Believe the Unbelievable!®

MANAGING TRANSPIRATION TO MAXIMIZE RESULTS



Transpiration & Chitosan

- How do we know it affects Transpiration?
 - Stomatal response in 30-35 minutes
 - Reduces transpiration up to 50%
 - Several examples



Guard cells (shrunken)



Stoma opening

Source: Guard Cell Wikipedia

How does it work?



Key movement from plant to root

- Transpiration is the main process of water movement within plant tissues.
- ★ Water is constantly transpired from the plant through its stomata to the atmosphere and replaced by soil water taken up by the roots.
- Transpiration assists the plant in absorbing nutrients from the soil as soluble salts.
- Chitosan enters the leaf and induces closure of the plant's stomata, resulting in decreased transpiration.

Science of guard cells and stomatal opening and its effect on transpiration.







Soybean Seed and Chitosan

Want more information on Chitosan?

There are literally thousands of scientific studies from around the world available on the internet.

A quick google search on Chitosan and your crop will produce reports.



(a) Coated with NP



FIGURE 1: Contrast section photos of soybean seedling growth coated with NP and CK.



(a) Coated with NP



FIGURE 2: Contrast section photos of coated-seeds' and uncoated-seeds' surface membrane.

Source Hindawi Publishing Corporation, International Journal of Carbohydrate Chemistry Volume 2012, Article ID 104565, 5 pages, doi:10.1155/2012/104565 *Research Article* Application of Bioactive Coatings Based on Chitosan for Soybean Seed Protection.

Why should you use a chitosan-based adjuvant*?

Sugar beet side by side test



*Results may vary and are not guaranteed. Test after test of various crops have shown when you use one of our adjuvants with your normal protocol of other treatments, the treated portion produces healthier plants and bigger and overall better yields.

White beans side by side test



Transpiration makes a difference!



Overall, allowing the roots the opportunity to process anything that is put on them, creates an environment for better efficiency. When our products are used with other products, consistent results on treated areas include:

- * <u>Root Mass:</u> The roots are tighter, bigger, fuller and longer in all areas of the root ball.
- * <u>Chlorophyll:</u> The intensity of the green color in the plants stems is extremely evident.
- * <u>Stem Diameter</u>: In side by side tests, producers noticed significant overall diameter and fullness of the treated. It's easy to see how the treated is getting proliferation of the stems as opposed to the untreated
- * Overall Yield Consistently larger and healthier than non treated areas



2018 Montana Barley Field Same Boy Same Day Treated – left Untreated - right



We look forward to helping you MAXIMIZE RESULTS!

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