

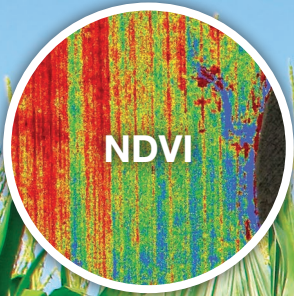


 **BASF**
We create chemistry

See the difference with **BASF Plant Health**

On Your Farm

agproducts.basf.com



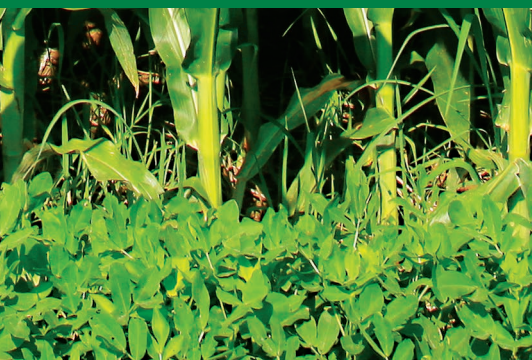


Introduction

Farming today is complex. You have more information and technology available than ever before, and with the array of products available and claims being made, **seeing is believing.**

While all fungicides, by definition, must control diseases to some degree, BASF Plant Health products manage both disease and environmental stresses. This complete stress management means that your crops can grow more efficiently, resulting in more consistent yield responses. Because you can see the difference from a BASF Plant Health product, you can be confident in choosing these fungicides on your farm.

See the difference
with **BASF Plant Health**



Disease Control

By definition, all fungicides must control diseases. Products will make claims about the number of diseases they control, how well they control them, or for how long, but what matters is if those products can deliver on these claims. As the market leader in row crop fungicides, BASF has been delivering products that control the diseases that matter most to you. And for the last 15 years, we have shown it time and again in university studies, on-farm trials, and yield maps across the US.

See the Difference

Both images to the right show pest infestations, but which one is worse? Severe weed problems can take half a corn crop's yield. Grey leaf spot, when left uncontrolled, can also take 50% of your crop's yield. Because weed infestations are inherently more visual, they often elicit a more deliberate response than infections from diseases. However, diseases start robbing yield from your crops even before symptoms are visible on the leaf. Maximize the potential of your crops by controlling diseases preventatively before infection reaches the portions of your crop that contribute most to yield.



It's important to target diseases preventatively before infection reaches portions of the crop that contribute most to yield.



Palmer Amaranth Infestation

Palmer Amaranth infestation in grower field, Iowa County, WI 2012.



Gray Leaf Spot Infestation

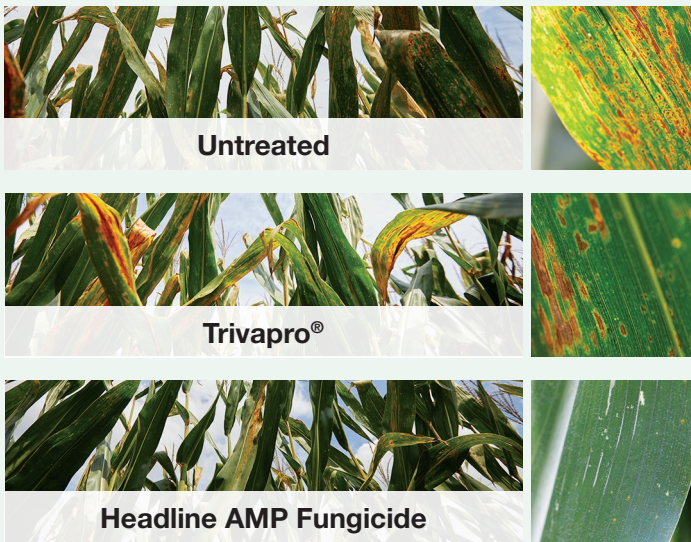
BASF small-plot replicated corn trial, MO 2018. Gray leaf spot infestation in the untreated check.



See the Difference

Corn

Gray leaf spot and northern corn leaf blight are residue borne diseases that continue to be the most economically important diseases in corn across the United States. Headline AMP® fungicide is the best product on the market to control both diseases, ensuring you are protecting your corn from the diseases that matter most.



BASF-funded small plot corn trial, Southern Illinois University 2017. Applications made at VT. Photos taken 52 days after treatment with Headline AMP fungicide 10 fl oz/A and Trivapro 4+10.5 fl oz/A.

Wheat

Monitoring the progression of stripe rust in wheat is important to maximize fungicide efficacy. Nexicor™ Xemium® brand fungicide delivers long-lasting preventative and post-infection control of stripe rust and other key cereal diseases.



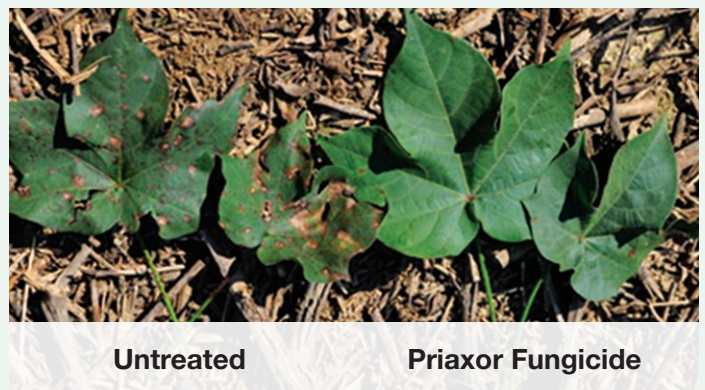
BASF sponsored replicated small plot trial conducted in 2017 at the University of Idaho, Aberdeen ID in spring wheat. Nexicor fungicide at 9 fl oz/A applied at Flag Leaf – 27 DAT. Application stage: Feekes 8, 37 days after treatment (DAT). WB 936 Spring Wheat – highly susceptible to stripe rust.

Soybean and Cotton

Target spot causes severe defoliation in both soybean and cotton in many geographies in the United States. Priaxor® Xemium® brand fungicide is the industry standard for control of this disease. Preserving petioles throughout the canopy ensures that every soybean pod has the resources it needs to maximize pod fill and boll production is maximized in every field.



BASF small-plot replicated trial, TN 2017. Quadris Top SBX 8 fl oz/A or Priaxor fungicide 4 fl oz/A applied to R3 soybean. Photos taken 50 DAT.



Priaxor fungicide 4 fl oz/A at 2nd week of bloom fb Priaxor fungicide 4 oz/A 4th week of bloom. University of Tennessee Research Trial 2016. Picture 10 weeks after 1st bloom.



Environmental Stress Control

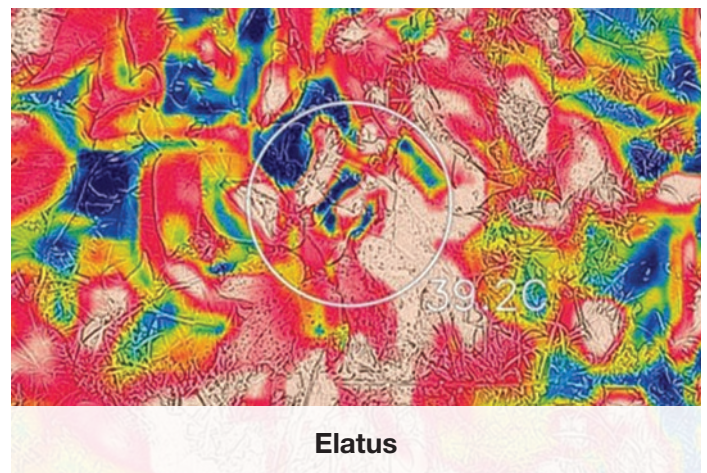
Every season has its challenges – periods of hot and dry, cool and wet, or even hail and wind. Regardless of what Mother Nature brings, know that BASF Plant Health products help ensure your crops are equipped to withstand the elements, so they can focus on growing more efficiently. Every other fungicide stops at disease control, but BASF Plant Health products help minimize the stress caused by the most uncontrollable factors in your operation.

See the Difference with Thermal Imagery

When crops experience stress (from environment or disease), ethylene is produced. BASF Plant Health products reduce ethylene levels in the plant and keep stomata functioning normally, essentially allowing the plant to “breathe” and “sweat”, resulting in a cooler crop canopy. Thermal images help illustrate this effect, where blue/green parts of the canopy are cooler and red/white parts are warmer. In the example to the right, Priaxor® fungicide treated cotton is noticeably cooler than the Elatus® treated cotton. Cooler canopies indicate that stomata are open so plants are photosynthesizing more efficiently, focusing on producing yield.



BASF Plant Health products are proven to reduce ethylene and keep stomata functioning normally, allowing crops to focus on producing yield.



BASF small-plot replicated trial, TN 2018. Elatus 6.15 oz/A or Priaxor fungicide 6 fl oz/A applied at 2nd week after 1st bloom. Thermal imagery taken 44 DAT.



See the Difference in Oxidative Stress

Greenhouse

Plants produce antioxidants, much like we do, to help combat the formation and accumulation of reactive oxygen species (ROS). However, environmental stresses can increase the production of ROS and overwhelm the antioxidants, resulting in oxidative stress that prevents the plant from operating efficiently. Oxidative stress was chemically induced on corn leaves treated with Delaro®, Trivapro and Headline AMP® fungicides. Only Headline AMP fungicide was able to mitigate the symptoms of oxidative stress, illustrating the ability of BASF Plant Health products to increase antioxidants in the plant and helping your crops focus on yield, even under the most severe environmental conditions.



BASF greenhouse corn trial, NC 2018. Delaro 8 fl oz/A, Trivapro 13.7 fl oz/A, Headline AMP fungicide 10 fl oz/A applied to corn. Carfentrazone-ethyl applied at 0.5 fl oz/A to all plants 7 DAT. Photos taken 14 DAT.

Field

In the field, hail can cause significant mechanical injury to a crop, resulting in elevated levels of oxidative stress. Applications of BASF Plant Health products can help the crop recover from this stress and get back to growing more efficiently. This corn field suffered hail damage, and the NDVI (normalized difference vegetation index) image shows that, six weeks after application, the Priaxor® fungicide treated portions of the field are much healthier than those that did not receive a Plant Health application. The images also show the treated plants are taller, greener, and are producing larger ears.



On-farm grower trial, IN 2018. Priaxor fungicide applied to vegetative corn at 4 fl oz/A 10 days following a hail event. NDVI imagery taken 58 DAT. Photos taken 80 DAT.



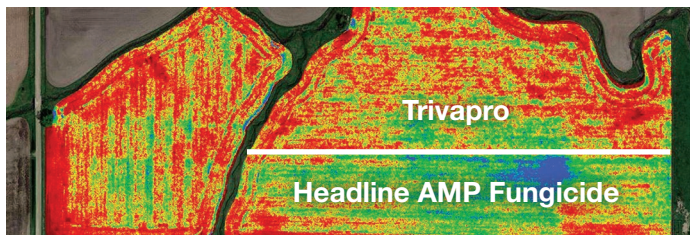
Optimized Growth Efficiency

While many fungicide companies tout long-lasting, hard-working products, BASF Plant Health products are proven to help your crops grow more efficiently throughout the season. Optimized growth efficiency leads to extended grain and pod fill, ensuring you get as many bushels out of your crops as possible. Confidently choose BASF Plant Health products to protect crops from whatever stresses may limit yield this season and maximize your yield potential.

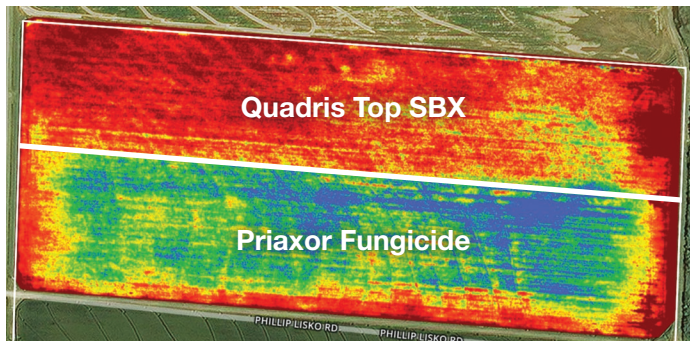
See the Difference

NDVI Imagery

NDVI imagery can help you visualize differences in plant health. Areas of higher NDVI (blue/green) have more biomass and more chlorophyll to drive yield. This comparison in corn from Iowa shows that Headline AMP® fungicide is helping to promote optimized growth efficiency over Trivapro four weeks after application. In Arkansas soybeans, we see Priaxor® fungicide promoting stress management from both disease and environmental stress better than Quadris Top SBX.



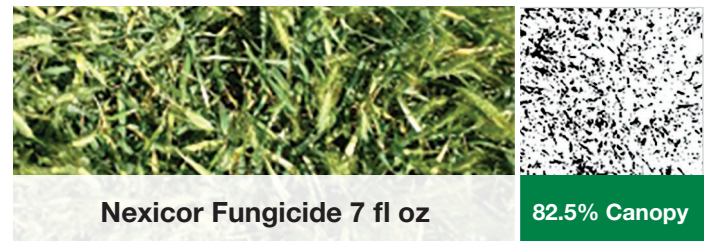
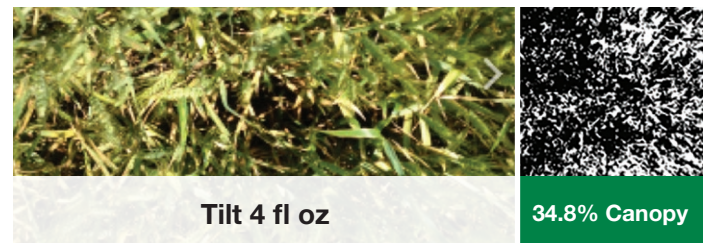
On-farm grower trial, IA 2018. Trivapro 13.7 fl oz/A or Headline AMP fungicide 10 fl oz/A applied to VT corn. NDVI imagery taken 28 DAT.



On-farm grower trial, AK 2018. Quadris Top SBX 8 fl oz/A or Priaxor fungicide 4 fl oz/A applied to soybeans at R3 and R5. NDVI imagery taken 32 DALY.

Wheat Canopeo

In Kansas, we see Nexicor™ fungicide in wheat maximizes above- and below-ground biomass by mitigating the effects of disease and environmental stresses. This helps optimize growth efficiency to drive grain production. The Canopeo app can be used to visualize the increase in biomass from Nexicor fungicide as compared to Tilt® and the untreated check.

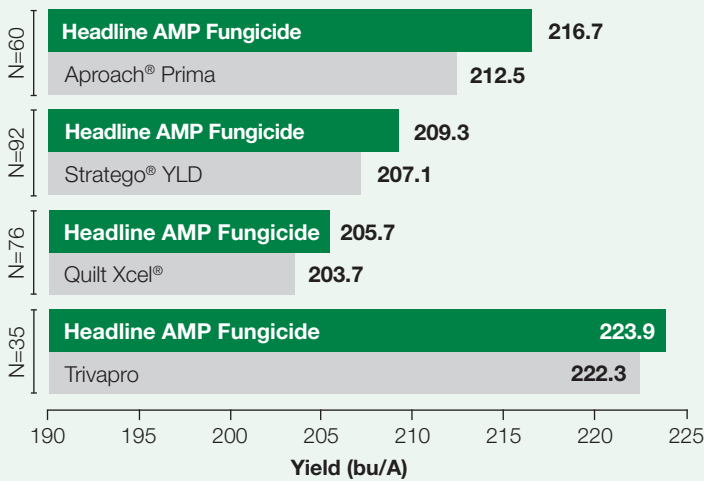


On-farm trial, Diamond Ag Research, KS 2017. Tilt 4 fl oz/A or Nexicor fungicide 7 fl oz/A applied to flag leaf wheat. Photos taken 37 DAT.



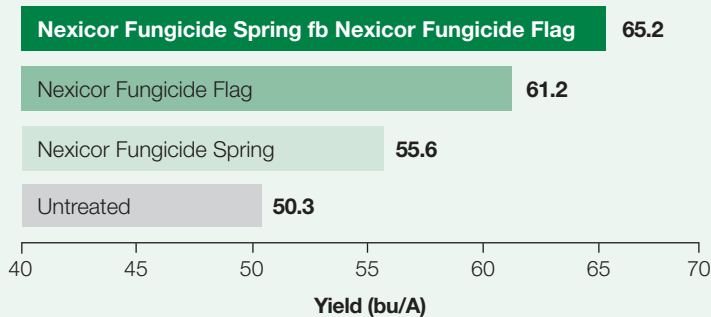
See the Difference

Corn: Headline AMP® Fungicide Delivers the Most Yield at Tassel



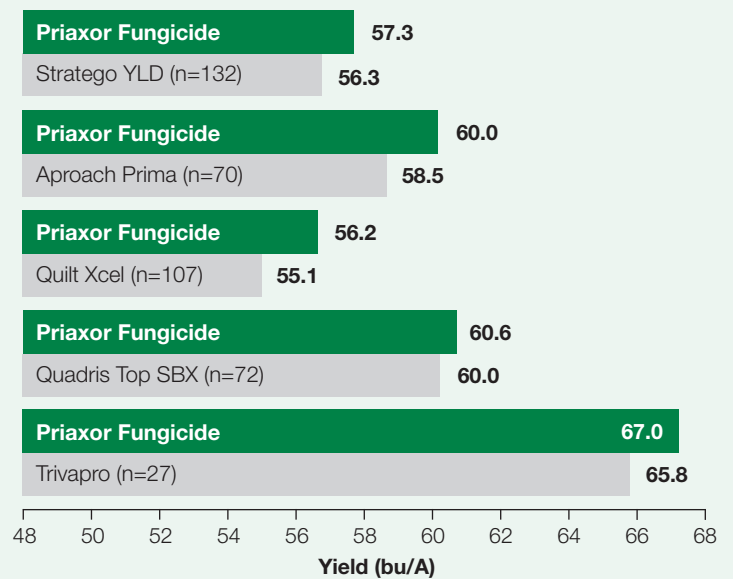
Summary of small-plot replicated corn trials, pair-wise comparisons by product with Headline AMP fungicide (10 fl oz/A). BASF trials or partially/fully sponsored University or Consultant locations. All applications made after VT. Approach Prima applied at 6.8-7 fl oz/A (Highest labeled rate is 6.8 fl oz/A) (2013-2017); Stratego YLD applied at 4 fl oz/A (2011-2017); Quilt Xcel applied at 10.5 fl oz/A (2011-2017); Trivapro applied at 4 + 10.5 or 13.7 fl oz/A (2016-2017).

Wheat: Nexicor™ Fungicide Offers a Wide Application Window from Tillering to Flag



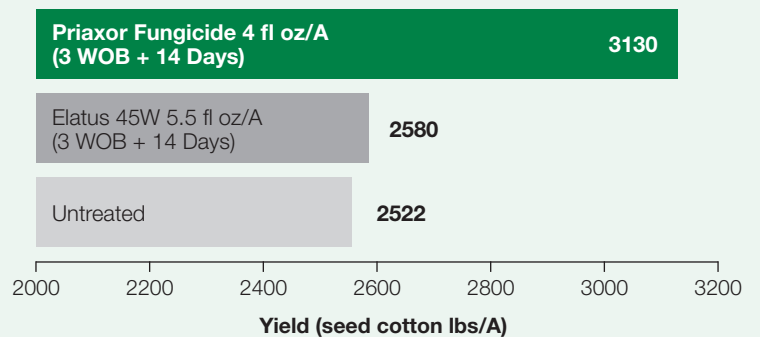
Summary of 7 small plot replicated trials conducted in wheat in 2016. BASF or partially/fully sponsored University or Consultant locations including DE, KS, LA and SD. Spring application of 3.5 fl oz/A at Feekes 4-6 and Flag Leaf application of 7 fl oz/A at Feekes 8-9.

Soybean: Priaxor® Brand Fungicides Out-Yield the Competition



Summary of 2010-2017 Small Plot Replicated Trials. Applications R3. Priaxor fungicide 4 fl oz/A, Approach Prima 7 fl oz/A, Stratego YLD 4 fl oz/A, Quilt Xcel 10.5 fl oz/A, Quadris Top SBX 7 fl oz/A, Trivapro 14.6 fl oz/A. *Priaxor D fungicide used in 2017 where QoI-resistant frogeye leaf spot was present.

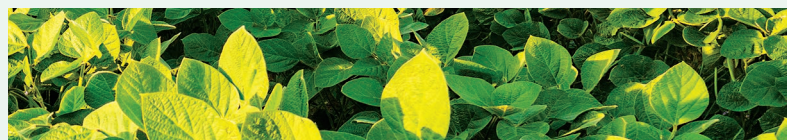
Cotton: Priaxor Fungicide is the Industry Leader for Maximizing Cotton Yields



2016. Auburn University – Fairhope, AL. Planted: 5/9/16. Variety: PHY 499. WOB=Week of Bloom.



Confidently choose BASF Plant Health products to protect crops from stresses that may limit yield this season.



BASF Plant Health Drives Consistency

When both biotic (disease) and abiotic (environmental) stresses are mitigated with applications of BASF Plant Health products, crops can focus on what you paid for them to do when you put them in the ground...yield. When it comes to choosing a fungicide, don't guess that the fungicide will work, have confidence and know that an application of BASF Plant Health products provide more consistent returns on the fungicide purchase.

See the Difference



Soybean

550+ On-farm Soybean Trials

- Priaxor® fungicide resulted in a **positive yield** response more than **92% of the time**
 - an **average yield** response of **4.5 bu/A**
- Produced a yield advantage of **2.0 bu/A** or more at least **78% of the time** over the untreated acre



Corn

550+ On-farm Corn Trials

- Headline AMP® fungicide resulted in a **positive yield** response more than **92% of the time**
 - an **average yield** response of **12.5 bu/A**
- Produced a yield advantage of **6.0 bu/A** or more at least **75% of the time** over the untreated acre



Headline AMP fungicide and Priaxor fungicide deliver more consistent performance via disease and environmental stress management leading to optimized growth efficiency.



Frequently Asked Questions

1. I have tried competitive fungicides in the past with inconsistent results. Why would a BASF Plant Health product be different?

Environmental conditions such as disease pressure, stresses and growing conditions are different every year. Some impact yield more than others.

BASF Plant Health products provide complete stress management (from disease and environment) to help optimize efficiency and consistent performance. Competitive products only address one, disease pressure.

2. In years of low disease pressure, should I still spray a fungicide?

Yes, but not just any fungicide. BASF Plant Health products provide proven protection beyond disease control. In addition to protecting your crop from biotic stresses, such as disease, BASF Plant Health products protect your crop from other stresses, such as heat, drought, soil salinity, and hail damage. This stress mitigation leads to increased crop growth efficiency resulting in consistent performance even in low disease environments.

3. Do all fungicides provide Plant Health benefits?

Not all fungicides are created equally. BASF Plant Health products deliver the total package defined as BASF Plant Health — disease and environmental stress mitigation for optimum growth efficiency and yield performance. While other companies talk about plant health, BASF provides the data to support disease and environmental stress management, leading to optimized growth efficiency and more consistent results.

4. What is ethylene?

Ethylene is a naturally occurring hormone that a plant produces in response to stress. Ethylene can signal to a plant under stress to shift away from normal growing behavior to self defense, such as fruit abortion.

5. If this is a natural occurring process, what can I do about it?

Reducing ethylene when your crop is undergoing short term stress can ensure the “factory” continues to operate as efficiently as possible. BASF Plant Health applications reduce ethylene production more than any other fungicide on the market, while other products, like Quilt Xcel and Trivapro, can actually increase it.

6. Should I be concerned about southern rust?

Unlike gray leaf spot and northern corn leaf blight, which are more consistent problems year after year, southern rust is a cyclical disease of which we can monitor the movement. Headline AMP® fungicide gives excellent control of southern rust. The high rate of Headline AMP fungicide outyields Trivapro under high southern rust pressure because of the benefits of BASF Plant Health. And because we can model the movement of southern rust, we have the opportunity to apply preventatively to get the best control of the disease, thereby maximizing yield potential.

7. How concerned should we be about disease resistance?

Fungicides in crop protection are dominated by three modes of action. It is important with this limited tool box to steward the options we have. This includes using premix products with multiple modes of effective action like Headline AMP fungicide, Priaxor® fungicide and Nexicor™ fungicide to ensure we are not relying on one mode of action to do all of the work.

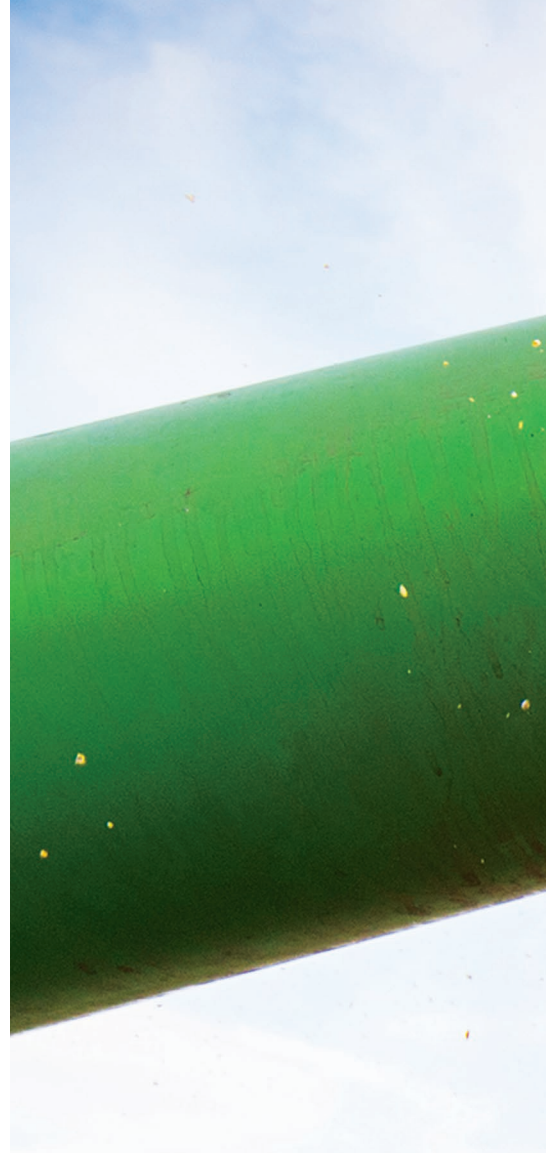
8. Are fungicides curative (once I see a lesion)?

The most effective way to control diseases in your crop is to apply fungicides preventatively. Curative fungicides can control a disease shortly after it has infected the crop and before lesions appear on the leaf. To minimize yield impact from disease, preventative applications (prior to infection) are critical to protect the leaves that drive yield. If your crop is already showing signs of disease an application of a BASF Plant Health product can prevent further spread of the disease and minimize additional yield loss.

9. What is residual control and what is the value?

Residual control is the length of time a product is available to protect your crop from disease pressure and other stresses. BASF Plant Health products have been proven to have some of the longest residual protection available. While other products in the market tout longer residual, BASF Plant Health products have the data to back up their claims and the consistent yield to back up your operation.





 **BASF**
We create chemistry



Always read and follow label directions.

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