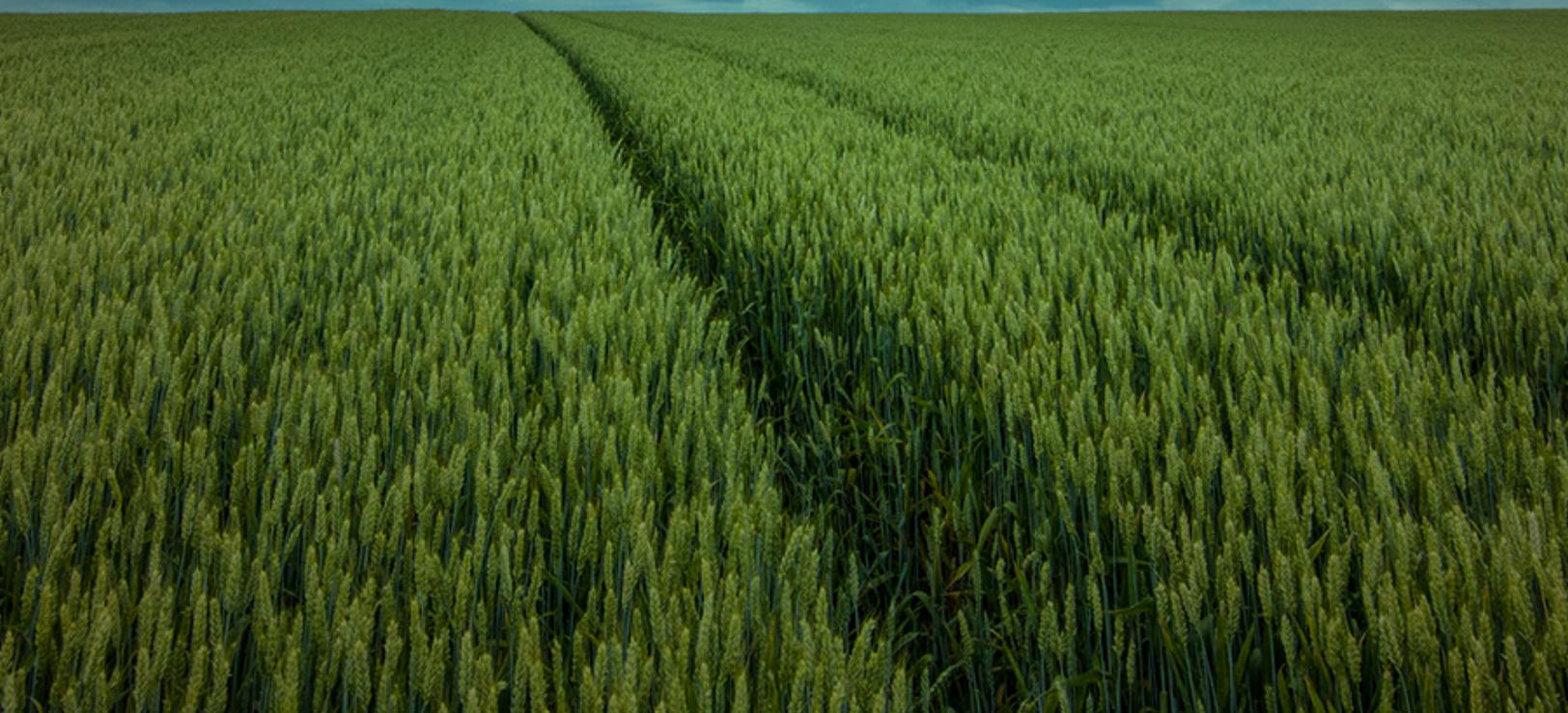


weathertrends360<sup>o</sup>

## **How AgReliant Helps Farmers**

Enhance Crop Yields  
with Year-Ahead  
Weather Intelligence



**AgReliant created the Advantage Acre platform to give farmers more control over the agricultural process. They partnered with Weathertrends360 to integrate 85% accurate year-ahead weather forecasts into their ag models.**

The success of a crop, or its yield, depends on about 80% of the decisions made before its seeds go into the ground.

But the unfortunate truth is that the farmers who make these decisions do so with limited information about planting and growing conditions. As a result, many of them have to base critical decisions, like seed selection and nitrogen timing, on what they did the previous year.

But there's an obvious problem with this approach. It requires the rather large assumption that this year's conditions will be the same as last year's.

What if they're not?

Clearly, the information farmers have is too inaccurate. It doesn't allow them to make precise decisions that maximize yield and profit potential. They need a better way.

This case study is about a company that found one.

## **CHALLENGE**

AgReliant is a leader in corn and soybean research and production. The company's precision agriculture platform, Advantage Acre, gives farmers access to better data and more control over the agricultural process. Because when farmers have better data, they make better decisions.

The Advantage Acre platform represented a significant leap forward for farmers. But Noah Freeman, the Digital Platform Lead for AgReliant, knew it was still missing the one thing farmers needed more than anything: reliable weather data.

And not just any weather data, but long-range weather data. Farmers needed to be able to make decisions far enough in advance, before planting.

Doing it themselves was out of the question – they weren't weather experts. To add this level of insight to their platform and better equip farmers, AgReliant would need to find a partner. One that could predict the weather a year before it happens – with reliable accuracy.

This was almost certainly impossible.

## **LONG-RANGE WEATHER FORECASTING**

It's no secret meteorology struggles with accuracy.

The physics-based method for forecasting weather is useful only up to about 10 days.

**“ AgReliant needed to find a partner that could predict the weather a year before it happens. This was almost certainly impossible. ”**

Freeman needed someone who could predict the weather at a long range, with a high degree of accuracy. The forecasts had to be reliable. Weather intel wouldn't do farmers any good if it changed after they planted.

He looked at several companies that purported to provide long-range forecasting, but nothing stuck. The science behind their accuracy and modeling methods was either too fuzzy or not convincing enough to gamble the Advantage Acre platform on.

One of AgReliant's regional seed managers had heard about a weather intelligence provider that did year-ahead weather intelligence. The difference with this provider, though, was that they didn't change their forecasts. Once they made a prediction, they trusted their model enough to stake their reputation on it.

But the most intriguing point? They said they were 85% accurate.

Freeman reached out.

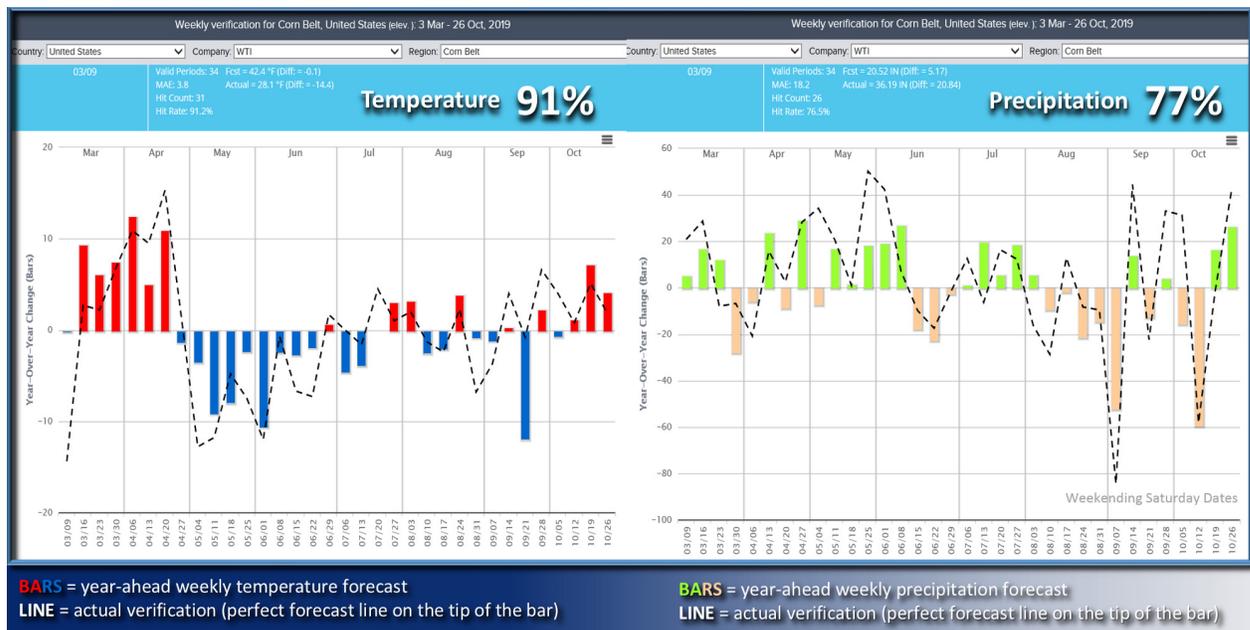
## SOLUTION

When Freeman heard that Weathertrends360 provided 85% accurate year-ahead forecasts, he thought, "No way. Nobody can do that." But after learning about their technology and seeing the results, he changed his mind.

Weathertrends360 uses statistics-based weather modeling and precision mathematics to provide an 11 month forecast with a proven accuracy of 85%.

**“ I looked at many options for long-term weather forecasting. Nobody could match their accuracy. – Noah Freeman ”**

## Year-Ahead Accuracy (March–October 2019): Corn Belt



Instead of looking at the physics of weather patterns, Weathertrends360 looks at 125 years of weather data, 13 million lines of code and trillions upon trillions of calculations, every day. They then run through 24 climate cycles and various weather-impacted scenarios to produce predictions by week, 11 months ahead, for every mile on Earth.



**85% ACCURACY**



**FORECASTS 11 MONTHS AHEAD**

**125**

**YEARS OF WEATHER DATA**



**13 MILLION LINES OF CODE**



**TRILLIONS UPON TRILLIONS OF CALCULATIONS**



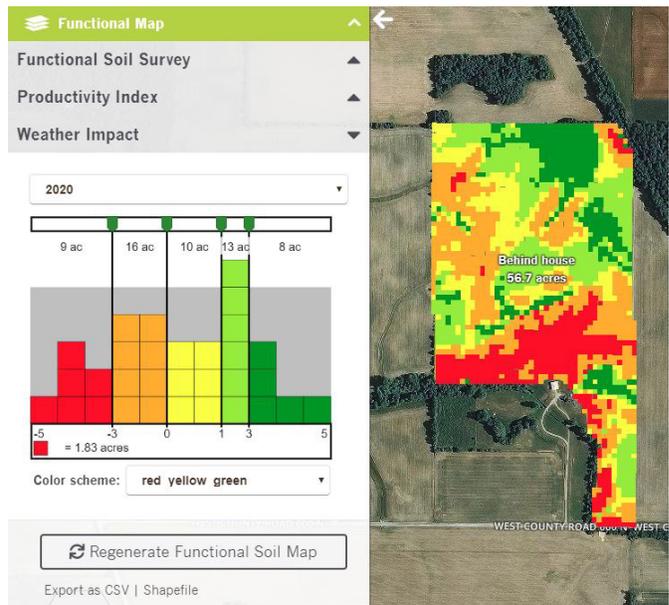
**24 CLIMATE CYCLES**

The primary function of AgReliant's digital ag platform is to create crop models. These models show farmers what the conditions they plant in will look like from planting to harvest – all before they plant. And a big part of predicting cropping season conditions is forecasting the weather.

Weathertrends360 enabled AgReliant to integrate data on how future weather will alter cropping conditions. This new layer of data meant AgReliant could now accurately project growth stages for farmers.

Once they've identified soil patterns and growth stages, AgReliant works with farmers to identify places where they can make decisions. This gives farmers more control and information before the planting process.

### Advantage Acre Functional Map



Functional soil maps modify the productivity zones based on Weathertrends360's long-range forecast.

### Advantage Acre Timeline



The Advantage Acre Timeline uses hybrid data and Weathertrends360 forecasts to model crop growth stages.

## RESULTS

AgReliant saw an immediate impact after implementing Weathertrends360.

The long-range weather intelligence enabled AgReliant clients to better anticipate unforeseen weather events that could impact their season. This means they can better understand and prepare for the conditions their seeds will experience in the months to come.

This includes:

- Hybrid selection – Selecting the right seeds a year in advance
- In-field applications – Assessing when to make in-field applications and when to wait
- Planting and harvest – Identifying planting and harvest dates with certainty
- Field conditions – Knowing the impact of field conditions on crops before they happen
- Understanding conditions – To know what a crop will experience during critical growth stages
- Field management practice – To take full advantage of each seed's potential in every growing season

“The best part for us was the compliments we received on the seed production side.”  
– Noah Freeman

## Planting Date Calculator

SEED PLAN ● ● ● ● ●

Planting equipment

Planting Name  (optional)

Crop: **Corn**

Date:

Planter:  (optional)

Tractor:  (optional)

Operator:  (optional)

Note:  (optional)

Advantage Acre uses the Weathertrends long-term forecast to help better estimate your planned planting date.

On average, corn takes 120 GDDs to emerge and optimal emergence should occur 11 days after planting.

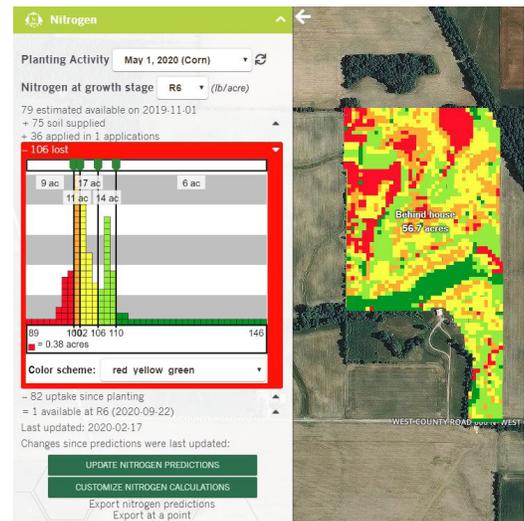
To better meet your planning needs, you can modify these parameters.

GDD to Emergence:

Optimal days to emergence:

Advantage Acre uses the Weathertrends360 long-term forecast to estimate planting dates.

## Nitrogen Modeling



Advantage Acre's nitrogen model uses Weathertrends360 forecasts to help farmers with nitrogen placement. This reduces potential loss of excess nitrogen that has a negative effect on the environment.

## Calculate Harvest Date

The screenshot shows a web application titled "Calculate Harvest Date". At the top, it says "Related corn or soybeans planting activity:" followed by a dropdown menu set to "May 1, 2020 (Corn)". Below this, a paragraph explains that AdvantageAcre uses WeatherTrends long-term forecasts to estimate harvest dates, and that R6 is typically between 33% and 37% grain moisture. It also notes that users can modify harvest moisture, grain moisture at R6, and dry down % per day parameters. The interface features three input fields: "Planned harvest moisture %" with a value of 15.5, "Moisture % at R6" with a value of 35, and "Dry down % per day after R6" with a value of 0.6. To the right, it displays "R6 2020-09-21" and "Days to dry down 32". A green button labeled "USE THIS DATE" is positioned to the right of the R6 date. Below the input fields, a grey box shows the calculated "Harvest date 2020-10-23". The background of the interface has a faint hexagonal pattern.

**AgReliant calculates harvest dates with Weathertrends360's forecasts.**

In total, there are 2,500 active users of Weathertrends360 data on the AgReliant platform. This includes 4-5 people on production teams at 13 locations, and 50 agronomists who use it to provide data to their seed sellers. All of them use a combination of Weathertrends360's short-term and long-term forecasts.

The weather data has been particularly indispensable during difficult planting seasons, like last year.

2019 was challenging for most farmers. The planting season was wet and provided few windows. But with Weathertrends360 data, AgReliant was able to help their clients prepare for the conditions a full 11 months ahead.

**Working with Weathertrends360 has helped AgReliant give their production team, partners and clients the data and control they need to maximize yield and profit potential.**