Early Blight Tranquility
Disease resistance meets its match

According to the USDA, potatoes contributed to about 15 percent of all vegetable sales in 2012 and are the leading vegetable crop in the United States. Therefore, potato production is a vital part of the country’s economy and an important commodity to protect. While many diseases and pests threaten potato crops throughout the growing season, potato researchers are beginning to identify resistance issues to diseases such as early blight, which threaten to significantly impact crop yield.

Growers use fungicide rotations to reduce disease damage as a part of a comprehensive crop protection program. However, potato growers across the country are beginning to experience a loss of efficacy in certain fungicide chemistries. This rise in resistance is becoming a far-reaching issue as widely used fungicides become increasingly ineffective in controlling destructive potato diseases.

THE SEARCH FOR SOLUTIONS

The significance of this issue caught the attention of potato researcher Phillip Wharton, Ph.D., at the University of Idaho. With a decade of experience in potato research, Wharton focuses his efforts on bacterial and fungal diseases that affect potatoes in the state and across the country.

In response to complaints in his area about the gradual loss of fungicide efficacy in potatoes, Wharton set out to test levels of early blight resistance to fungicides containing strobilurin and boscalid chemistries, expecting to find a high level of control with fungicides containing boscalid. However, his research revealed early blight isolate resistance is present for fungicides containing strobilurin and boscalid chemistries.

“When we see a loss of efficacy with any product, we want to know why,” said Wharton. “With growers complaining about a loss in effectiveness in strobilurins, we decided to test strobilurin resistance and thought that boscalid would make a good positive control. To our surprise, we actually found several isolates that were resistant to boscalid as well.”

Determined to find a resistance solution, Wharton turned to testing fluopyram and pyrimethanil, the active ingredients found in Bayer CropScience’s Luna Tranquility. The chemistries provided complete control of early blight isolates in testing, offering a solution to resistance management issues.
“The good news is that we have not found any cross resistance to Luna Tranquility for early blight. All of the early blight isolates we found to be highly resistant to boscalid are completely sensitive to Luna Tranquility,” said Wharton.

Neil Gudmestad, Ph.D., a distinguished professor of plant pathology at North Dakota State University, also heard reports from growers in Nebraska and North Dakota regarding a decrease in early blight efficacy. In an effort to test the issue on a national scale, Gudmestad collected disease isolates from states across the country, including Florida, Idaho, Minnesota, Nebraska, North Dakota and Wisconsin. From his collections, he was able to determine 80 percent of the early blight instances have resistance to fungicides containing boscalid chemistry.

Wharton and Gudmestad both investigated the molecular basis for this growing resistance issue and identified five distinct mutations generating early blight resistance. Through testing, the researchers also identified moderate and high levels of early blight resistance to newly launched fungicides containing the penthiopyrad and fluxapyroxad chemistries.

“While our research identified that penthiopyrad and fluxapyroxad chemistries are affected by early blight mutations, we found that fluopyram in Luna was not affected by any of these five mutations,” said Gudmestad.

Gudmestad’s conclusion points to Luna Tranquility as the current answer for resistance management issues for early blight.

“My hope for Luna Tranquility, because it is a premix of fluopyram and pyrimethanil, is that it will provide effective resistance management for growers,” said Gudmestad. “It is one of the last effective tools we have for management of early blight.”

**EFFICACY AND CONTROL**

Jeff Miller, an independent researcher and president of Miller Research, has seen similar efficacy results for Luna Tranquility in his research on early blight and white mold for potatoes. With nearly 15 years of experience in potato research, Miller knows the potential threat early blight and white mold pose to growers every year. Growers employ several methods to manage these diseases each year and using an effective fungicide is an important part of that plan.

To ensure growers have an effective fungicide option to include in potato disease management programs, Miller began testing fungicide efficacy for early blight and white mold.

“Luna Tranquility’s performance in our trials was outstanding,” said Miller. “It keeps the potato vines almost completely free of early blight and white mold all season long.”

Miller was impressed by Luna Tranquility’s ability to control both white mold and early blight. While there are other options that control white mold, Miller emphasized the importance of providing protection for multiple diseases.

“When growers select a fungicide, they want it to have as many benefits as possible,” said Miller. “There are some fungicides that control white mold alone, but Luna Tranquility is far superior in controlling both white mold and early blight, offering growers two disease solutions in one product.”

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**NEW TRI-STEEL FELT DRYER**

THE TRI-STEEL FELT DRYER COMBINES EXCELLENT DRYING CAPABILITIES, QUICK CONVENIENT FELT REPLACEMENT AND A HEAVY WELL BUILT MACHINE TYPICAL OF TRI-STEEL EQUIPMENT.

- Premium motors and gear reducers, 24-72” wide rollers, food grade lubricants, optional stainless steel construction, all components are non-metric, non proprietary.

- Plastic wiper shears excess water off of squeeze rollers.

- Fast easy replacement of felt, no negative reaction to sproutnip or chemical application.

- Designed to provide uniform consistent squeeze pressure along length of each drying roller via spring & manual tension.
A SOLUTION FOR THE FUTURE

Along with Luna Tranquility’s superior performance in efficacy trials, all researchers were hopeful for its impact on the future of resistance issues. It utilizes two active ingredients, which reduce the chance of resistance issues and provides an effective option for resistance management.

“It is a great resistance management strategy for Luna Tranquility to come as a premix of two chemistries combined. Our research shows that when you combine the two chemistries together, it’s much more effective than either fluopyram or pyrimethanil chemistries on their own,” said Wharton. “There appears to be a synergy between the chemistry combination, which gives you better control than if you were to spray one after the other. The total is better than the sum of its parts.”

The industry plays a critical role in the nation’s vegetable production. With the resistance to fungicides containing strobilurin and boscalid chemistries on the rise for damaging diseases, it is critical for growers to follow recommendations for resistance management and utilize products suited for resistance management.

Luna Tranquility’s chemistries have proven in multiple research trials to provide white mold and early blight control equal or superior to current leading fungicides while also providing protection against brown spot, botrytis, black dot and powdery mildew.

Through its new, unique chemistry, Luna Tranquility fungicide offers a systemic solution for exceptional protection against some of the toughest diseases growers face today while also providing sound resistance management.

To learn more about Luna Tranquility fungicides, contact your local Bayer CropScience representative or visit www.LunaFungicides.com.