressure in California; 2003.

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Cruiser® insecticide is protected by several pending patent applications and granted patents in the US and worldwide, including US Patent Nos. 5852012 and 6844339.

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