



Improving management of white mold in soybeans: 2. Optimizing fungicide application frequency

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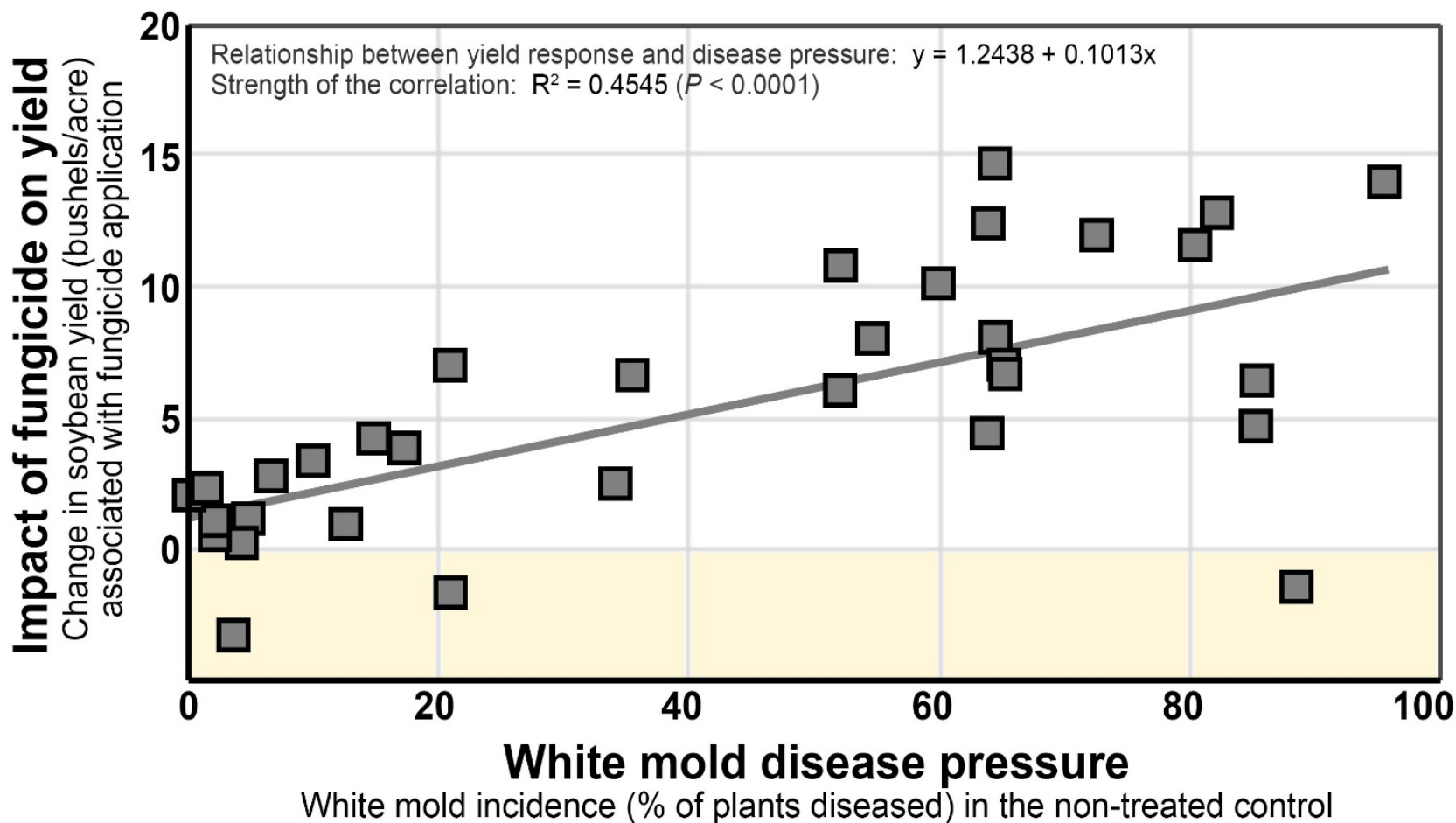
RESEARCH FUNDED BY THE **NORTH DAKOTA SOYBEAN COUNCIL**

IMPROVING WHITE MOLD MANAGEMENT IN SOYBEANS

Optimizing fungicide application frequency

Endura 8.0 oz/ac: single application at late R1 to early/mid R2

Active ingredient: **boscalid** 159 g ai/ac



Fungicide performance in one replicated field trial: ■

Fungicide application methods: 15 to 17.5 gal/ac, 35 or 40 psi, flat-fan nozzles with fine or medium droplets

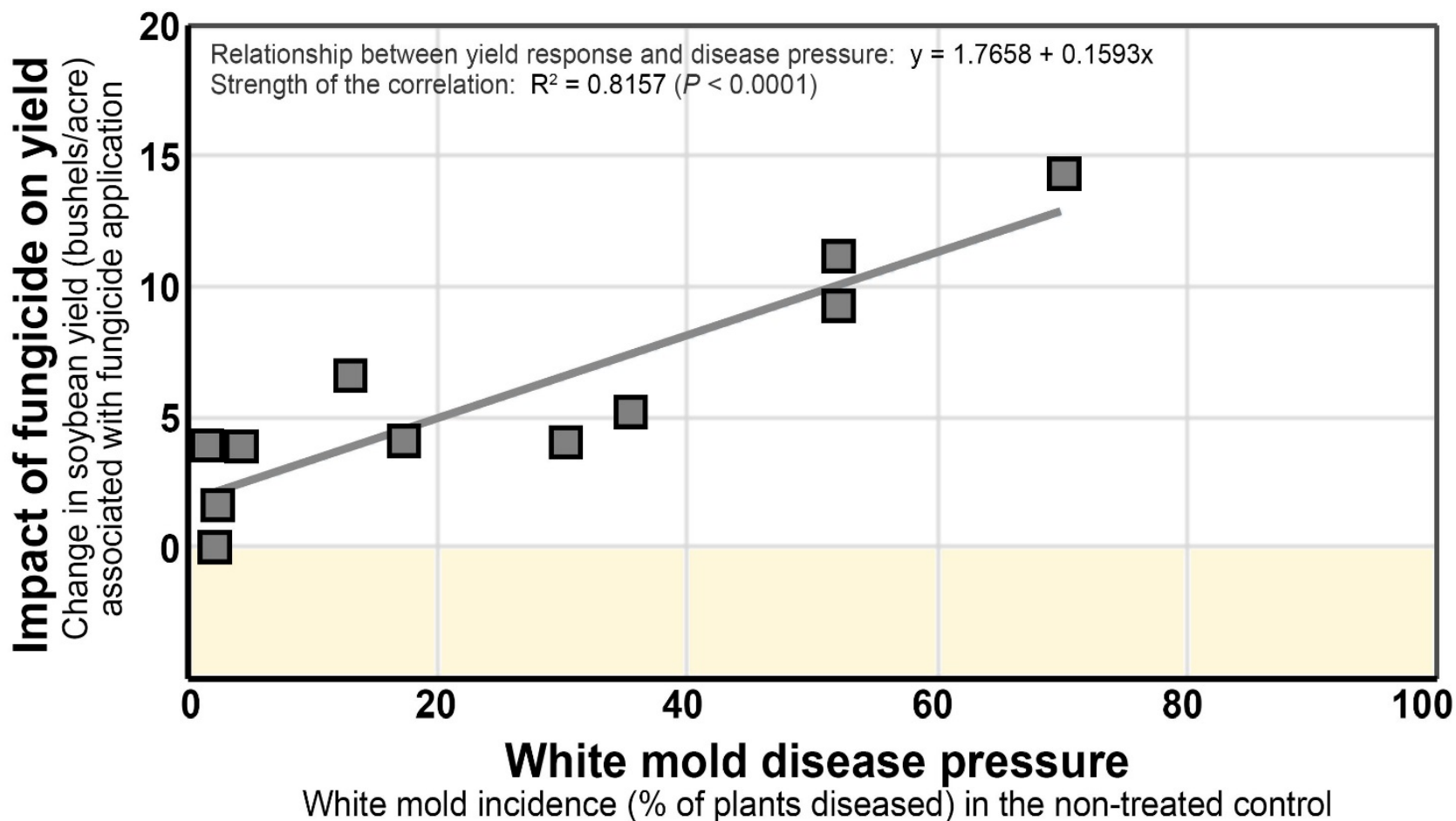
Fungicide performance across 33 field trials conducted at four locations (Carrington, Hofflund, Langdon and Oakes, ND) across six years

IMPROVING WHITE MOLD MANAGEMENT IN SOYBEANS

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Endura 8.0 oz/ac: two applications, late R1 to early/mid R2 + 10-14 days later

Active ingredient: **boscalid** 159 g ai/ac



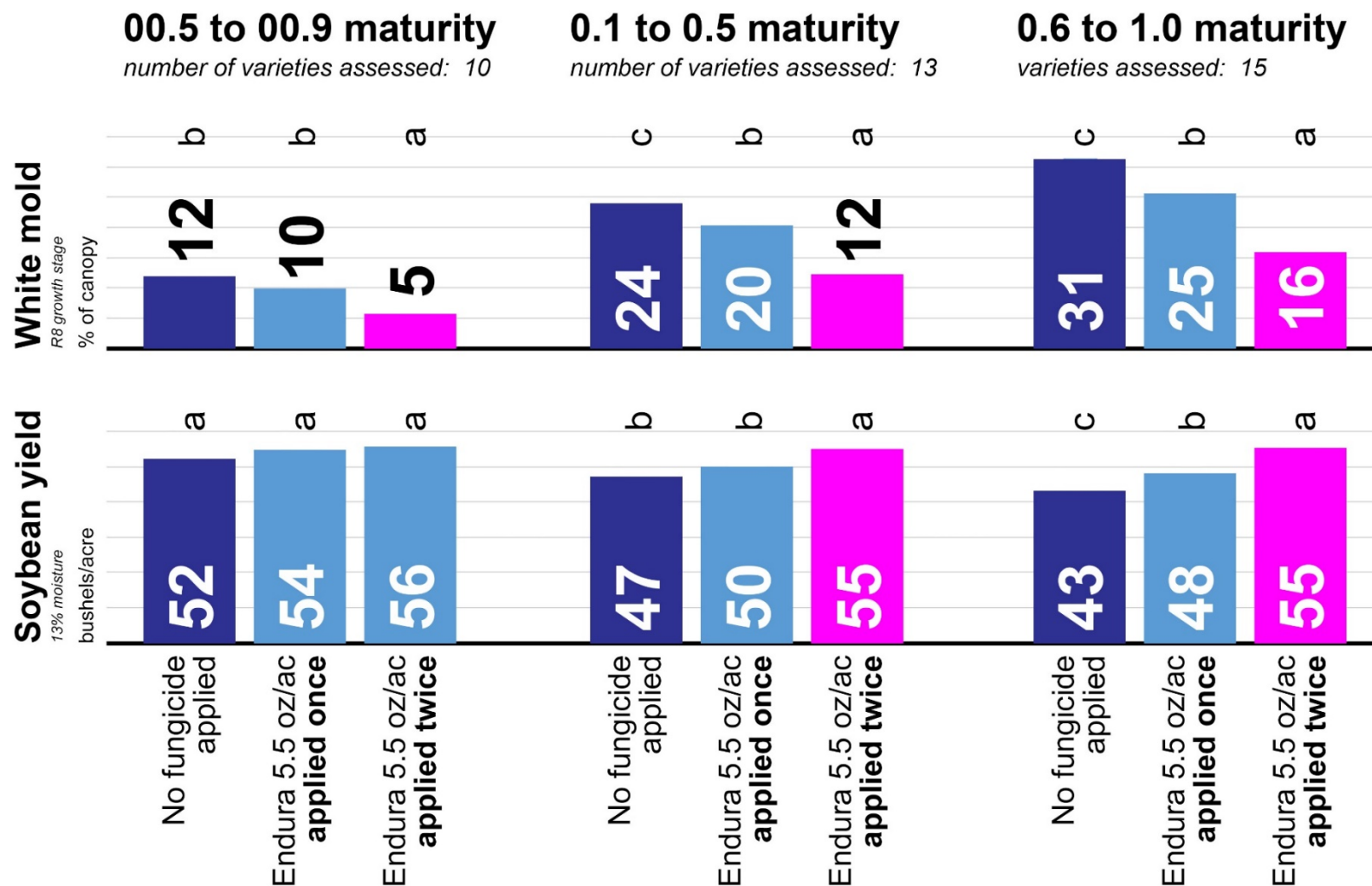
Fungicide performance in one replicated field assessment: 

Fungicide application methods: 15 to 17.5 gal/ac, 35 or 40 psi, flat-fan nozzles with fine or medium droplets

Fungicide performance across 11 field trials conducted at one location (Carrington, ND) across four years

Response to 1 vs. 2 fungicide applications targeting white mold relative to soybean maturity

CARRINGTON, ND (2018)



Fungicide application methods: 15 gal/ac, 40 psi, TeeJet XR110015 flat-fan nozzles (fine droplets)

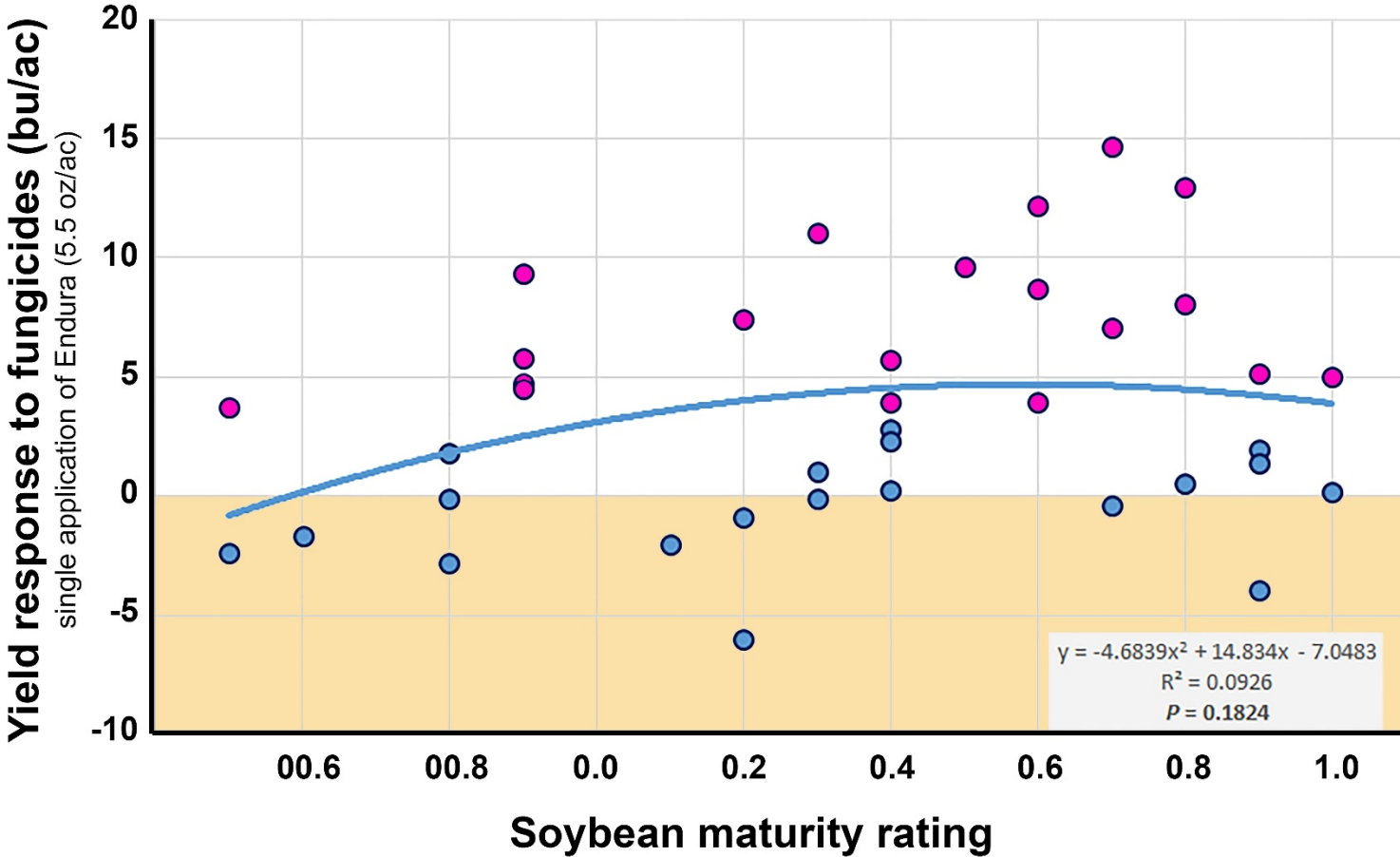
Fungicide application timing – first application: 0 to 2 days after 90% of plants at reached the R1 growth stage

Fungicide application timing – second application: 10-12 days after the first application

Response to 1 vs. 2 fungicide applications targeting white mold relative to soybean maturity

CARRINGTON, ND (2018)

A. Single application of Endura (5.5 oz/ac); Carrington, ND (2018)



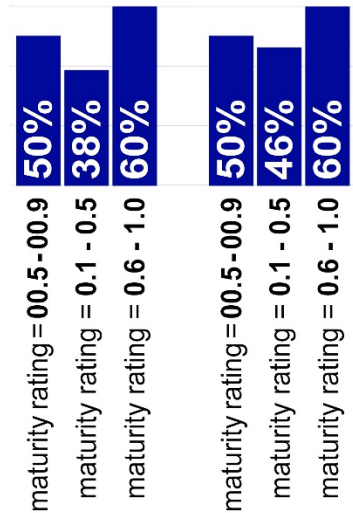
PINK DOT = soybean variety in which fungicide application was **profitable at \$8/bu**
BLUE DOT = soybean variety in which fungicide application was **not profitable at \$8/bu**

Frequency that fungicides were profitable

Percent of varieties

assuming total cost of \$27/ac (product + application) for one fungicide application

\$8/bu soybeans **\$10/bu soybeans**



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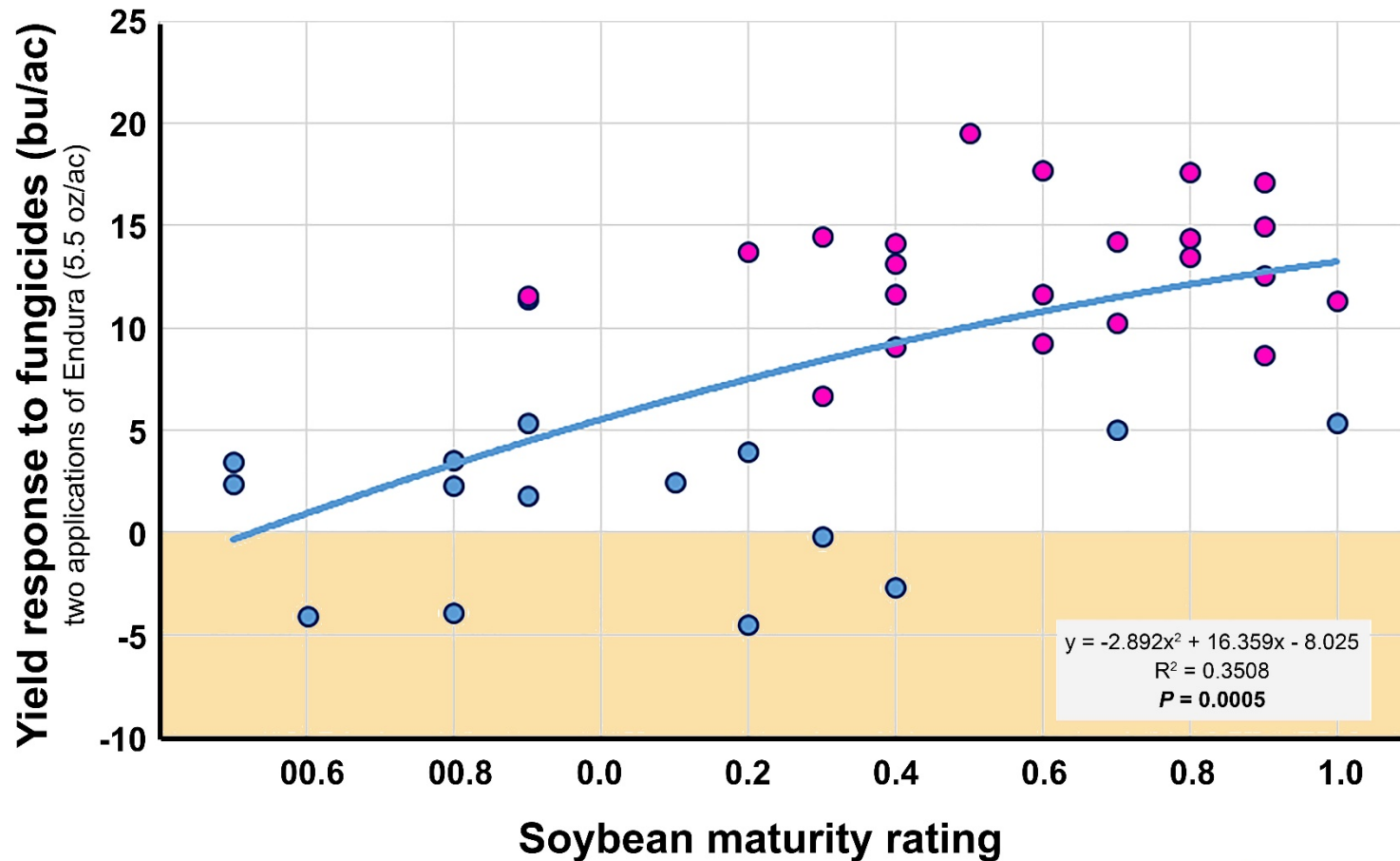
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B. Two applications of Endura (5.5 oz/ac); Carrington, ND (2018)



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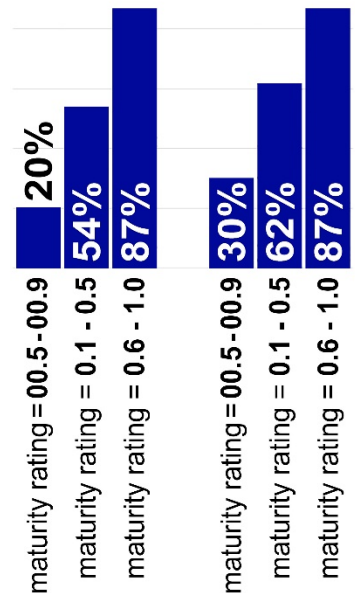
BLUE DOT = soybean variety in which fungicide application was not profitable at \$8/bu

Frequency that fungicides were profitable

Percent of varieties

assuming total cost of \$54/ac
(product + application)
for two fungicide applications

\$8/bu soybeans **\$10/bu soybeans**



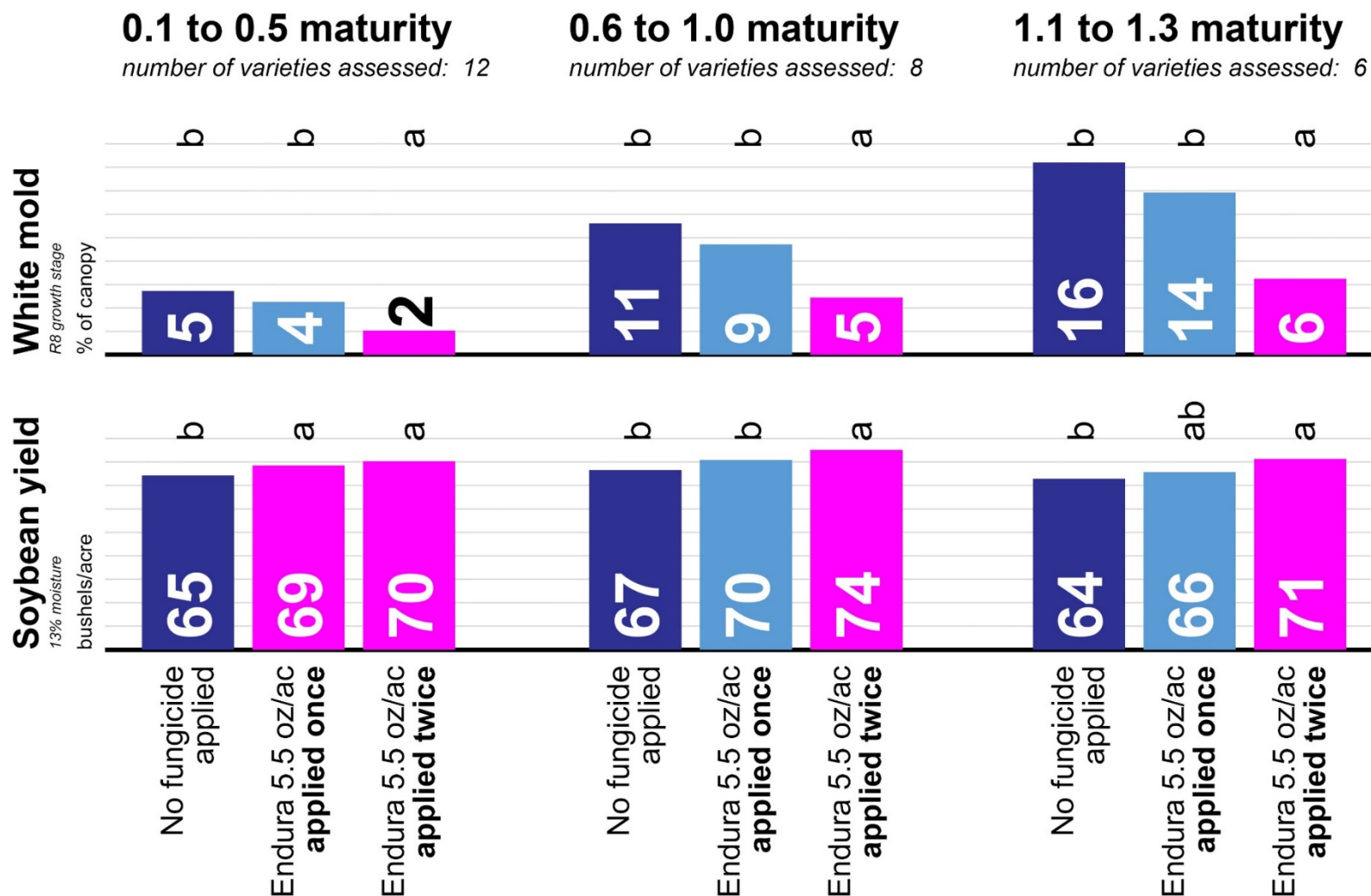
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Response to 1 vs. 2 fungicide applications targeting white mold relative to soybean maturity

OAKES, ND (2018)



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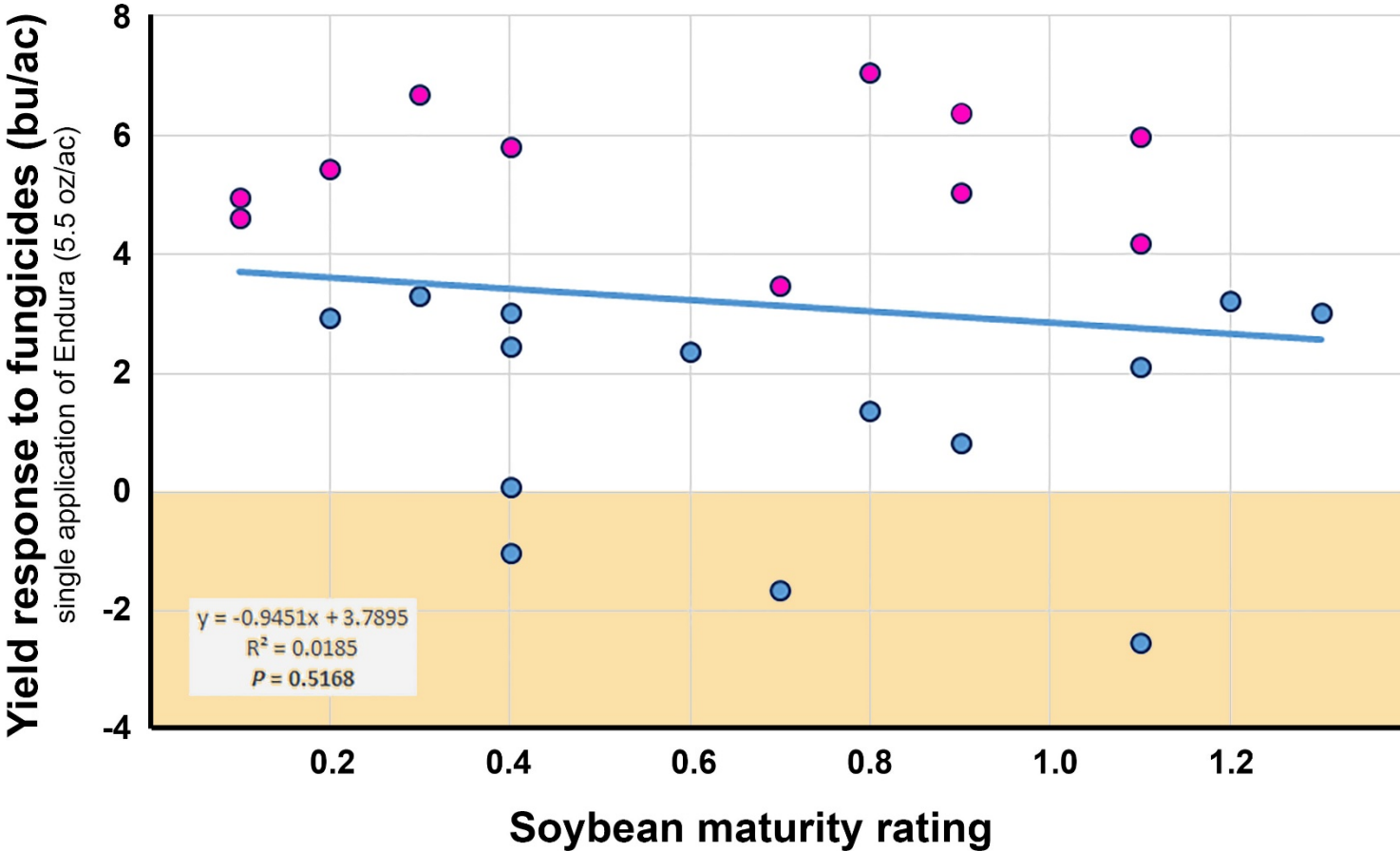
Fungicide application timing – first application: 1 to 9 days after 90% of plants at reached the R1 growth stage

Fungicide application timing – second application: 10-12 days after the first application

Response to 1 vs. 2 fungicide applications targeting white mold relative to soybean maturity

OAKES, ND (2018)

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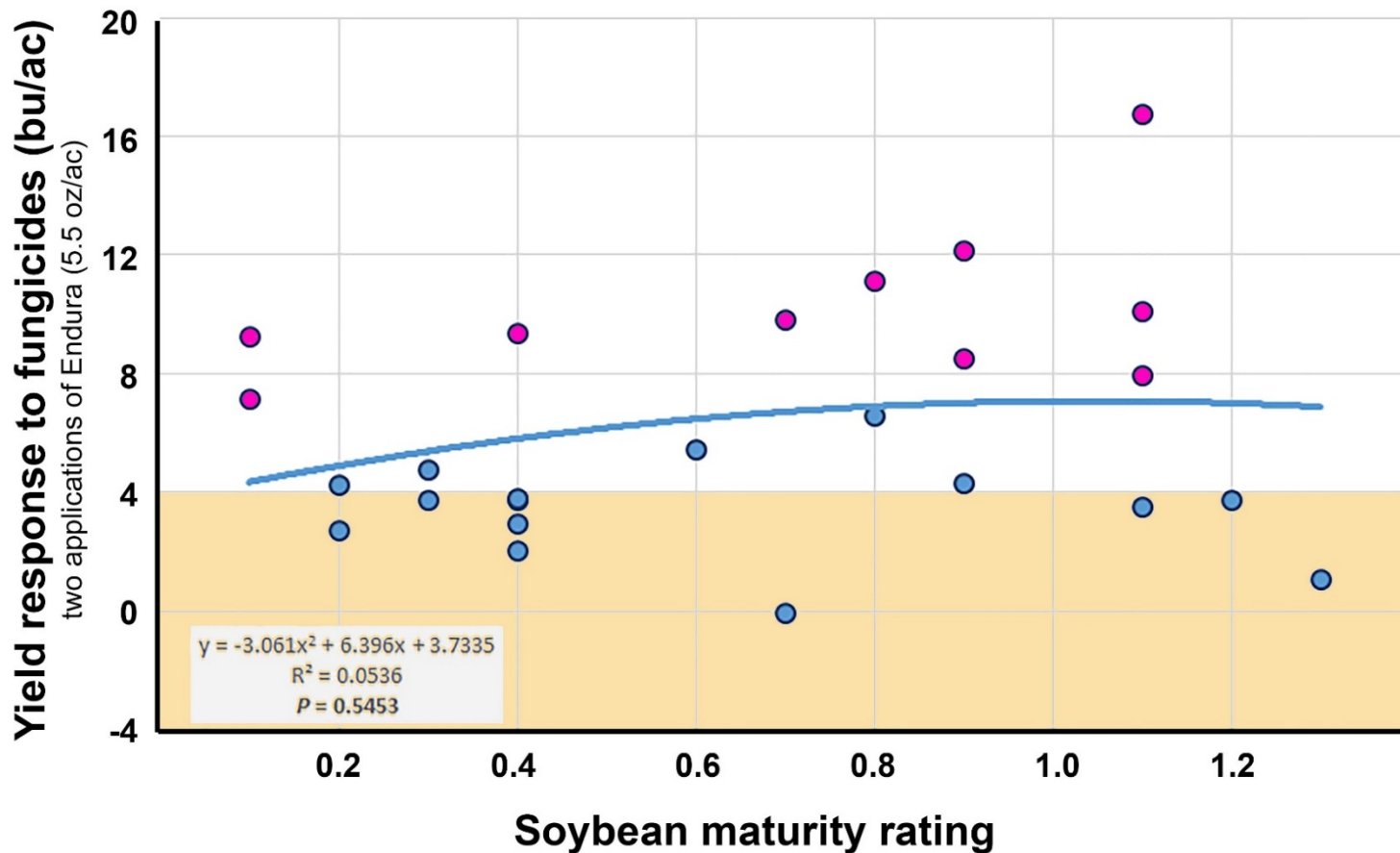
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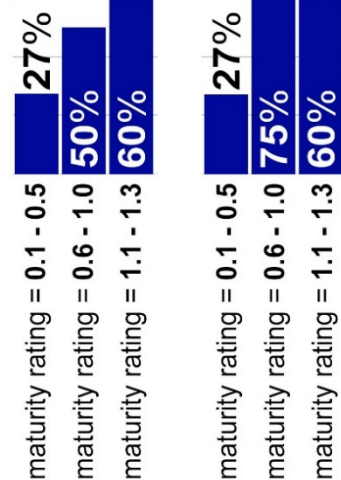
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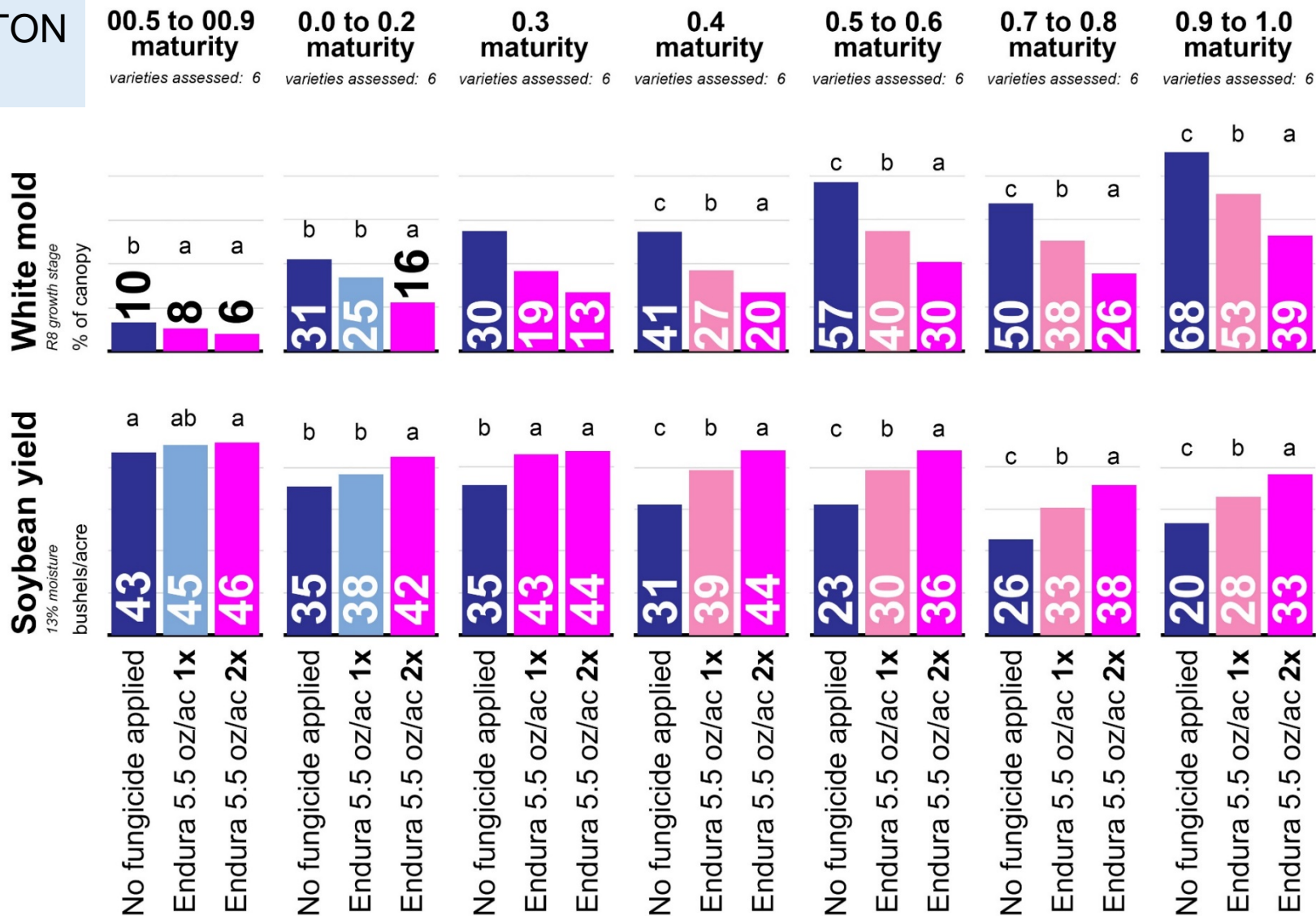
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Response to 1 vs. 2 fungicide applications targeting white mold relative to soybean maturity

CARRINGTON
(2019)



Fungicide application methods: 15 gal/ac; TeeJet AIXR110015 flat-fan nozzles at 60 psi (medium droplets) when canopy was open

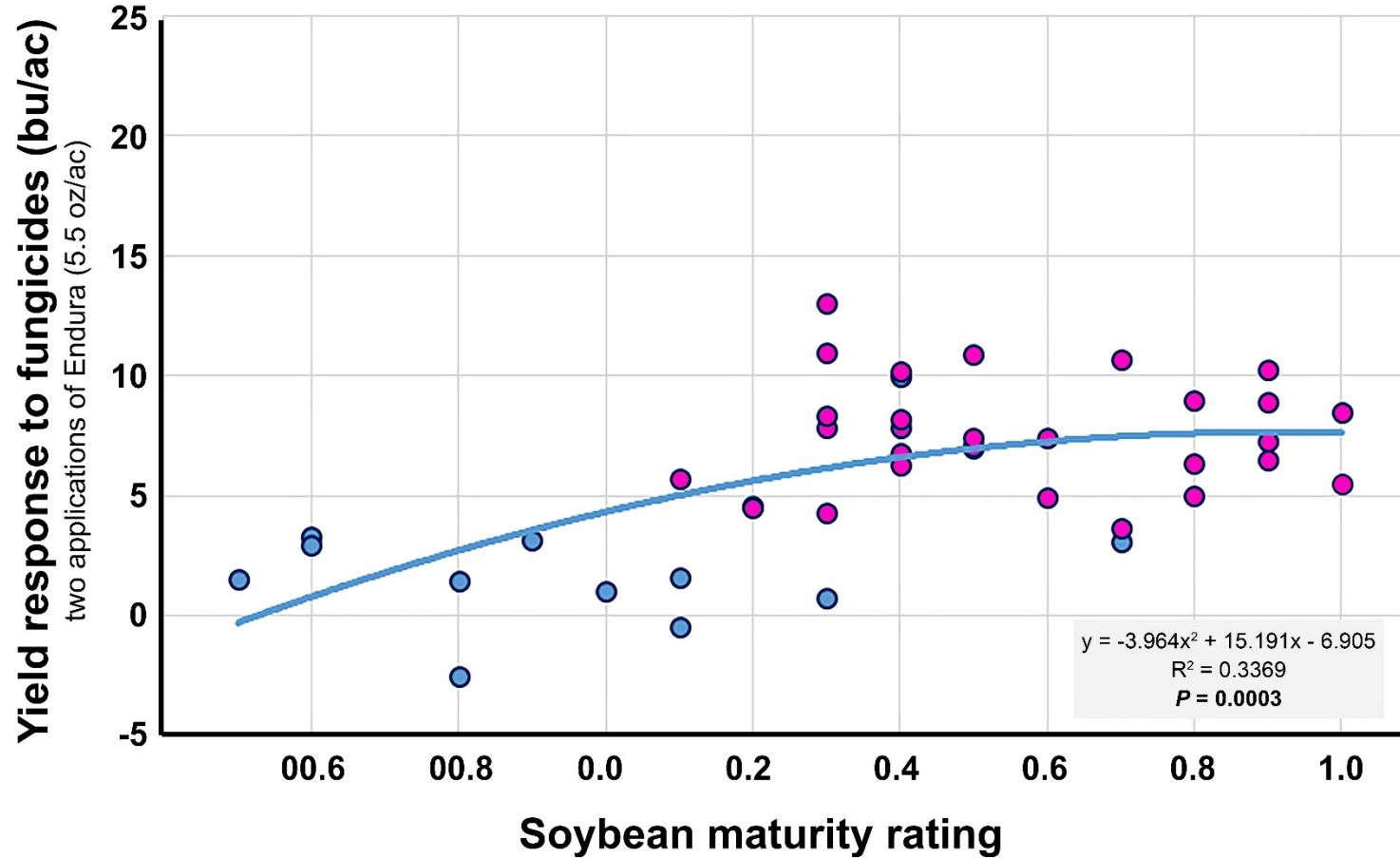
15 gal/ac ; TeeJet AIXR110015 flat-fan nozzles at 40 psi (coarse droplets) when canopy was at or near closure

Fungicide application timing: within 24 hours of 70% of plants reaching R2 growth stage (application #1) and 10 days later (application #2)

Response to 1 vs. 2 fungicide applications targeting white mold relative to soybean maturity

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A. Single application of Endura (5.5 oz/ac); Carrington, ND (2019)

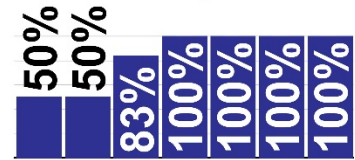


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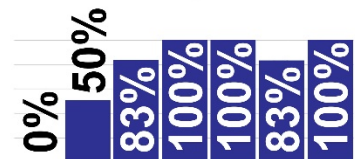
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\$10/bu soybeans



\$8/bu soybeans



maturity rating = 0.5 - 0.9
maturity rating = 0.0 - 0.2
maturity rating = 0.3
maturity rating = 0.4
maturity rating = 0.5 - 0.6
maturity rating = 0.7 - 0.8
maturity rating = 0.9 - 1.0

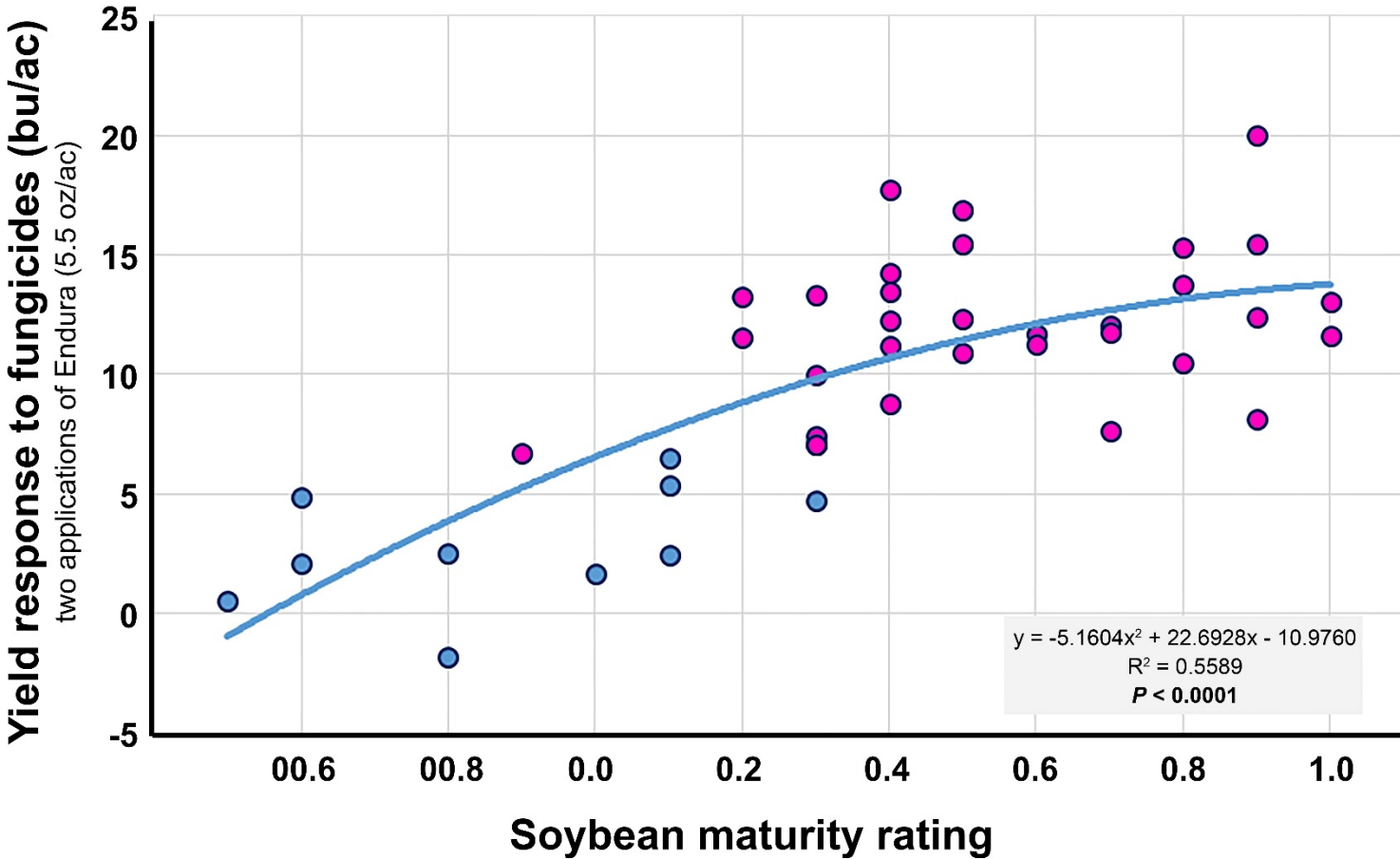
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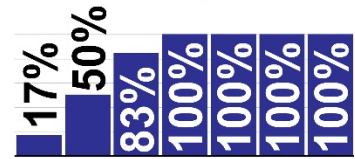


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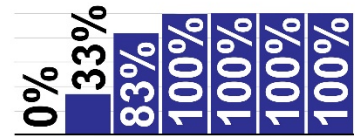
Percent of varieties

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\$10/bu soybeans



\$8/bu soybeans



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Optimizing fungicide application frequency

When conditions favor white mold from the R2 through the late R4 growth stages (when soybeans are most susceptible to white mold), **two sequential fungicide applications targeting white mold are often more profitable than a single fungicide application** in soybeans of mid-zero maturity and longer.

Longer-maturity soybeans have longer bloom periods.

In soybeans of mid-zero maturity and longer, the residual activity from the first application is insufficient to provide protection through late R4, which can result in late white mold infections.

R2: at least one open blossom at one of the two uppermost nodes of the plant.

R3: pods are 3/16 inch long at one of the four uppermost nodes of the plant.

R4: pods are 3/4 inch long at one of the two uppermost nodes of the plant.

R5: seed is 1/8 inch long within one or more pods at one of the four uppermost nodes of the plant.





Thank You!

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North Dakota Soybean Council



NDSU NORTH DAKOTA AGRICULTURAL
EXPERIMENT STATION