

EARLY BLIGHT (*ALTERNARIA SOLANI*)

KNOW WHAT YOU'RE UP AGAINST

- Primary infection comes from other host plants, inoculum in or on the soil, or inoculum on plant debris.
- Under favorable conditions, **spores can survive for at least 8 weeks** and travel long distances on air currents, spreading the infection to neighboring plants and fields.
- Cool, dewy mornings followed by hot, dry days create the ideal conditions for spore formation and dispersal.
- Disease pressure is greatest where overhead irrigation is used or frequent wetting occurs from dew.

Source: Compendium of Potato Diseases, 2nd Edition, APS Press

THE INDUSTRY STANDARD FOR RESISTANCE MANAGEMENT

Over the past several seasons, resistance management has become an important consideration for early blight control. The first strobilurin fungicide (azoxystrobin) was registered on potato in 1999 and the following year isolates of the early blight pathogen, *Alternaria solani*, were detected with reduced sensitivity to this fungicide. The shift in sensitivity to azoxystrobin, and also to pyraclostrobin, was approximately 10-fold, resulting in a significant loss in early blight disease control.

Research at North Dakota State University in 2003 demonstrates DuPont™ Tanos™ provides more effective control of *Alternaria solani* isolates with reduced sensitivity to azoxystrobin and pyraclostrobin. To maintain this effective control and provide the best protection against the risk of resistance development, Tanos™ labeling requires:

- Tank mixing with a preventive contact fungicide with a different mode of action (such as Manzate® 75DF) — thereby delivering two to three modes of action against early and late blight.
- Alternation with a fungicide with a different mode of action, such as Manzate® 75DF or SuperTin® 80WP.
- Limiting Tanos™ applications on potato to no more than 6 per season.

FOR MORE INFORMATION

For more information about Tanos™ programs in potato production, please contact your local DuPont crop protection retailer or your local DuPont representative. And visit us on the Web at tanos.dupont.com.



DuPont™ Tanos™
fungicide

This reference guide is not intended as a substitute for the product label for the products referenced herein. Product labels for the above products contain important precautions, directions for use and product warranty and liability limitations that must be read before using the product. Applicators must be in possession of the product label(s) at the time of application. Always read and follow all label directions and precautions for use when using any pesticide alone or in tank mix combinations.

Super Tin® is a restricted-use pesticide.

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The miracles of science™



The miracles of science™

DuPont™ Tanos™ fungicide

BEFORE THE ROWS CLOSE, OPEN THE DOOR TO A DUPONT™ TANOS™ FUNGICIDE PROGRAM FOR ENHANCED RELIABILITY

A DuPont™ Tanos™ fungicide program enhances disease control reliability by combining a novel fungicide from a new chemical class, with proven partners. But don't push your luck. Apply Tanos™ early — before row closure — to keep both early and late blight at bay.

MORE COMPLEMENTARY CHEMISTRIES ... FOR EARLY AND LATE BLIGHT PROTECTION YOU CAN COUNT ON

Tanos™ helps reduce the anxiety of slipping performance on some early blight strains as well as uncertain performance should late blight threaten. It contains the active ingredient of Famoxate™ for **enhanced contact control of both early blight and late blight with excellent rainfastness**. Tanos™ fixes on and within the plant's cuticle waxes. Laboratory and field testing demonstrate Tanos™ is fully rainfast within an hour of application and its resistance to washoff is unsurpassed by current fungicide standards. It also provides more effective control of azoxystrobin/pyraclostrobin and chlorothalonil insensitive early blight strains.

Tanos™ also contains the DuPont™ Curzate® active ingredient for **unique “kick back” activity on late blight**. While late blight may not strike each year, when it does it can be devastating. Tanos™ controls unseen, hidden infections while inhibiting lesion expansion and sporulation, so you'll be ready for whatever comes your way.

APPLY TANOS™ EARLY — GET BETTER EARLY BLIGHT CONTROL, LATER



Untreated check



Tanos™ 6 ounce program with Manzate® and Super Tin® (early season)

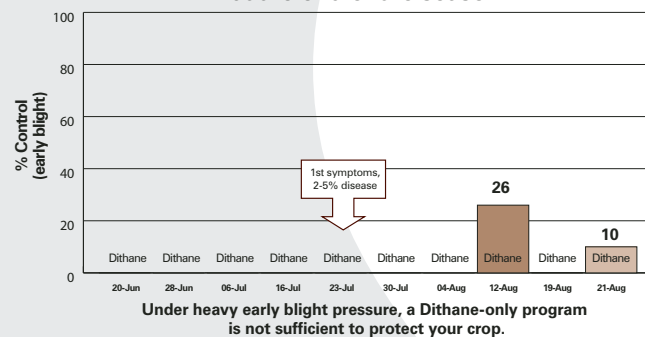
In research conducted at the DuPont Stine-Haskell Research Center programs that included an application of Tanos™ before row closure outperformed contact-only fungicide programs and programs with delayed applications of Tanos™.

DUPONT™ TANOS™ EARLY BLIGHT TIMING STUDY: METHODOLOGY

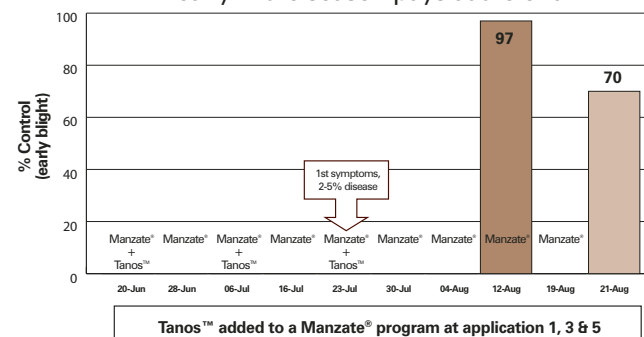
- Researchers compared early versus late applications of either Tanos™ or SuperTin® 80WP added to a contact program of Manzate® 75DF. They also compared Tanos™/SuperTin® 80WP/Manzate® 75DF programs to straight, full-season programs of Manzate® 75DF or Dithane Rainshield.
- Study was conducted on field grown Red Pontiac potatoes.
- First application was made at 10 percent row closure (10 percent of the crop canopy touching between the rows).
- Early blight symptoms first observed at application #5 (2 percent to 5 percent infection in untreated check).
- First evaluation was conducted following application #8 (68 percent infection).

TANOS™ EARLY BLIGHT TIMING STUDY: RESULTS

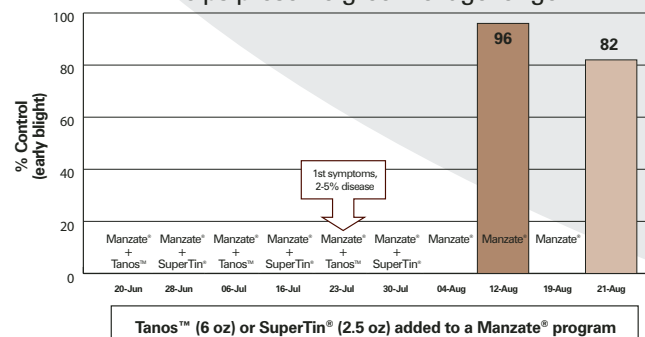
Performance of a **Dithane Rainshield** Program at the end of the season



Adding **Tanos™** to a **Manzate®** Program early in the season pays at the end

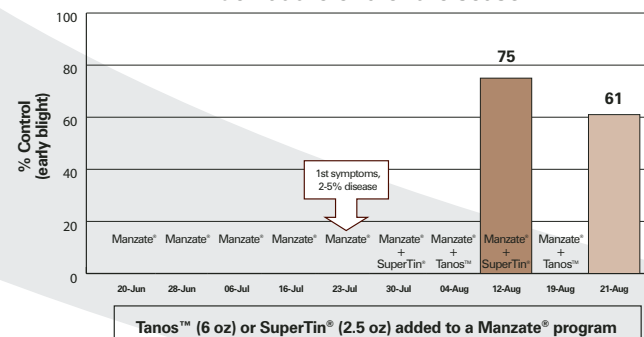


The addition of **Tanos™** and **SuperTin®** early helps preserve green foliage longer



Reinforcing your Tanos™ and Manzate® program early in the season helps preserve green foliage for a longer period.

Waiting to add **Tanos™** doesn't pay off as much at the end of the season



Adding Tanos™ and SuperTin® at the end of the season, after disease is observed in the field, helps reduce the incidence of the disease but is not as effective as early applications.

DUPONT™ TANOS™ EARLY BLIGHT TIMING STUDY: CONCLUSIONS

The research confirms that an early application of Tanos™ is the key to improved control of early blight.

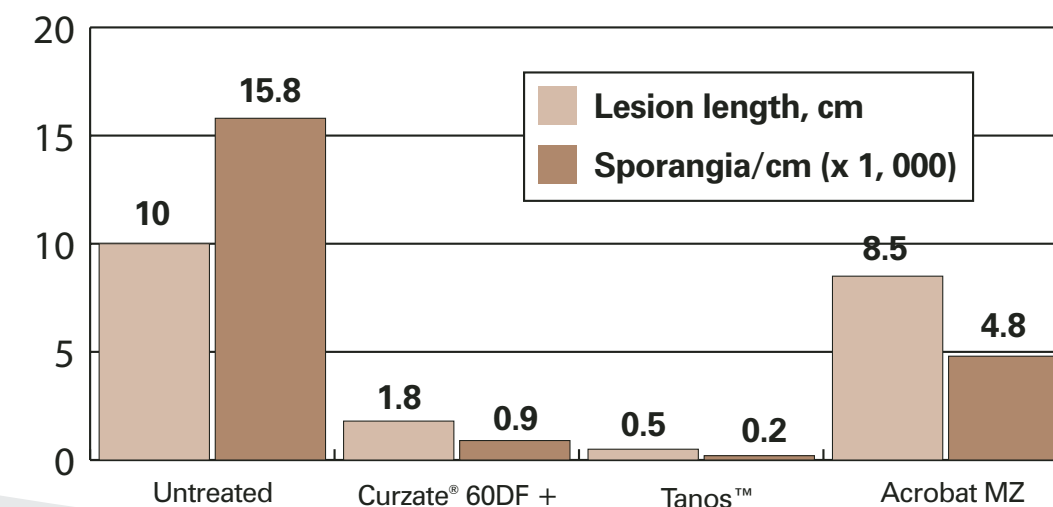
- **Don't wait:** The addition of Tanos™ to a contact program early in the season prevented primary infection. Adding SuperTin® later in the season may further improve overall performance of your fungicide program.
- **Earlier is better:** Adding Tanos™ and SuperTin® 80WP (in alternation) to a contact program later in the season greatly improved early blight control compared with a straight contact program. **The later application, however, was not effective at preventing primary (initial) early blight infection.**
- **Mix it up:** Alternating applications of Tanos™ early in a spray program greatly improved early blight control as compared to a straight contact program using only Manzate® 75DF or Dithane Rainshield.
- **Double up:** Adding 2.0 ounces of SuperTin® 80WP to the Manzate® 75DF applications improved overall program performance against early blight.

TREATING EARLY WITH TANOS™ ALSO PREVENTS THE ESTABLISHMENT OF LATE BLIGHT ON STEMS

Under favorable weather conditions, the stem lesions serve as an inoculum source for foliar late blight leading to late season foliar/tuber blight. Stem lesions are more common with US-8 isolates of late blight (*P. infestans*). Early stem lesions are difficult to detect. Getting good coverage with a contact-only product is critical and becomes more difficult after row closure. Also, level of control can be diminished by washoff or extended spray intervals.

An early season application of Tanos™ + Manzate® 75DF prior to and just after row closure can reduce the risk of stem blight in your potatoes.

Tanos™ highly effective against stem blight



Two applications, 7-day interval, starting 3 days post-infection

Source: DuPont Stine-Haskell Research Center 2002