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Biologicals Alone or In Combination? The Best of Both Worlds Colliding

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President & CBDO,
Douglas Products Plant Health Division

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AgriEnergy Resources®

GROWTH PRODUCTS

Dow AgroSciences ProFume® Gas Fumigant

Dow AgroSciences Vikane® Specialty Gas Fumigant
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Biologicals Alone:
A look at Essential, SP1 & Nitro 28

- Performance Studies
  Corn and Soybeans - 2018

- Studies conducted by: AGRITHORITY® Science without Borders

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Studies: 10 (5 corn, 5 soybean)

Treatments: 6

- **T1 - Essential @ 32 fl oz/A**
- **T2 - Essential @ 64 fl oz/A**
- **T3 - SP1 @ 1.5 GPA**
- **T4 - SP1 @ 3.0 GPA**
- **T5 - Ascend SL @ 5 fl oz/A**
- **T6 - Untreated check**

Application: In-furrow at planting

Evaluations:

- **Plant stand** at V1 and V4 stage
- **Plant vigor** at V4 stage
- **Crop height** at V8 stage, Stalk diameter and internodes length at R5 stage for corn only
- **Pod count** at R6 for soybean only
- **Harvest data** (yield, test weight and grain moisture)
- **Tissue** complete mineral analysis (N, P, K, Mg, Ca, S, Na, Fe, Mn, Bo, Cu and Zn) at R1

One location in each state

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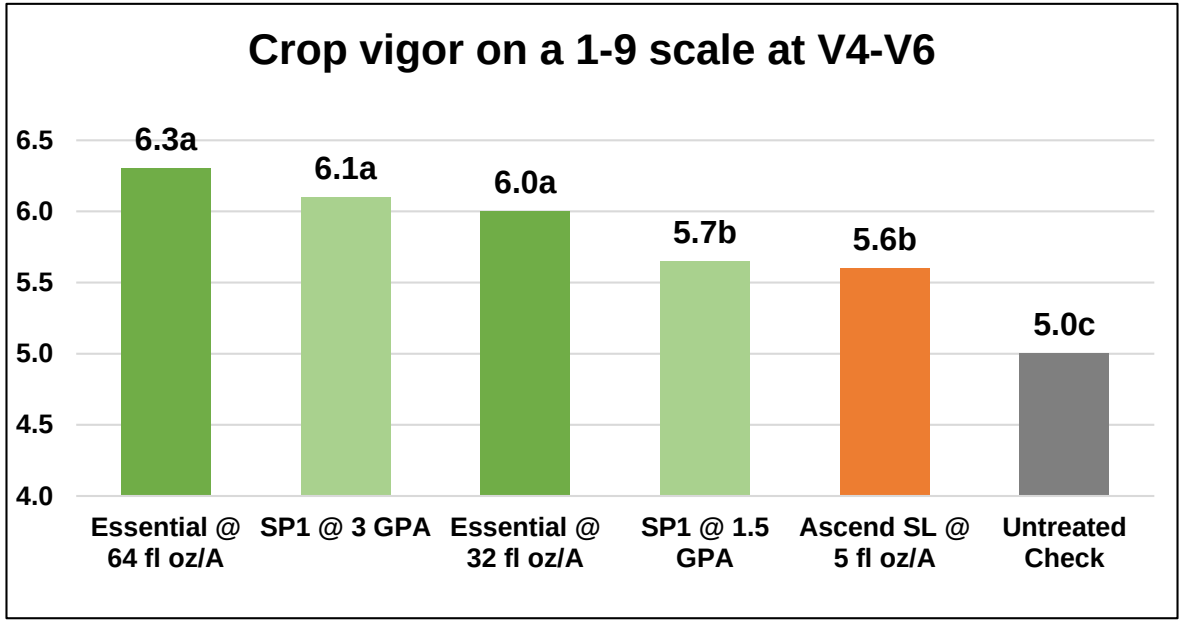
Corn: Essential and SP1 produce greater crop vigor

Essential @ 64 fl oz/A

SP1 @ 3 GPA

Untreated control



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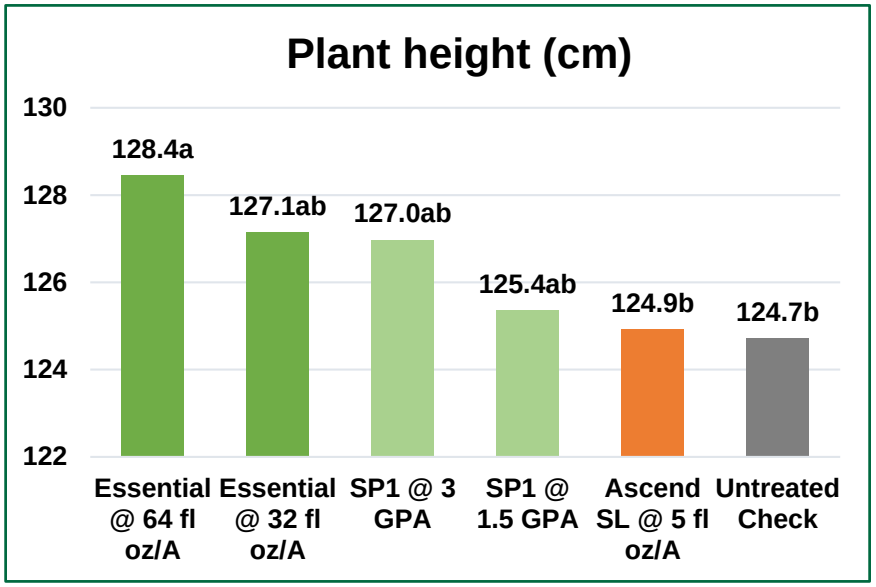
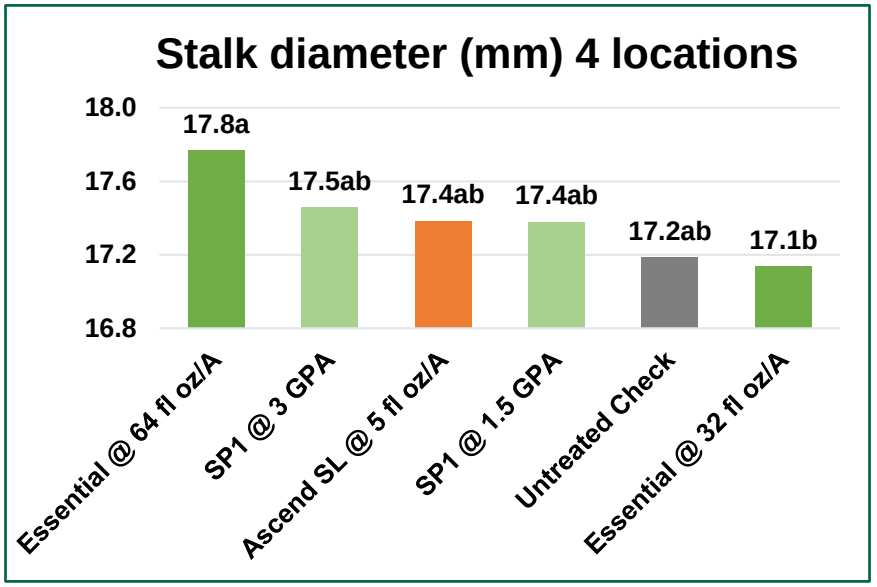
Corn: Plant health improved by Essential





- **Essential @ 64 fl oz/A in-furrow application significantly increased plant height compared to UTC and standard check**
- **SP-1 was not statistically different from UTC and standard check Ascend**

- **Essential @ 64 fl oz/A in-furrow application significantly improved stalk diameter compared to UTC**
- **Statistically comparable to standard check and SP1.**

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Corn: Essential and SP1 result in taller plants, thicker stalks, and broader, darker colored leaves

Crop at V12-V13 stage treated with Essential, SP1, and Ascend

Untreated control

Essential @ 64 fl oz/A

SP1 @ 3 GPA

Ascend SL @ 5 fl oz/A

Wisconsin Study shows difference in plant height

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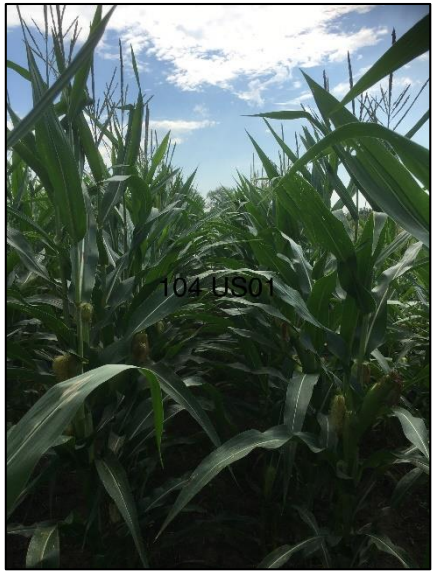
Corn: Essential and SP1 result in taller plants, thicker stalks, and broader, darker colored leaves

Crop at V12-V13 stage treated with essential, SP1, and Ascend

Untreated control

Essential @ 64 fl oz/Al



SP1 @ 3 GPA

Ascend SL @ 5 fl oz/A

Missouri Study sees thicker, darker leaves with Essential and SP1

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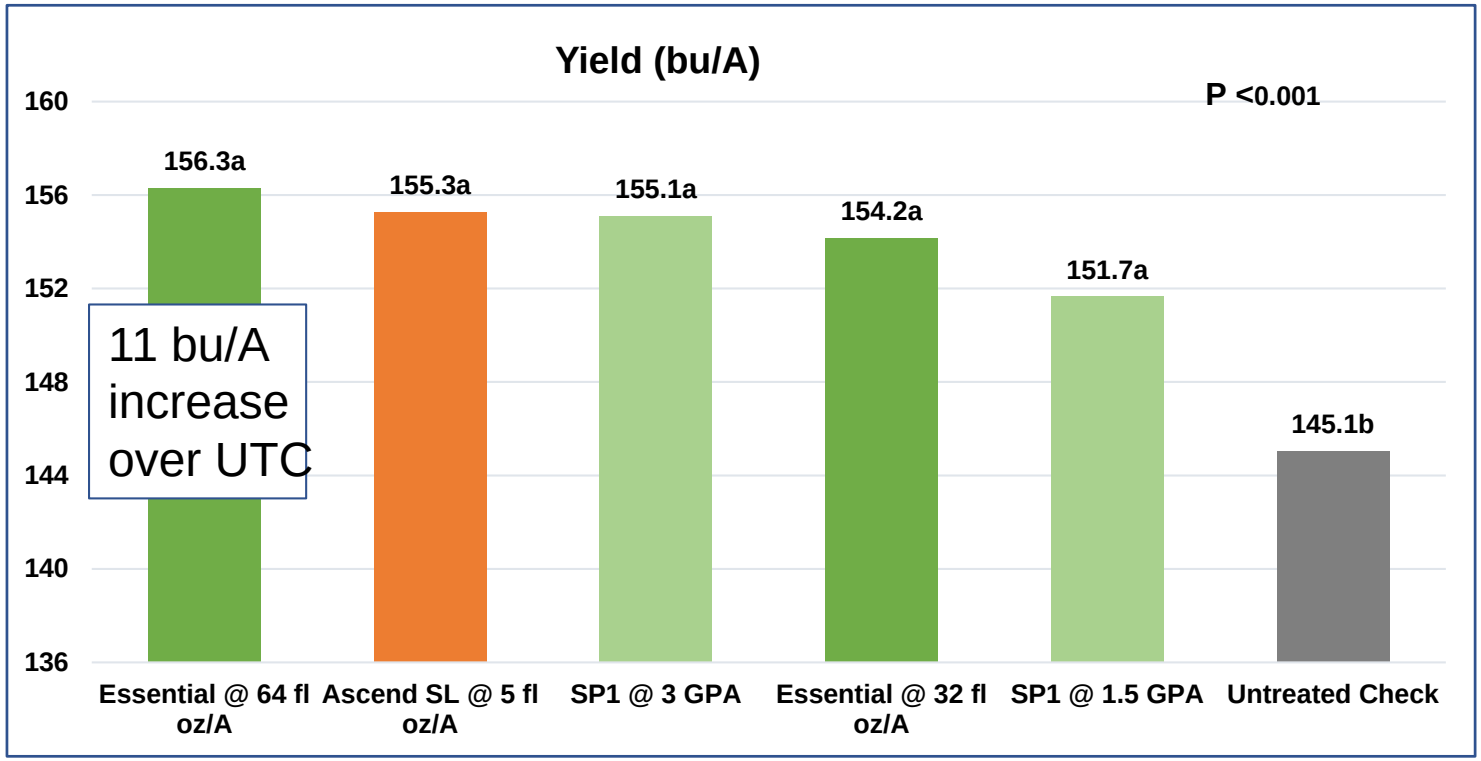
Corn: Essential outproduces Check by 11 bushels/acre



Essential @ 64 and 32 fl oz/A and SP1 @ 3 and 1.5 GPA in-furrow application:

- **Significantly improved crop yield compared to UTC**
- **Not statistically different from each other**
- **Essential @ 64 fl oz increase was statistically comparable to SP1 at 3GPA and the standard check (Ascend)**

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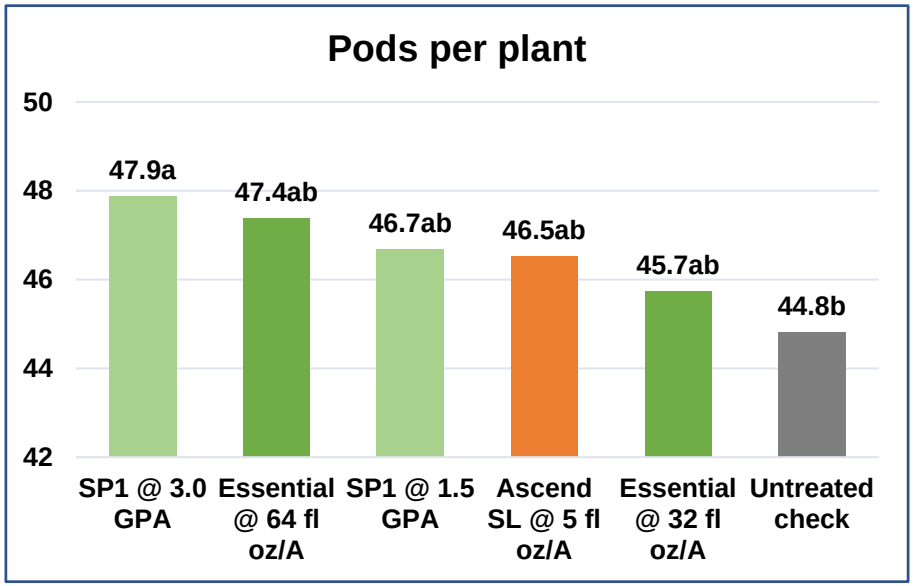
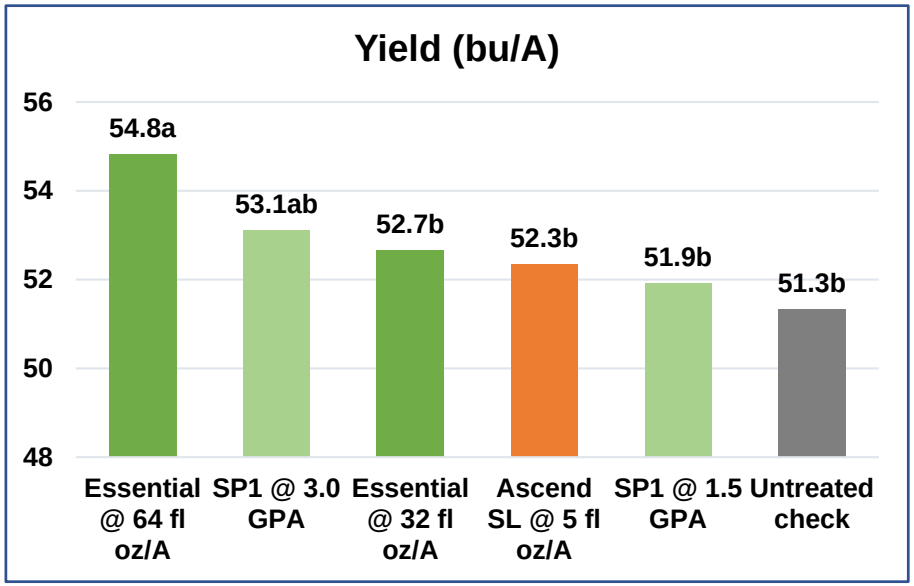
Soybeans: Essential and SP1 add pods and bushels





- **SP1 @ 3 GPA significantly increased pods per plants compared to UTC**
- **Also comparable to the standard check and Essential at both rates**

- **Essential at 64 fl oz significantly increased yield compared to UTC and standard check and was comparable to SP1 at 3 GPA.**
- **Essential @ 64 fl oz increased yield by 3.5 bu/A over UTC. Increase was statistically comparable to SP1 at 3GPA**

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Nitro28 SRN 20-0-0

- Performance Studies
  Corn - 2018

- Studies Conducted by: AGRITHORITY® Science without Borders

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Studies: 4 (IA, IN, MN, WI)

Treatments: 4

- **T1 - Nitro28 SRN 28-0-0-0 @ 1.5 GPA**
- **T2 - Nitro28 SRN 28-0-0-0 @ 3.0 GPA**
- **T3 - Coron 28-0-0 @ 1.5 GPA**
- **T4 - Untreated checkSP1**

Application: Foliar application at V-7-V-8, second application 14 days after pollination

Evaluations:

- **Plant vigor** 10 days after each application
- **Stalk diameter** and **internodal length** at R5 stage
- **Harvest data** (yield, test weight and grain moisture)
- **Tissue** analysis for stalk nitrate at R1stage

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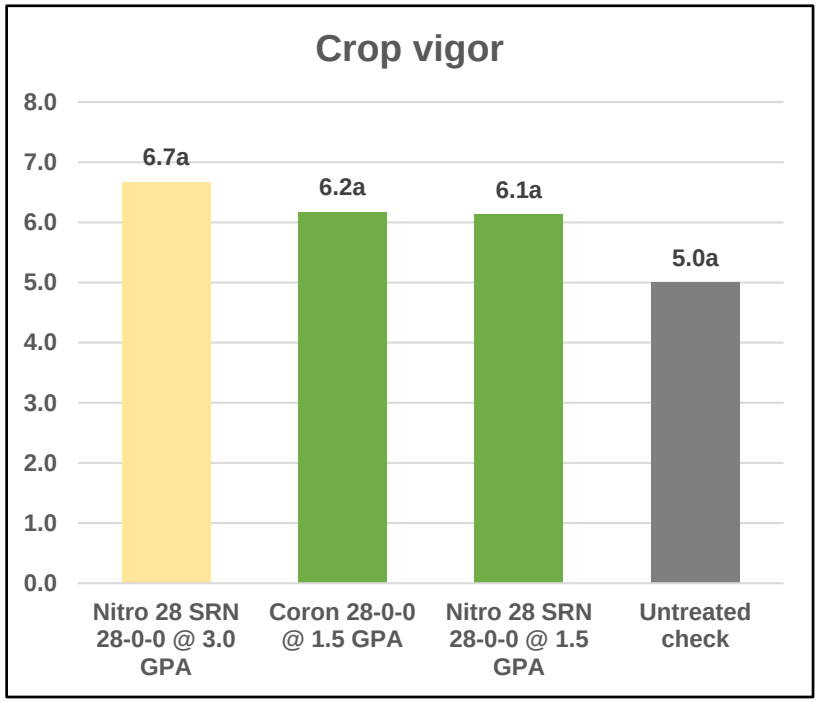
Corn: Nitro28 SRN improves plant vigor



- **Nitro28 SRN @ 3 GPA foliar application improved plant vigor compared to UTC and standard check**

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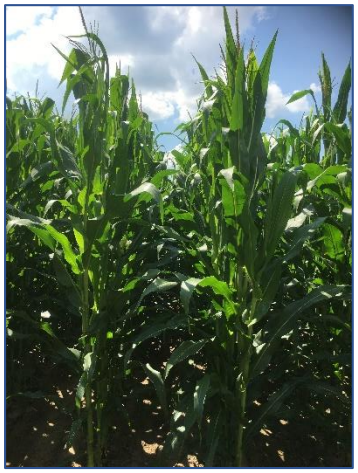
Corn: Nitro28 produces broader, darker leaves in WI Study

Untreated control



Nitro28 @ 1.5GPA

Nitro28 @ 3GPA

Coron28 @ 1.5 GPA

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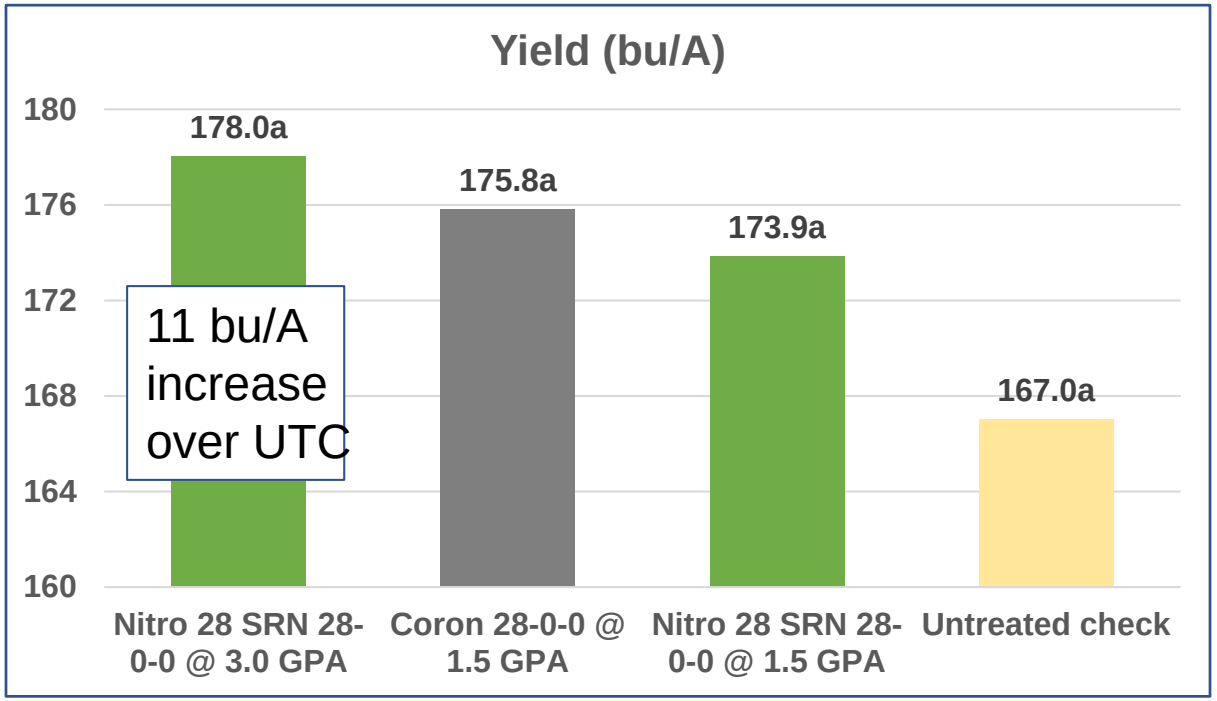
Corn: Nitro28 delivers 11 bu/acre increase



- **Foliar application of Nitro28 SRN @ 3.0 GPA showed increased grain yield compared to untreated control, standard check (Coron 28), and Nitro lower rate, but statistically significant**

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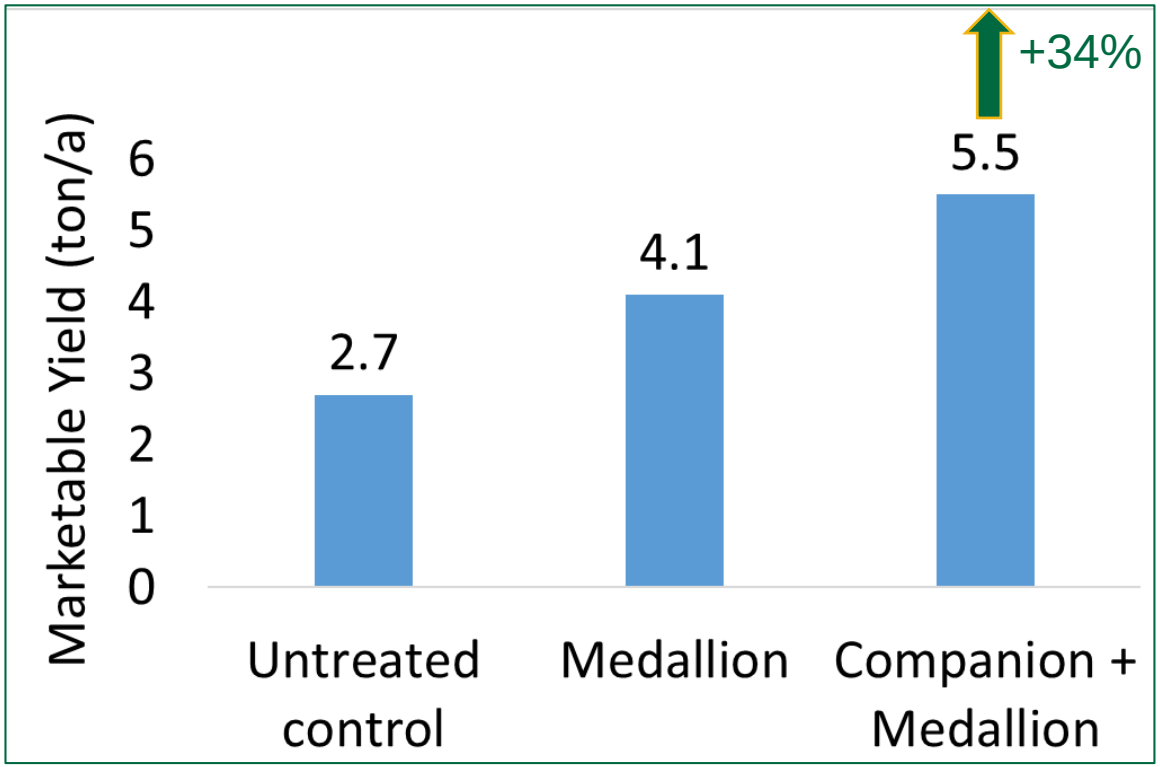
Biologicals in Combination with Synthetics:

A look at 2-3-2 COMPANION® LIQUID BIOLOGICAL FUNGICIDE Bio-fungicide

Control of *Rhizoctonia* on Potato



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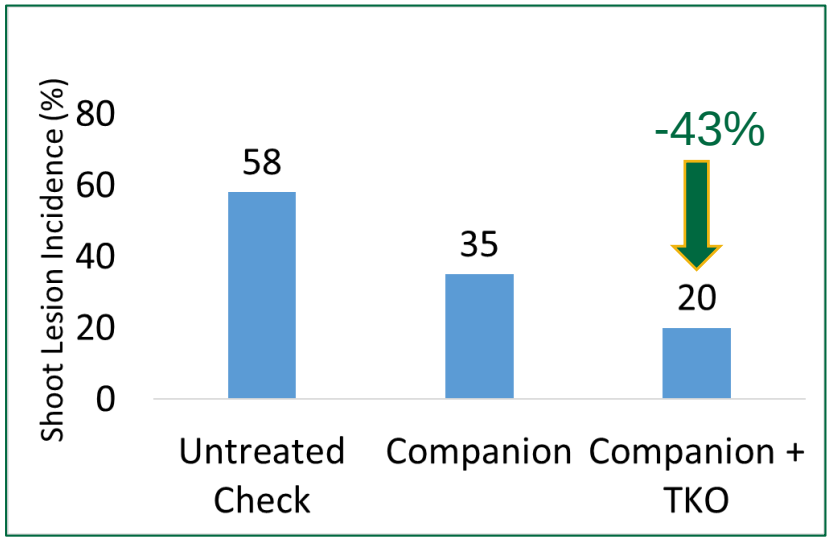
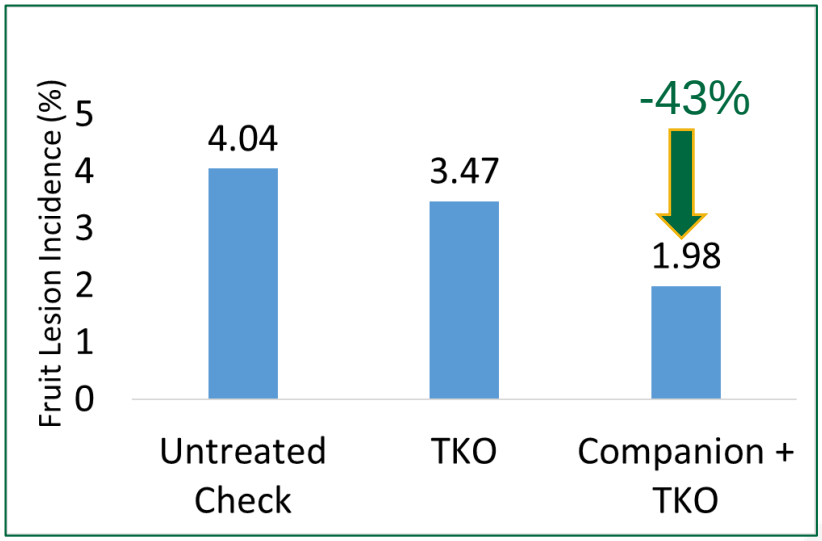
Control of Fire Blight (*Erwinia amylovora*) and Apple Scab (*Venturia inaequalis*) on Apple





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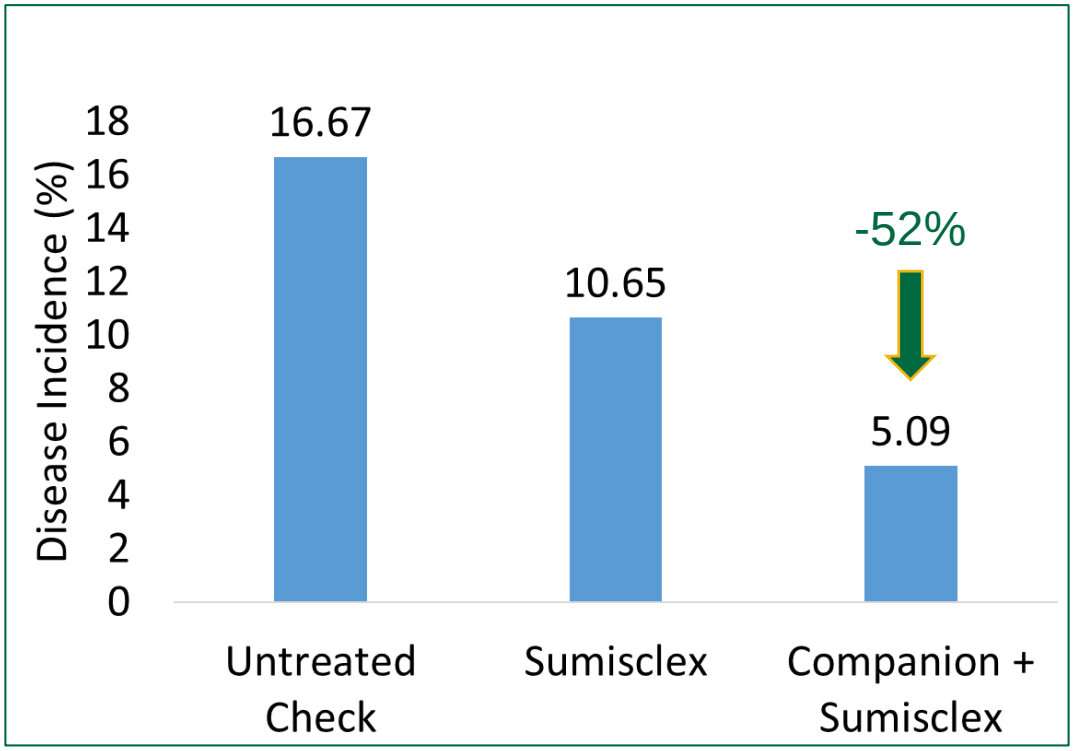
Control of *Sclerotinia minor* on Iceberg Lettuce



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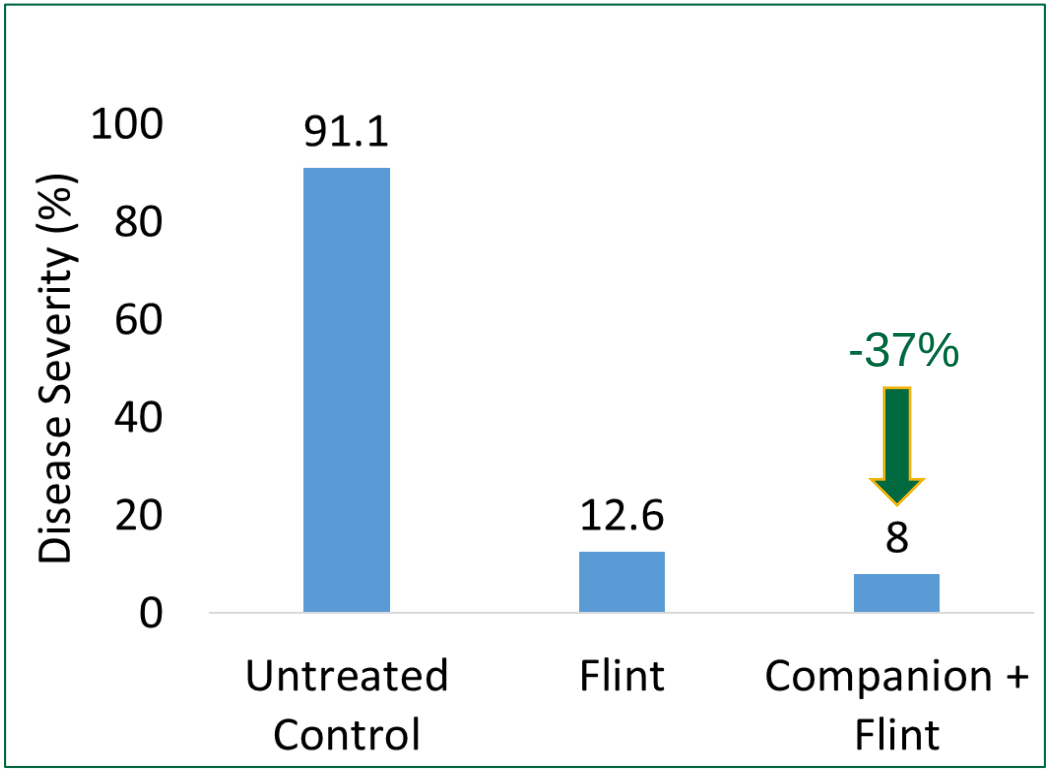
Control of Powdery Mildew (*Erysiphe necator*) on Grape



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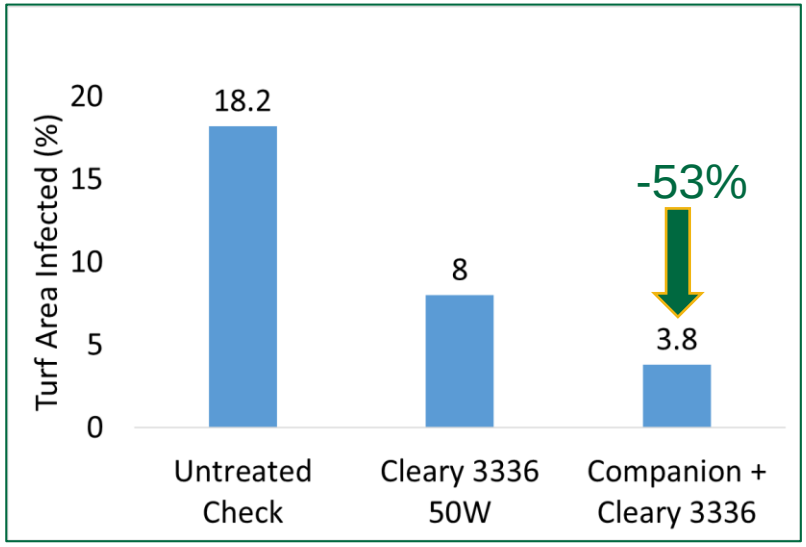
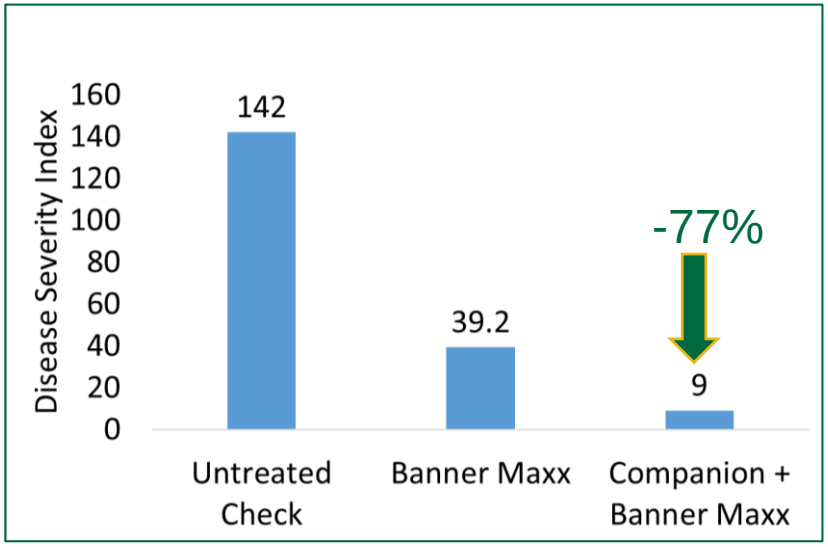
Control of Summer Patch (*Magnaporthe poae*) on Kentucky Bluegrass





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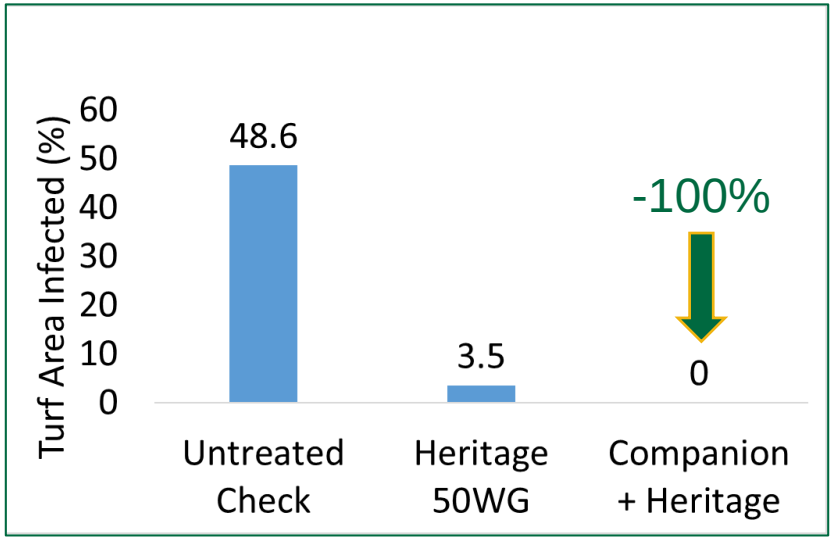
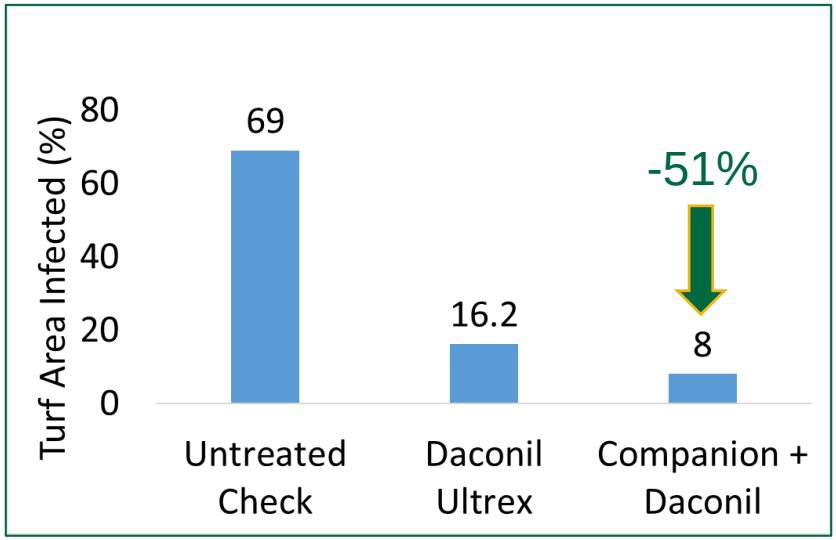
Control of Brown Patch (*Rhizoctonia spp*.) on Colonial Bentgrass





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Thank You!

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