Yield Forecast Feature Overview

Understand where your crop yield is based on the current state of the crop. As the season unfolds, see how it is impacting your final yield.

Yield Forecast Feature Requirements:
- o Field Boundary
- o Crop Type
- o Planting Date
- o *Note: Results will be improved with machine data integration.*

How does it work?
- o The model uses a machine learning approach that correlates the data listed below to yield outcomes to make predictions on fields.
  - o Weather Information
  - o Topography and Soil Types
  - o Planter Information, if provided
    - *All machine data may be used*
  - o Imagery Data and Analytics
- o Along with the yield predictions will come a pixel-level map for each field
  - o Bushels per acre legend shows yield values across a field
- o Yield Forecasting begins at 735 GDD, which is V7 to V8, and will make a prediction on each capture until harvest

Accuracy of Yield Forecast
- o The three tables on the back highlight the accuracy of the Yield Forecast feature in more detail.

- o Measurements include:
  - o **Mean Error:** Average percentage error for the predictions in the group
  - o **Min Error:** Least amount of error for the predictions in the group
  - o **Max Error:** Most amount of error for predictions in the group
  - o **GDD range:** Growth stage of the crop for the predictions being measured

- o **Field Average Error (BPA)**
  - o From the average error of the predicted BPA vs the actual BPA for all the fields a prediction was made
  - o Being over 5bpa and under 5bpa on different predictions does not offset

- o **Grower Average Error: BPA Predicted vs Actual**
    - o Average, minimum, and maximum error for the average bpa production against the predicted average bpa production for an individual grower company
    - o In this evaluation, the predictions made on each field are averaged, and then this prediction is compared to the actual average yield for the company
    - o Metrics are representative of the average, minimum, and maximum error across all companies after they have been individually assessed

- o **Grower Total Bushels Produced vs Predicted Bushels**
    - o Average, minimum, and maximum error for the total amount of bushels produced against the predicted number of bushels produced for an individual grower company
    - o In this evaluation, the predictions made on each field are multiplied by the area of the field during a certain time of the growing season to get the total predicted volume; this is compared to the actual number of bushels produced for the grower company
    - o Metrics are representative of the average, minimum, and maximum error across all companies after they have been individually assessed

Yield Forecast Accuracy Charts:

	All Growers					
Growth Stage	V4 - V8	V8 - VT	VT - R2	R2 - R4	R4+	Grand Total
Average Error: Field Predictions	10.60%	10.30%	9.50%	9.20%	8.90%	**9.60%**
Average Error: Total Bushel Predictions	1.50%	2.20%	2.50%	0.20%	1.90%	**1.70%**
Total Predictions	3,130	4,443	4,233	4,897	4,233	**21,718**
Total Acres	322,151	443,567	409,173	479,262	403,870	**2,133,405**

The average error of our predictions at various growth stages for fields and for a grower's total production. Total production is calculated by comparing our estimate for each grower individually to their production and then averaging the results across all the growers. At the bottom is the total amount of predictions we made in the time frame and overall as well as the total amount of acres predicted in that time frame and overall.

Total Bushels Produced All Growers: VT - R5			
Group	Overpredict	Underpredict	Average
% of total within 5% error	21%	36%	58%
% 5% to 10% error	**13%**	**18%**	**31%**
% 10% or more error	**8%**	**3%**	**10%**
Yield When within 5% error	221	236	231
Yield 5% to 10% error	**212**	**247**	**230**
Yield 10% or more error	**194**	**276**	**235**

Calculation is done at the grower level. For a grower how often were we within ___% error and did we over or under predict the yield. When we over predicted or under predicted what was the average yield of these growers.

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