StressGard™ FORMULATION TECHNOLOGY

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The Benefits Of Bayer® Fungicides With StressGard™ Formulation Technology

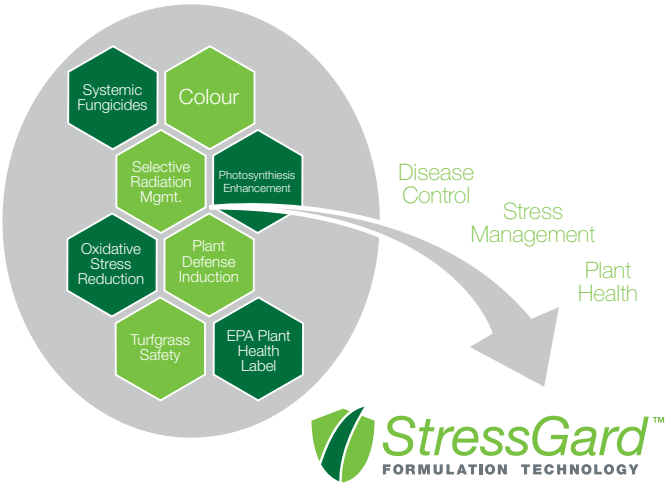
Dr.Paul Giordano – Bayer Green Solutions Specialist

Bayer fungicides with StressGard Formulation Technology *(StressGard FT)* offer benefits like outstanding disease control, stress management and plant health for turfgrass. That's because Bayer *StressGard FT* fungicides have stacked technologies:

- Systemic fungicide activity
- Colour enhancement
- Selective radiation management
- Photosynthesis enhancement
- Oxidative stress reduction
- Plant defense induction
- Summer turf safety

Some of these technologies may be available in fungicides and plant health products from other manufacturers; with Bayer*StressGard FT* fungicides, these technologies are proven and already built in.

The benefits add up to improved disease control, enhanced turf color and density, and overall improvements in turf quality.



StressGard Formulation Technology vs. the Competition

Benefit	StressGard™ FT	Intrinsic® Brand Fungicides	Civitas™ + Civitas Harmonizer™	Turfscreen™	Pigments
Systemic Fungicides	**Aliette® Signature Chipco Triton® Trilogy® SC**	**Yes**	Contact Only	None	None
Colour	**Yes**	No	Yes	Yes	Yes
Selective Radiation Management	**Yes**	No	Unknown	Unknown	Unknown
Photosynthesis Enhancement	**Aliette® Signature**	No	No	No	No
Oxidative Stress Reduction	**Trilogy® SC**	**Yes**	No	No	No
Plant Defense Induction	**Aliette® Signature**	No	**Yes**	No	No
Summer Turf Safety	**Aliette® Signature Chipco Triton® Trilogy® SC**	**Yes**	No*	**Yes**	**Yes**

**see product label for high temperature, stress and tank mix restrictions.*

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Systemic Fungicides

All StressGard FT fungicides provide systemic activity for disease control, resulting in long-lasting preventative as well as curative activity. Effective fungicidal active ingredients are a key part of successful turf disease management programs. Other products may have no fungicidal properties or only contain a contact fungicide.

Colour

All StressGard FT fungicides enhance turf colour, adding to the natural aesthetic characteristics of both cool and warm season turfgrass. Other products may provide colour, but can vary in the color quality or natural appearance.

Selective Radiation Management

StressGard FT fungicides reduce the impact of harmful ultraviolet radiation and selectively allow for the transmission of red and blue light wavelengths used by turf plants for photosynthesis. Products that block all radiation, including the red and blue wavelengths, may actually injure plants by reducing the light available for photosynthesis. The degree of selective radiation and light filtration has not been scientifically documented for non-StressGard FT products.

Photosynthesis Enhancement

Studies with Aliette Signature show an enhancement in photosynthesis in heat-stressed plants (Huang & Liu 2009). Enhanced photosynthesis equals more energy production in plants and increased tolerance to stresses and disease development. Other products have not shown this effect.

Oxidative Stress Reduction

Trilogy SC contains trifloxystrobin and can be used to assist in oxidative stress reduction on turfgrass. Trifloxystrobin reduces oxidative stress in plants, resulting in increased tolerance to drought and other abiotic factors (Han et al. 2012), exactly like the mechanism promoted by BASF's Instrinic® brand fungicides.

Plant Defense Induction

Aliette Signature activates natural plant defenses such as plant phytoalexins to decrease the impact of diseases (Guest 1984). Although the active ingredient in Aliette Signature is primarily active against pythium, it is effective in combination with other products to prevent stress diseases like anthracnose (Cook et al. 2006). The plant defense mechanism is separate from systemic acquired resistance utilized by acibenzolar-S-methyl.

Summer Turf Safety

Under summer stress conditions, some other products can cause significant damage to plants. StressGard FT solutions have year-round flexibility. Non-DMI products like Aliette Signature can be used anytime without risk of negative plant growth regulation effects. Potential turfgrass growth regulation effects caused by DMI fungicides in summer conditions are minimized when using Chipco Triton or Trilogy SC.

References And Further Reading

- Cook, J., Landschoot, P. and Schlossberg, M. 2006. Phosphonate products for disease control and putting green quality. Golf Course Management 74(4):93-96.
- Guest, D. I. 1984. Modification of defense responses in tobacco and capsicum following treatment with Fosetyl-Al [Aluminium tris (o-ethyl phosphonate)]. Physiological Plant Pathology 25:125-134.
- Han, S. H., Kang, B. R., Lee, J. H., Lee, S. H., Kim, I. S., and Kim, C. H. 2012. A Trifloxystrobin Fungicide Induces Systemic Tolerance to Abiotic Stresses. The Plant Pathology Journal 28:101-106.
- Huang, B. and Liu, X. 2009. Physiological responses of creeping bentgrass to heat stress affected by phosphonate fungicide applications. International Turfgrass Society Research Journal 11:799-806.

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