



Frequently Asked Questions for Intrinsic™ Brand Fungicides: Insignia® SC Intrinsic Brand Fungicide and Honor® Intrinsic Brand Fungicide from BASF Professional Turf & Ornamentals

1) What are Intrinsic™ Brand Fungicides?

A: **Intrinsic** brand is the family of fungicide products labeled for disease control and plant health. The launching pad of **Intrinsic Brand Fungicides** is based on the active ingredient pyraclostrobin. The first two products in this category are **Insignia SC Intrinsic Brand Fungicide** and **Honor Intrinsic Brand Fungicide**. In the future, BASF will launch other products under this brand that will include formulation enhancers and formulation technology.

2) How can you now say that pyraclostrobin has disease control and plant health benefits after six years in the marketplace?

A: Like many other products in the agricultural industry, once a product has widespread use, new observations are made that require further evaluation. This has been the case with pyraclostrobin in the turf market. Improved plant health was documented on golf courses that had been treated for diseases prior to a significant stress event and turf quality was improved vs. untreated turf.

Observed benefits include improved root development while above-ground effects can sometimes appear to be subtle. These benefits are more subtle when turfgrass is growing under ideal conditions, but express themselves more when turfgrass is stressed.

3) Does boscalid in **Honor Intrinsic Brand Fungicide** contribute toward the disease control and plant health benefits of pyraclostrobin when the product is used according to label directions?

A: Boscalid, the active ingredient, is part of the known synergy with pyraclostrobin for improved control of many diseases, resulting in better turf quality. Specific trials that focused on Boscalid response in turf to stress factors such as drought, temperature, and mechanical stress were not conducted. These disease control and plant health trials looked solely at the response of the combination product.

4) What kind of scientific evidence do you have to demonstrate that **Intrinsic brand fungicides** do something in the plant to help combat stress?

A: We have researched disease control and plant health with pyraclostrobin in crops for over 10 years and in turf for over three years. Our findings show that several plant physiological processes are affected when pyraclostrobin is applied. These include: reduced CO₂ production, increased nitrate reductase activity, reduced ethylene production and increased activity of stress reducing enzymes.

5) How are the benefits from these products different than benefits from Bayer products containing StressGard®?

A: StressGard-containing products affect turf by filtering UVB radiation. In other words, it acts as a protectant to the turf. Pyraclostrobin, the active ingredient contained in **Insignia SC Intrinsic Brand Fungicide** and **Honor Intrinsic Brand Fungicide**, affects physiological (internal) processes in the plant which trigger protection from diseases and stresses, delivering more comprehensive stress tolerance.

6) Do other QoI fungicides exhibit similar plant health responses?

A: In BASF and university research, other QoI's which include azoxystrobin, have been compared in a number of studies and did not show the complete plant health effects observed from **Intrinsic brand fungicides**. Laboratory data has shown differences in the level of enzyme activity generated with azoxystrobin as compared to pyraclostrobin (SOD or nitrate reductase). BASF also manufactures several QoI fungicides and research has shown that pyraclostrobin is the most metabolically active for disease control and plant health benefits.

7) With pyraclostrobin being classified as a localized penetrant vs. azoxystrobin having acropetal systemic activity, how do **Insignia SC Intrinsic Brand Fungicide** and **Honor Intrinsic Brand Fungicide** provide a higher degree of disease control and plant health benefits?

Systemic activity does not necessarily result in better disease control or impart plant health benefits. **Insignia SC Intrinsic Brand Fungicide** and **Honor Intrinsic Brand Fungicide** control specific diseases (Pythium Root Dysfunction, Rapid Blight, and suppression of Dollar Spot) that azoxystrobin does not control despite small translocation differences. There are also other active ingredients that have high mobility (such as fosetyl-al) but do not deliver broad spectrum control or greater efficacy on certain diseases solely because of that characteristic.

8) Explain the difference between plant health benefits from foliar fertility nutrition vs. **Intrinsic brand fungicides**?

A: Foliar fertility provides nutrients that turfgrass requires. Benefits from foliar nutrition are excellent turf color and normal growth characteristics. **Intrinsic brand fungicides** can help plants protect themselves from diseases and other stresses by utilizing their internal physiological processes to fight disease and mitigate stress, such as increased SOD activity. Fertilizer is the food for the turf to grow while **Intrinsic brand fungicides** are the medicine for turf to fight off diseases and stress.

9) How many applications does it take to see the plant health benefits?

A: We typically see benefits following one application that is applied for disease control and prior to the stress event. Priming the plant (in other words, treatment prior to a stress event) appears to be the best way to maximize on plant health benefits as well as disease control vs. treating after or during the stress event.

10) How long does the plant health effect last after an application?

A: Our turf studies have focused on showing plant health benefits days to weeks after application. Plant health effects gained from pyraclostrobin treatments, such as larger root growth, may benefit the plant even after the active ingredient eventually disappears. Future research will be focused to learn more about the long-term plant health benefits of pyraclostrobin treatments

11) Can an end user expect this plant health effect at the lower end of the labeled rates?

A: **Insignia SC Intrinsic Brand Fungicide** and **Honor Intrinsic Brand Fungicide** were tested at mid and high labeled rates for disease control that results in plant health benefits; the lower rates for disease control have not been tested for plant health benefits.

12) Can I use **Intrinsic brand fungicides** to get plant health benefits if there are no diseases present?

A: The use directions on the product labels are specific for disease prevention and control. The products may only be applied to labeled use sites when disease is expected. You should apply any fungicide first as a preventative for disease control.

13) In terms of plant health benefits resulting from superior disease control, what are the pre-aerification timelines to achieve the best results for different turf species?

A: While we continue to determine pretreatment timelines, our initial research indicates that applying **Insignia SC Intrinsic Brand Fungicide** or **Honor Intrinsic Brand Fungicide** for disease control around seven days prior to the stress event (aerification) will help provide plant health effects on Bermuda and bentgrass. Results are pending for *Poa annua*.

14) What other stress related performance benefits have been shown with **Intrinsic Brand Fungicides**?

A: **Intrinsic brand fungicides** like **Insignia SC Intrinsic Brand Fungicide** and **Honor Intrinsic Brand Fungicide** have been shown to provide disease control as well as protection from stresses like drought and temperature extremes.

15) Can foliar nutrition be utilized by the plant more efficiently after an **Insignia SC Intrinsic Brand Fungicide** or **Honor Intrinsic Brand Fungicide** application?

A: At the cellular level, significant increases in nitrate reductase enzyme activity has been measured. This enzyme converts nitrate to nitrite, the nitrogen source plants use to build proteins. Direct benefits from foliar/soil fertility changes and pyraclostrobin applications have not yet been investigated in turf.

16) Are there any products that may be used in a spray rotation, either before or after **Insignia SC Intrinsic Brand Fungicide** or **Honor Intrinsic Brand Fungicide** that would deter or alter the development of any measurable plant health benefits?

A: We have not observed any antagonism to **Intrinsic brand fungicides** with regard to performance with the use of other products prior to or after use.

17) The product label for **Headline® fungicide**, which also contains pyraclostrobin and is sold to the agricultural market, states that preventive applications of Headline can result in greater yields at harvest when used according to label directions for preventive disease control. Is this observed in turf?

A: In research trials, we have observed increased root development with **Insignia SC Intrinsic Brand Fungicide** or **Honor Intrinsic Brand Fungicide** but did not note any yield or growth enhancement in turf (faster growth rate, higher clipping yield, more seed heads).

Always read and follow label directions.

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