Pattern Ag

Case Study: Fusarium

Location:
Garretson, South Dakota

Soil Sample Dates:
Fall 2021

Crop Planted 2020:
Soybean

Crop Planted 2021:
Corn

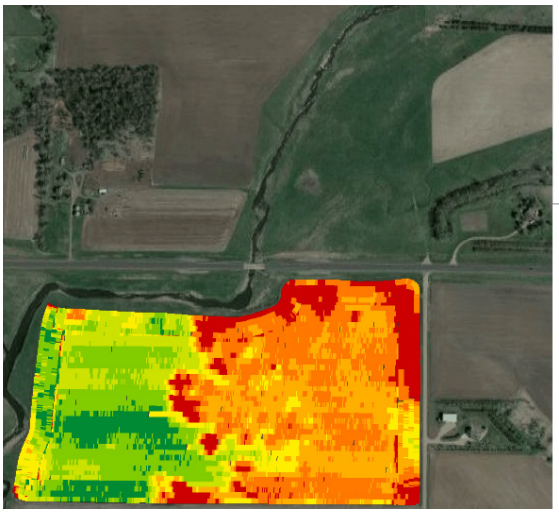
Result:
Grower made switch to alfalfa in order to repair fields with low yield

BACKGROUND

In 2020, this South Dakota farmer noticed a significant decrease in soybean yields in one of his fields. Even with treated soybeans, the yields were nearly 40% less than expected. Unable to pinpoint the cause of this yield loss, he switched to traited corn for the 2021 growing season. 2021 also came as a disappointment with yields again coming in 40% less than expected. Pattern Ag's Decision Dashboard was utilized in the fall of 2021 to help identify the root cause of these issues.

Soybean Yield Target: 65-70 bu/ac
Soybean Yield Actual: 42 bu/ac

Corn Yield Target: 245 bu/ac
Corn Yield Actual: 146 bu



2021 Yield Map of Corn Field

2021 Arial of Corn Field

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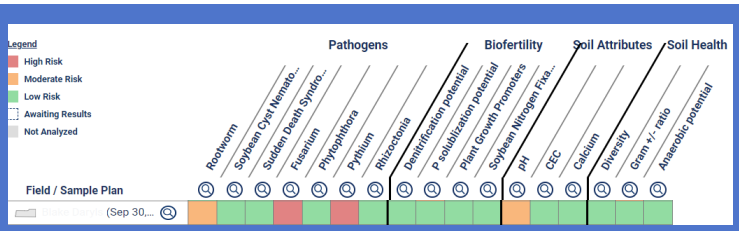
DECISION DASHBOARD RESULTS

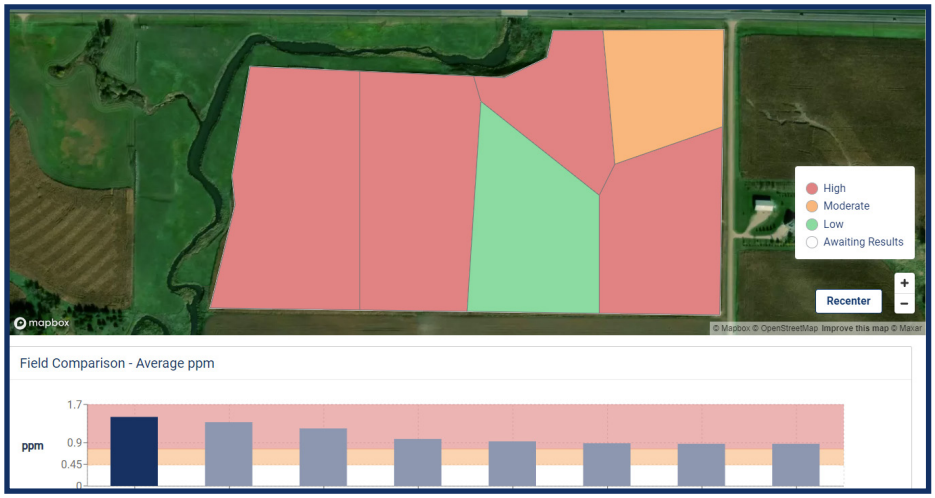


The Decision Dashboard revealed high risk of Fusarium and Pythium in this field. Seedling and root rots are responsible for upwards of half a billion dollars in losses every year across the Midwest, with Fusarium and Pythium being some of the most common soil borne diseases.

Fusarium Results

The entire field registered as high risk for Fusarium with zones ranging from 10.2 ppm on the low end, to 288 ppm on the high end. As a frame of reference, a reading of >3.39 ppm indicates risk for yield loss, and this field tested well above the threshold.

The field comparison chart showed this field registering an average of 67ppm with nearby fields averaging less than a third below.



Pythium Results

A large portion of the field came back as high risk for Pythium with zones ranging from 0.6 ppm on the low end, to 5.6 ppm on the high end. A reading of >0.5 ppm indicates risk for yield loss, and portions of this field tested well above the threshold.

Once again, the field comparison chart showed this field with the highest average pythium levels (1.440 ppm) in comparison to nearby fields.

SOLUTION

The grower was surprised to see the extreme level of Fusarium and high level of Pythium found in this field that was clearly affecting yield. Because the grower has been rotating crops, using traited seed and crop protection, the only way to truly mitigate risk and start repairing the field was to switch to alfalfa for the upcoming crop year (2022). If the grower had not tested the field using the Decision Dashboard, he would have continued to increase input costs trying to mitigate yield loss, but still running into the same challenges.

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