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Changing the Mindset

“We have always done it this way”

We hear it every day and it continues to be the seven most expensive words in agriculture. Certain factors can make farming unpredictable year in and year out, but typically, there are several standard variables that are consistent. We can use predictive analytics to be more efficient while still doing things the way we have always done them. The data and analytics from customer's farms are telling us that we can exceed the point of farming for “average”. After analyzing field averages over the last several years we've found that less than 15% of a field's yield is within 5% of the field average. Comparing that to PMP's (Predictive Management Points), or grids, we have found the same correlation with nutrient level variations.

- ▶ Why are we planting and fertilizing fields for average when 85% of the field isn't average?
- ▶ Simple answer: “We have always done it this way”



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Take the Guesswork Out

The crop production off one 2.5-acre PMP (2% of total production) is worth roughly \$600 more than the cost to grid sample an entire field. Making that investment is crucial for the success of Producers who manage tight margins each year. With the current state of an inverse marketplace (crop prices on the decline and farm inputs rapidly rising); producer's farm management decisions may be headed in the wrong direction for the coming year. The initial reaction has always been to pump the brakes in these times and cut back on inputs and decision making, but the data says otherwise. There is no better time than now to utilize the data and information at our finger-tips to ensure Producers continue to push for record yields based on more efficient management decisions.

- ▶ With a \$10/ac investment in PMP's, coupled with the data from what was most likely a record crop, CTS can help producers manage their margins efficiently and effectively to continue pushing for record yields.
- ▶ Are you potentially creating a yield drag in your most productive areas by continuing to fertilize for "average" and pulling yields out of the field 20, 30, 40 bushel above that?



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Our Record

- ▶ Over that last five years Crop Tech Solutions' has developed a predictive management tool that continues to increase production by 5-8% year over year. With that, better nutrient and seeding management has increased efficiency to allow our customers to make better in-season decisions such as: additional herbicide treatments, insecticide, fungicide, and in season/split fertilizer treatments.
- ▶ There are currently three harvests rolling with our customers between putting their crop in the bin, putting his data in our hands, and putting our soil samplers in his fields to keep the foot on the gas and manage his margins efficiently and effectively. If harvest results continue current trends, our PMP's will have a success rate of over 95% on production estimates and a net ROI of over \$70/acre for our current customers.
- ▶ We continue to put money back in Producers pockets by utilizing the data and information from his farm and we are also working on a platform to monetize that data and information. The Civic Ag^x platform gives a producer the option to "sell" that verified data and information to fulfill a Blockchain SmartContract. This platform and technology allow for food or grain buyers to seek out Producers that can provide verified data that meets certain criteria to fulfill a contract and connects a consumer back to the "root" of their food.



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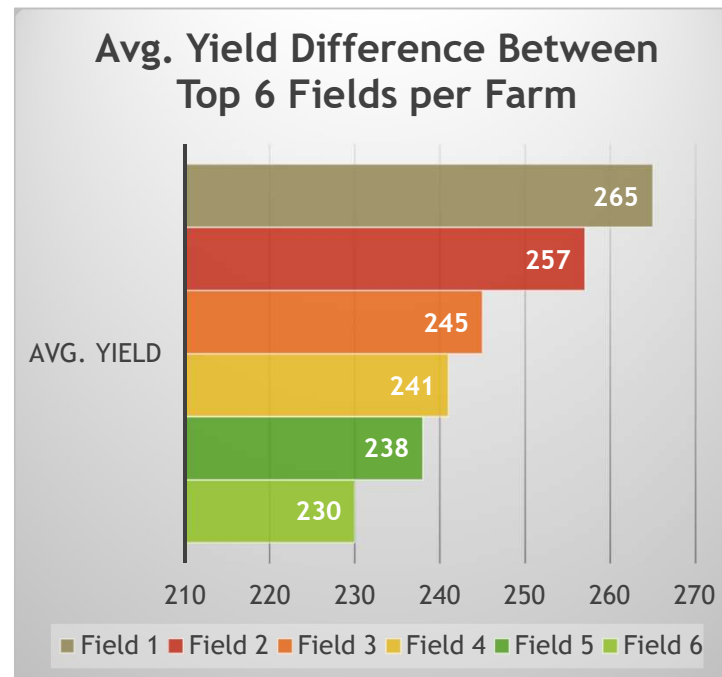
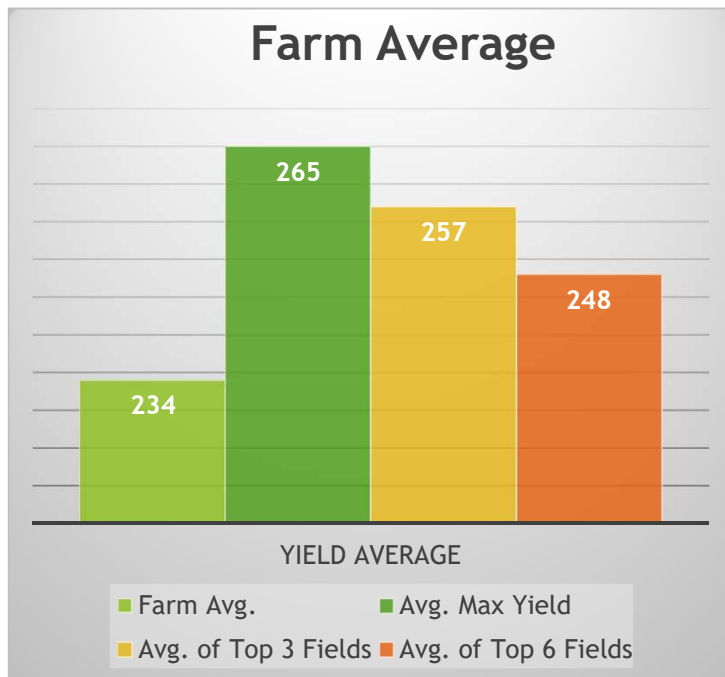
2022 Yield Summary



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Farm Average Report

composite average across all acres (does not exclude dryland, hail, wind, etc.)

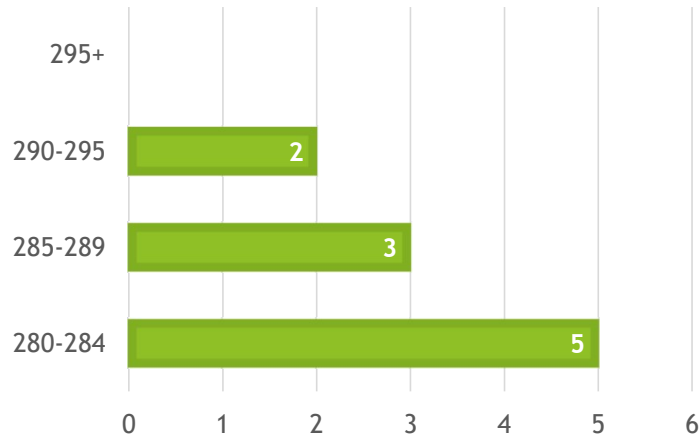


Field Average Report

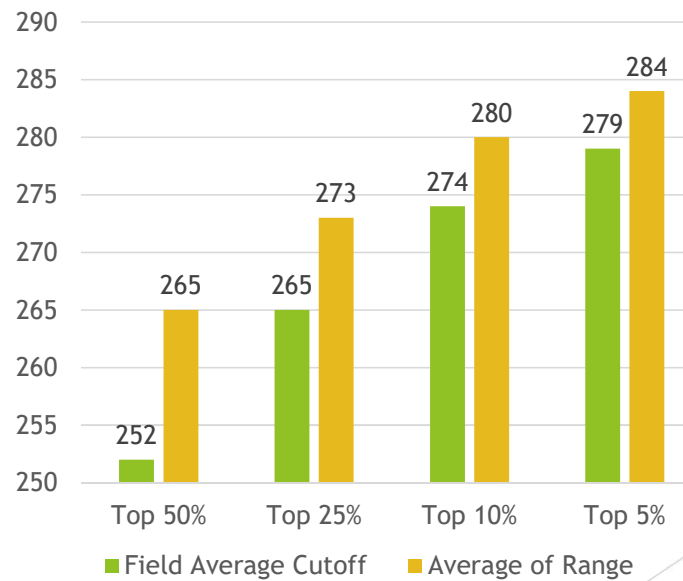
TOP 10 OVERALL FIELD AVERAGES

(# OF FIELDS IN EACH YIELD RANGE)

■ 280-284 ■ 285-289 ■ 290-295 ■ 295+



Field Average Percentile Rank

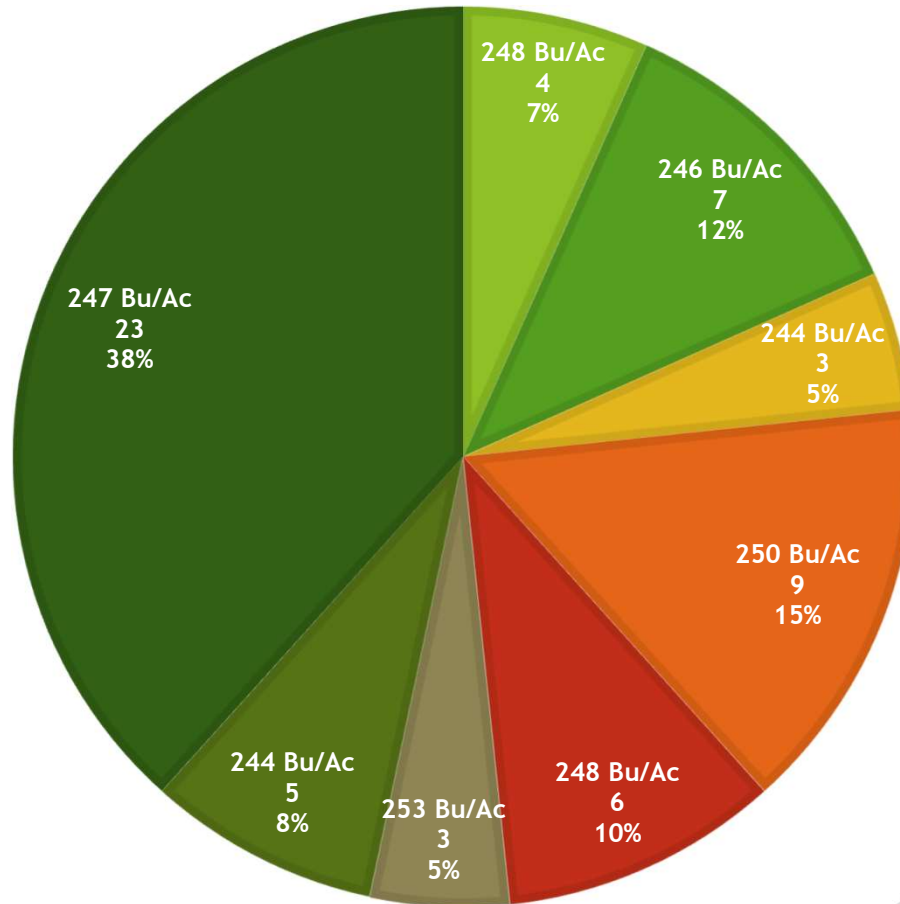


Seed Brand & Hybrid Report

***Excludes Yields less than 200 Bu

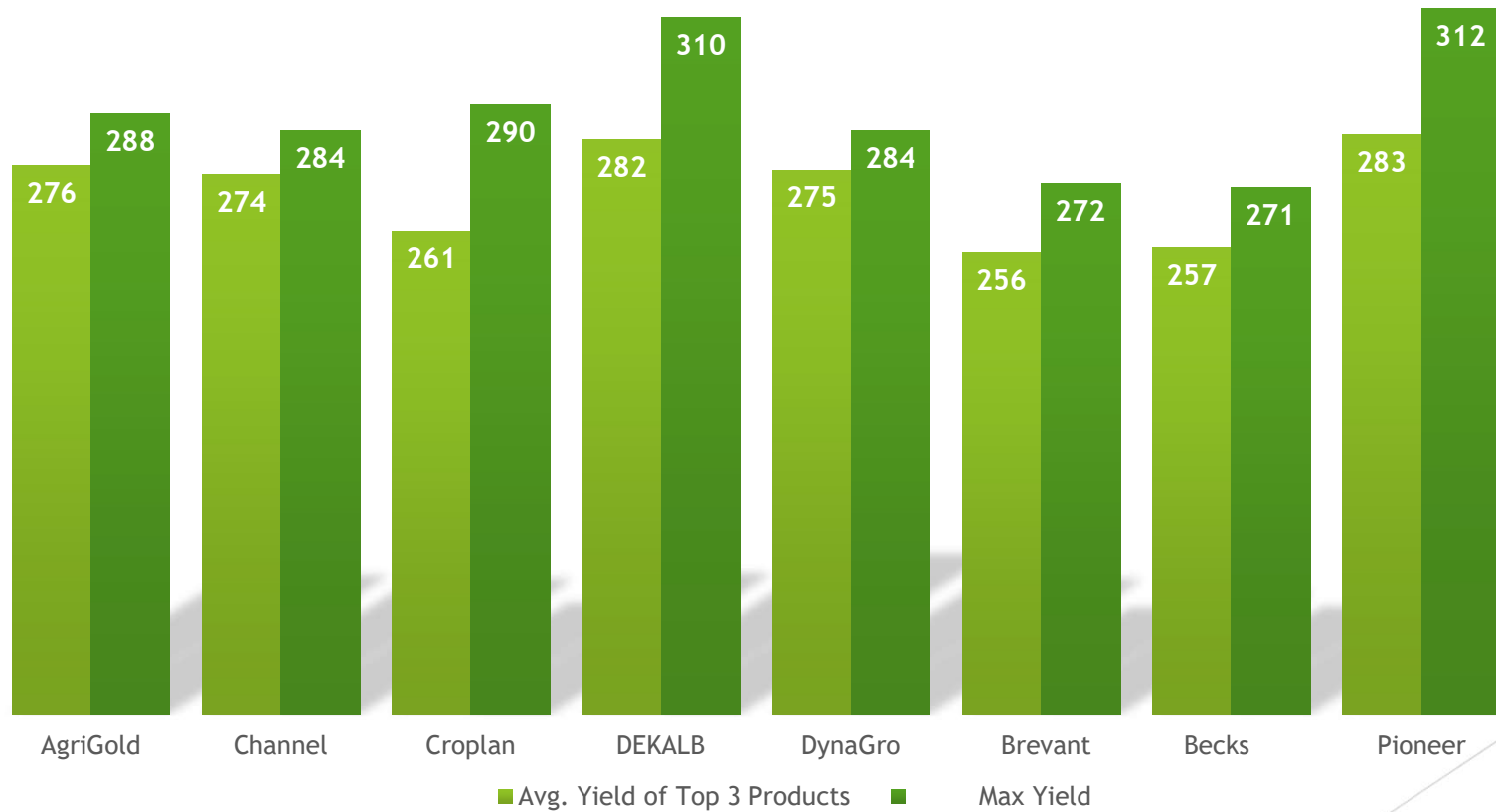
Average Yield by Seed Brand / Number of Hybrids / Seed Brand Total

■ AgriGold ■ Channel ■ Croplan ■ DEKALB ■ DynaGro ■ Brevant ■ Becks ■ Pioneer



Seed Brand & Hybrid Report

Average Yield of Top 3 Products by Seed Brand



Top 3 Yielding Hybrids by Seed Brand

	Hybrid	Avg. Yield	Max Yield		Hybrid	Avg. Yield	Max Yield
	A6488	280	280		D50-30	281	281
AgriGold	A6499	278	288	DynaGro	D52-91	278	284
	A6572	267	267		D51-54	262	264
	214-22	283	284		B10Y90	267	272
Channel	213-19	270	278	Brevant	BQ4Z92	251	251
	214-78	270	278		B14R22Q	246	246
	6594	290	290		6381AM	266	266
Croplan	5290	267	269	Becks	6041Q	263	265
	4791	218	218		6485SX	253	271
	DKC64-64	309	310		P1309	286	302
DEKALB	DKC64-34	286	295	Pioneer	P0924	282	312
	DKC61-40	265	274		P1185	281	299

-Moving forward into 2023-

Let us help you eliminate
creating a yield drag before
the crop is even in the
ground...



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We can help you leverage your data with predictive analytics to drive more efficient management decisions & manage your margins...

► Creating the “CTS Standard”

- As you know, there is very little that remains constant from year to year and from farm to farm. By aggregating data across multiple farms and taking a deep dive into it, we can start to see trends emerge that aren't visible on the surface of a single farm. These numbers become the standard, or benchmark, that we use to break down the potential and opportunity cost for the decisions you have to make on your farm.

► Creating your “Field Standard”

- On average there are 12 different soil types across a farm with each field averaging 4 different soil types.
- Focus on Average (AYP) & Max (MYP) Yield Potential and creating an environment to meet that potential.
 - Are your yield goals in line with your true yield potential?
 - Are you putting the right hybrid on the right acre?
 - What effect does seeding rate have on yield potential and hybrid potential?

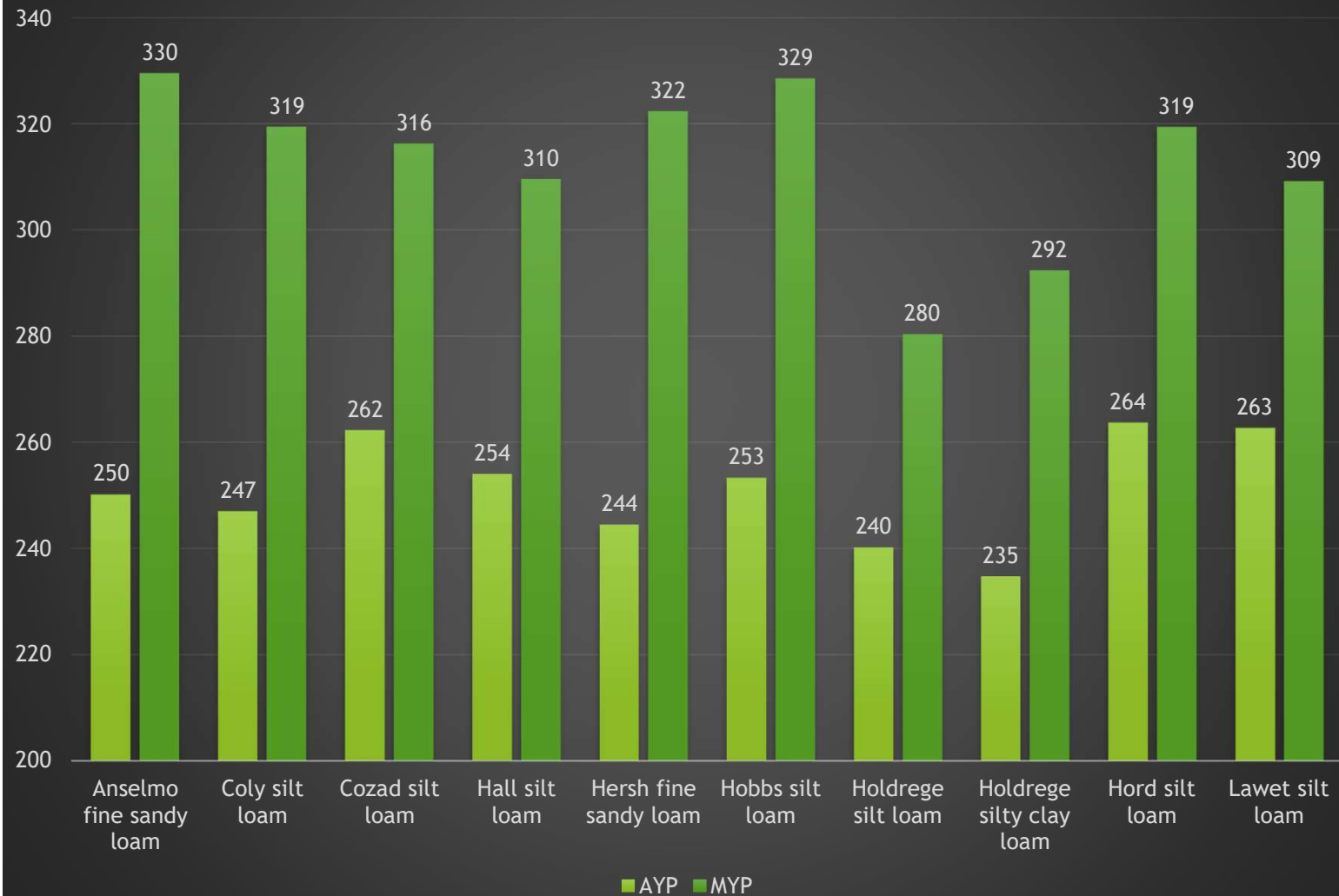


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-Everything Starts With Soil Type-

- ▶ Are you encouraged or discouraged by this chart?
 - ▶ AYP Avg: 251 Bu
 - ▶ MYP Avg: 313 Bu
 - ▶ There's an average yield opportunity of 60Bu/Ac out there currently! I would be happy with meeting that in the middle for now...
- ▶ Want to make a bet?
 - ▶ If you REDUCE your seeding rates by 10% you will see a 15% increase in your average yield...
 - ▶ Think about that...you could be using the money from your seed cost savings to pay for this kind of info AND STILL have a little extra beer money leftover

Average & Max Yield Potential of 10 Most Common Soil Types



Field Example #1

% of Field	Soil Type	STS-AYP	Rev/Ac
45%	Cozad Silt Loam	280	\$980.00
9%	Cozad loam	261	\$913.50
10%	Cozad silty clay loam	276	\$966.00
36%	Hord silt loam	282	\$987.00
100%	Total/Avg.	279	\$975.14

% of Field	Soil Type	STS-Rate	Cost/Ac
45%	Cozad Silt Loam	33.3K	\$112.50
9%	Cozad loam	31.1K	\$105.00
10%	Cozad silty clay loam	32.8K	\$110.00
36%	Hord silt loam	33.6K	\$113.00
100%	Total/Avg.	33.2K	\$112.00

- ▶ Soil Type Standard (STS)-AYP
 - ▶ 20 Bushel difference
 - ▶ 2 major Soil Types
 - ▶ Overall high AYP
 - ▶ Opportunity to redistribute input costs and drive yield in most productive areas

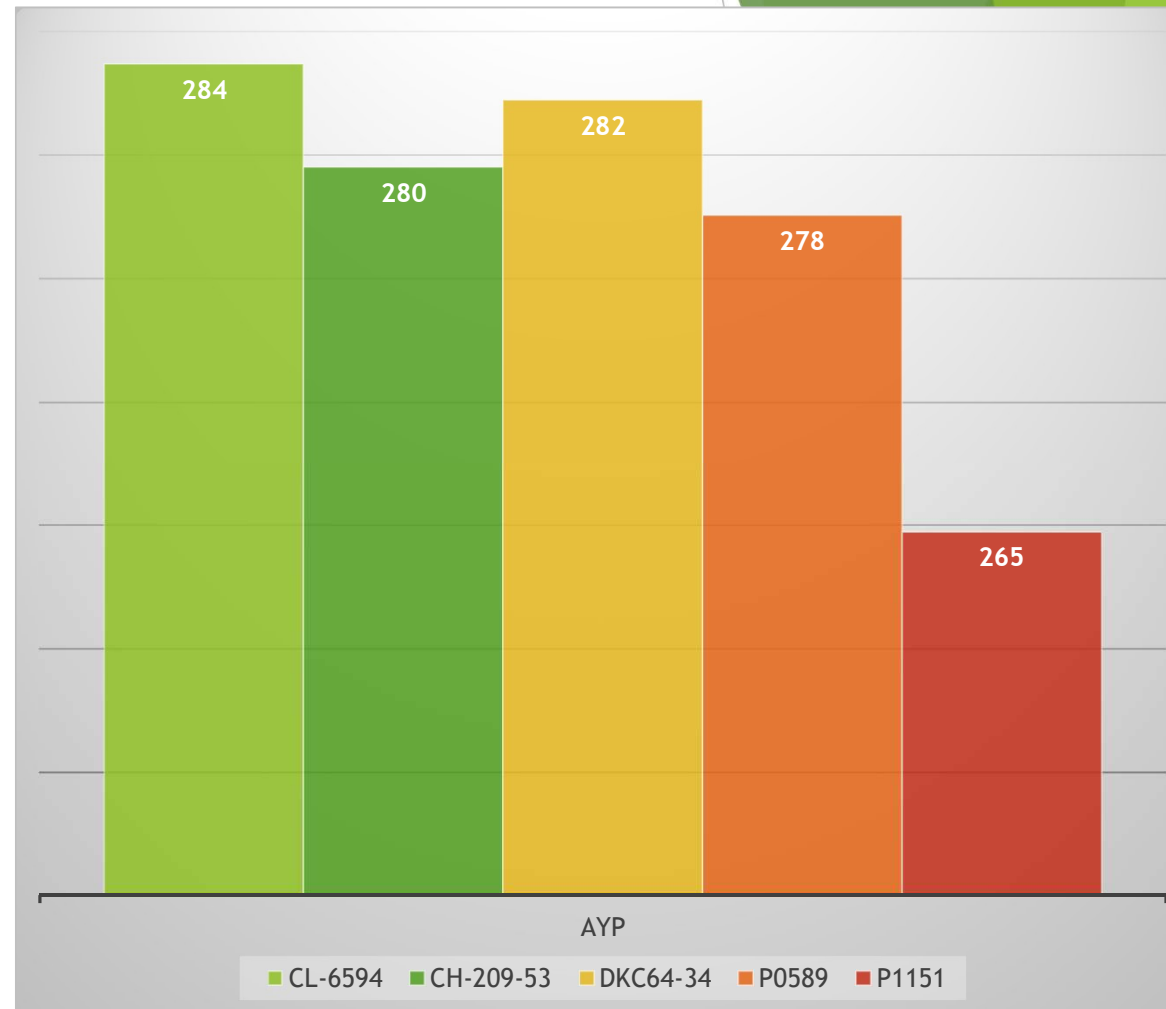
- ▶ Soil Type Standard - Rate
 - ▶ Target seeding rate needed to maximize efficiency and production on every acre.
 - ▶ If your normal seeding rate is over 34K you've already saved \$4.00/ac

Field Example #1

► Does Hybrid Selection Matter?

- Find a hybrid that performs well across major soil types
- Find a hybrid that has 280+ Bushel Average Yield Potential
 - Note: P1151 is an excellent middle of the pack hybrid and as consistent as they come, but it's not going to yield 280 Bushel

	Hybrid Standard - AYP				
Soil Type	CL-6594	CH-209-53	DKC64-34	P0589	P1151
Cozad Silt Loam	284	289	282	278	262
Cozad Loam	268	271	269	269	267
Cozad Silty Clay Loam	283	286	288	265	282
Hord Silt Loam	287	268	284	282	263
Average	284	280	282	278	265



Field Example #1

- ▶ What about Seeding Rate?
 - ▶ Maximize Yield/Plant (Average Ear Size) on every acre of the field. We want average ear size to remain consistent for every AYP zone.
 - ▶ As Yield/Plant rating goes up; Average seeding rate goes down
 - ▶ Note: Croplan 6594 and DKC64-34 have an excellent Yield/Plant rating. P0589's AYP is 6 bushel less than 6594 and requires 3,000 more plants/ac.

	Hybrid Standard - Rate				
Soil Type	CL-6594	CH-209-53	DKC64-34	P0589	P1151
Cozad Silt Loam	31,957	34,234	32,578	34,799	32,766
Cozad Loam	30,111	32,077	30,996	33,685	33,377
Cozad Silty Clay Loam	31,822	33,879	33,201	33,111	35,279
Hord Silt Loam	32,338	31,722	32,762	35,260	32,815
Average	31,914	33,100	32,564	34,696	33,090



Field Example #1

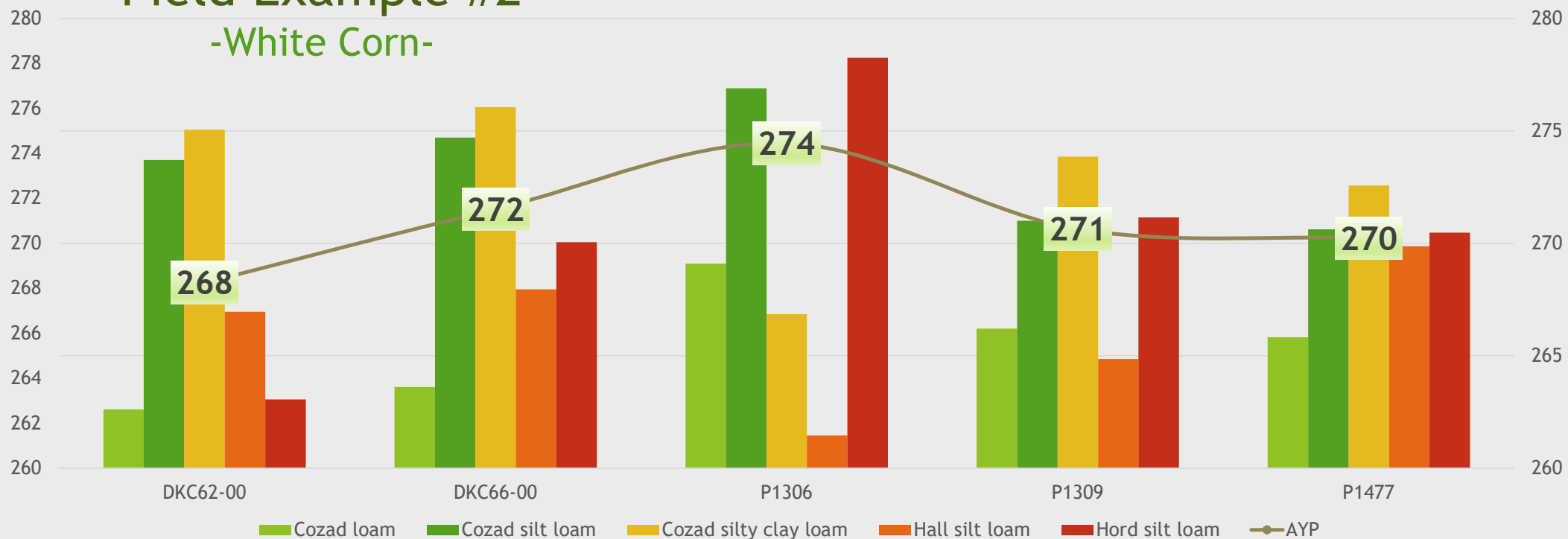
Financial Breakdown



Field Example #2

-White Corn-

Hybrid AYP by Soil Type



% of Field		STS-AYP	STS-Rate
12%	Cozad Loam	257	30,600
32%	Cozad Silt Loam	263	31,300
14%	Cozad Silty Clay Loam	269	32,000
4%	Hall Silt Loam	258	30,700
38%	Hord Silt Loam	266	31,600
100%	Total/Avg.	264	31,400

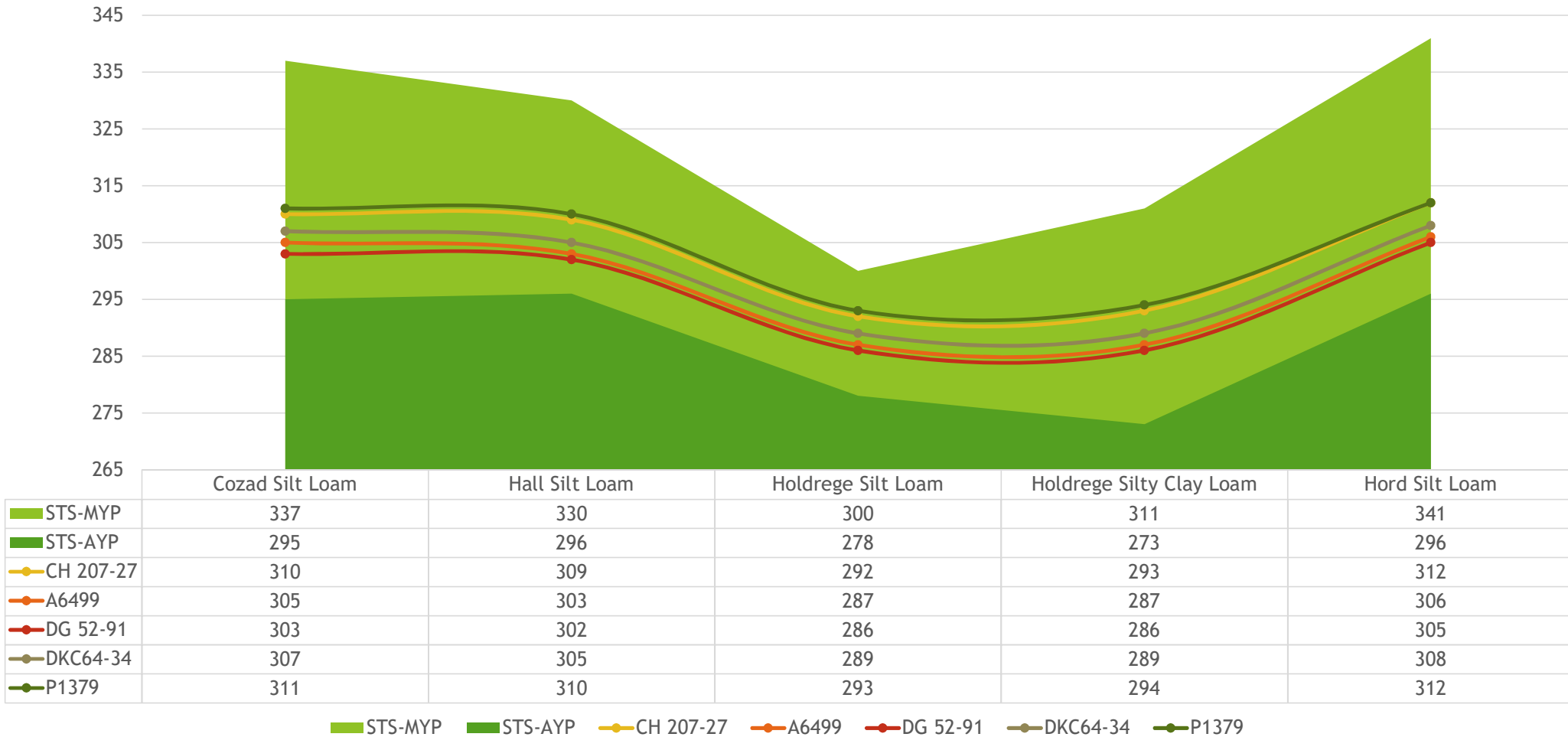
Field Example #2

Financial Breakdown



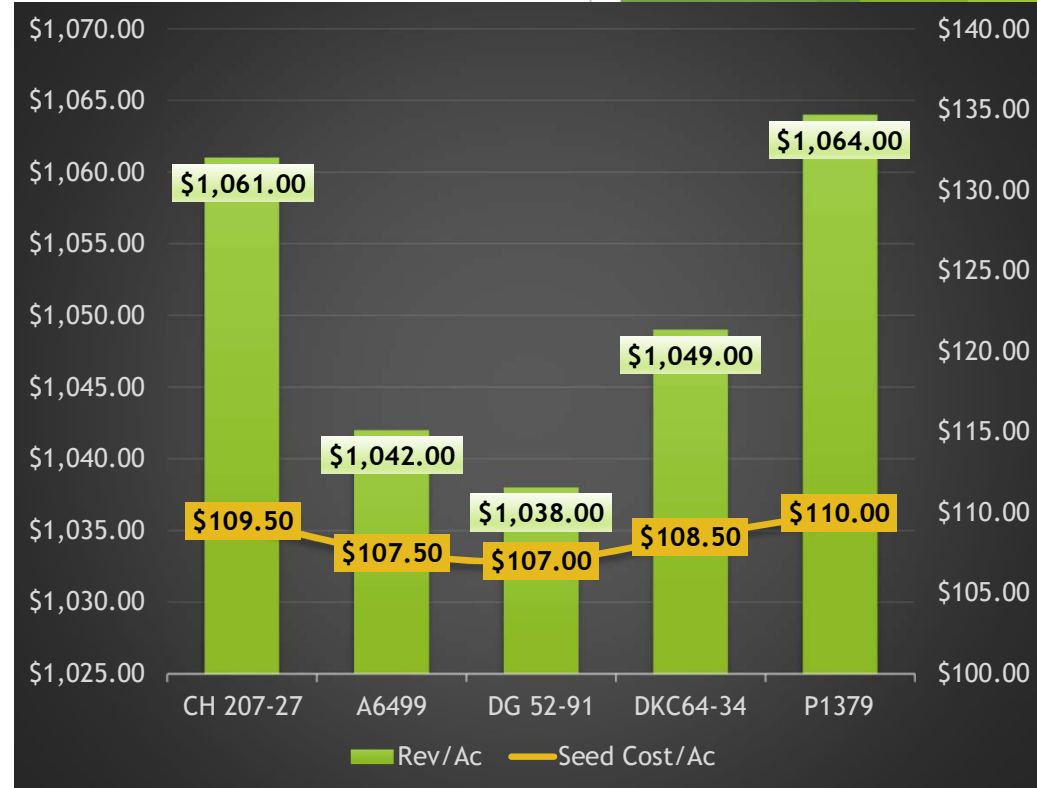
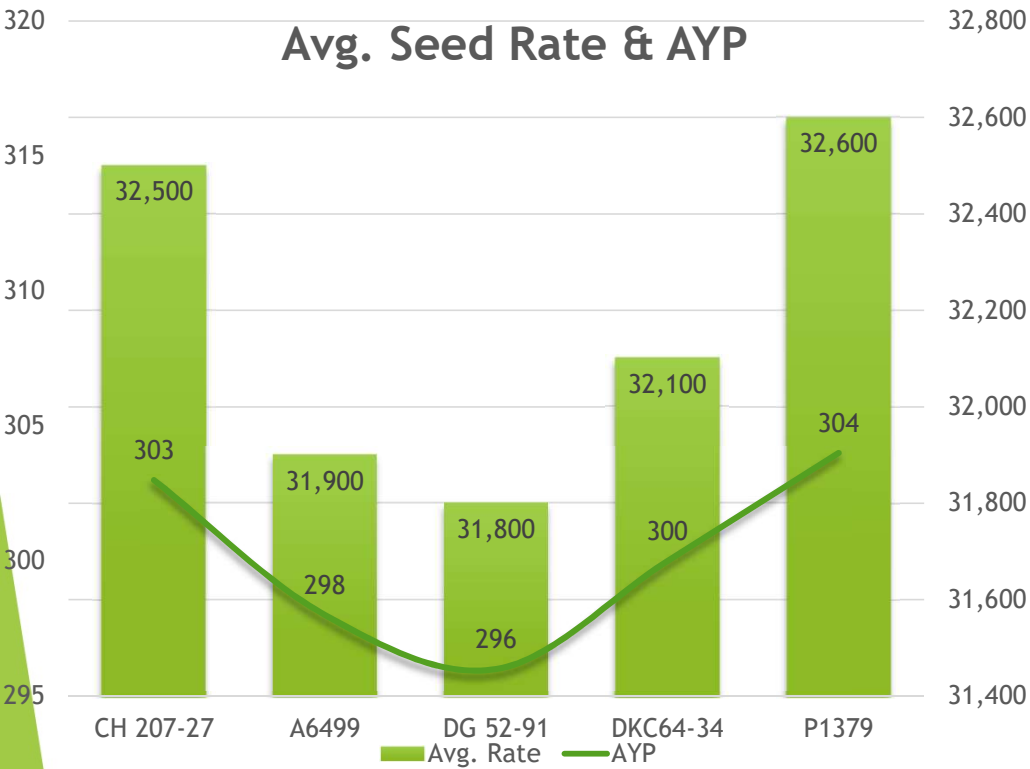
Field Example #3

Finding Hybrids that fall into the AYP-MYP Cushion



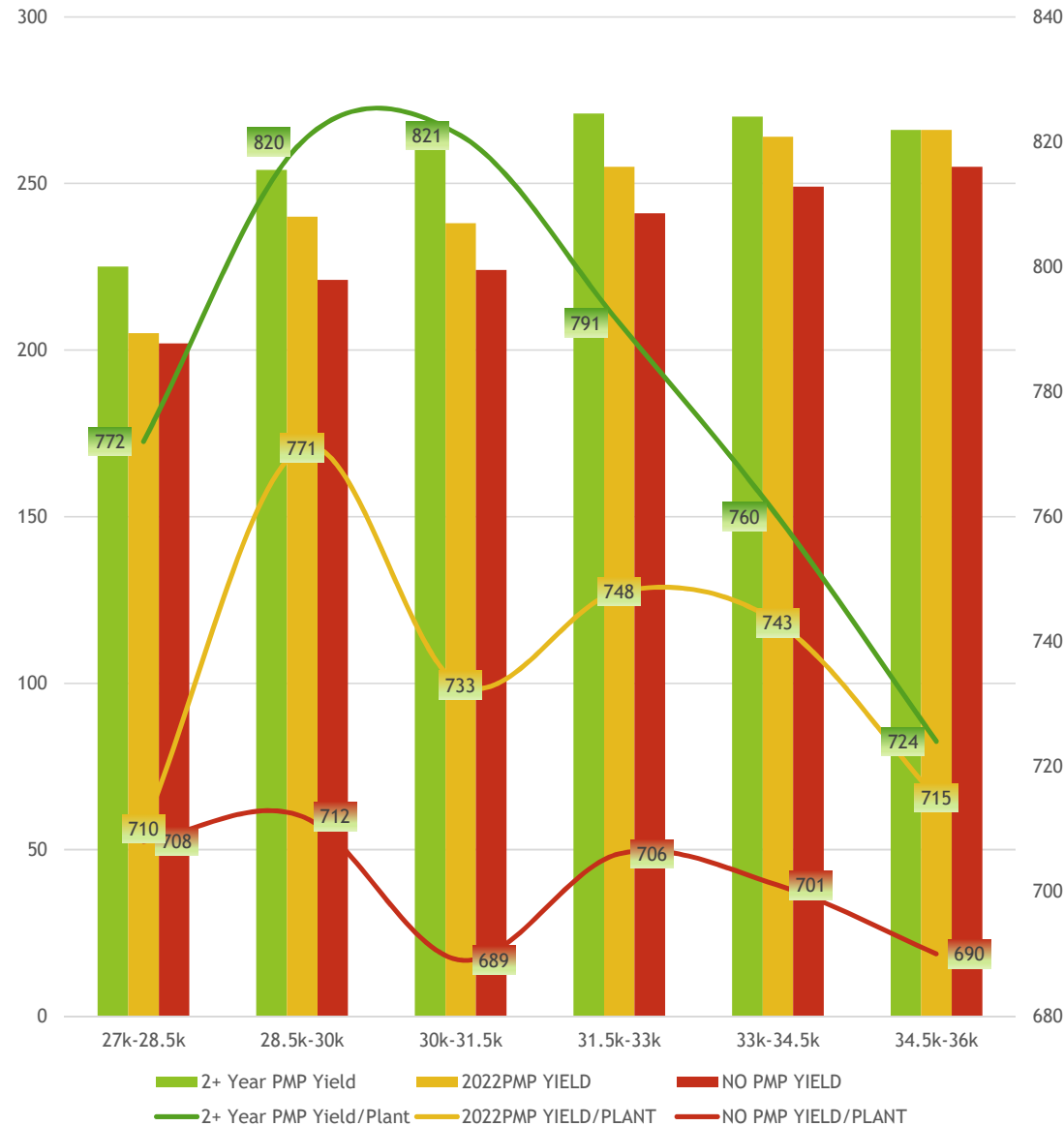
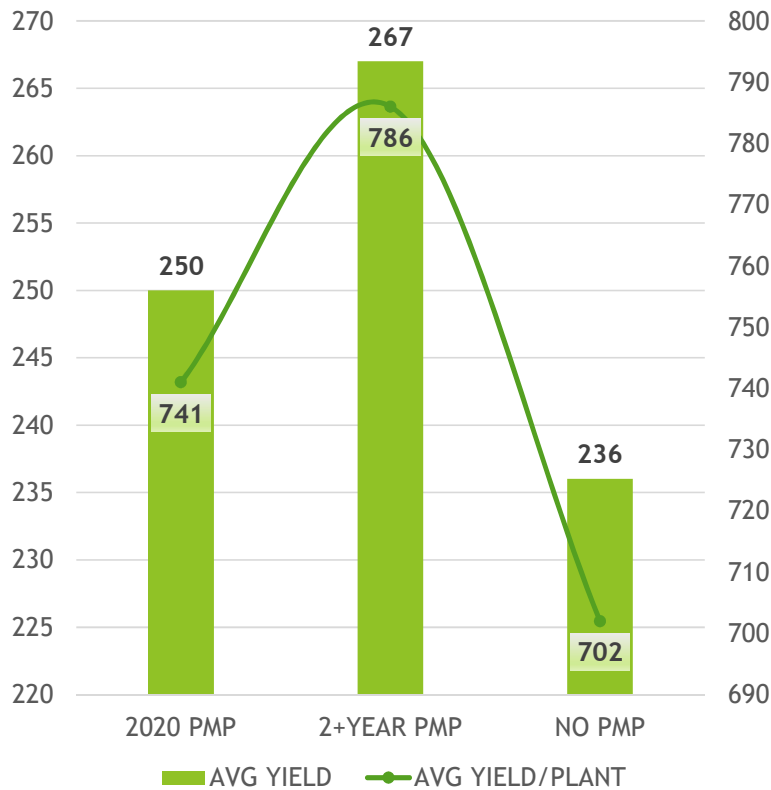
Field Example #3

Avg. Seed Rate & AYP



Taking it to the next level...

Grid Sampling was expensive. That's why we call it PMP Sampling and here's its value when you take this basic information down to every acre of your field.





That's already \$50/ac worth of value...

And we haven't even started talking about fertilizer yet.



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