ITLUS – 2019
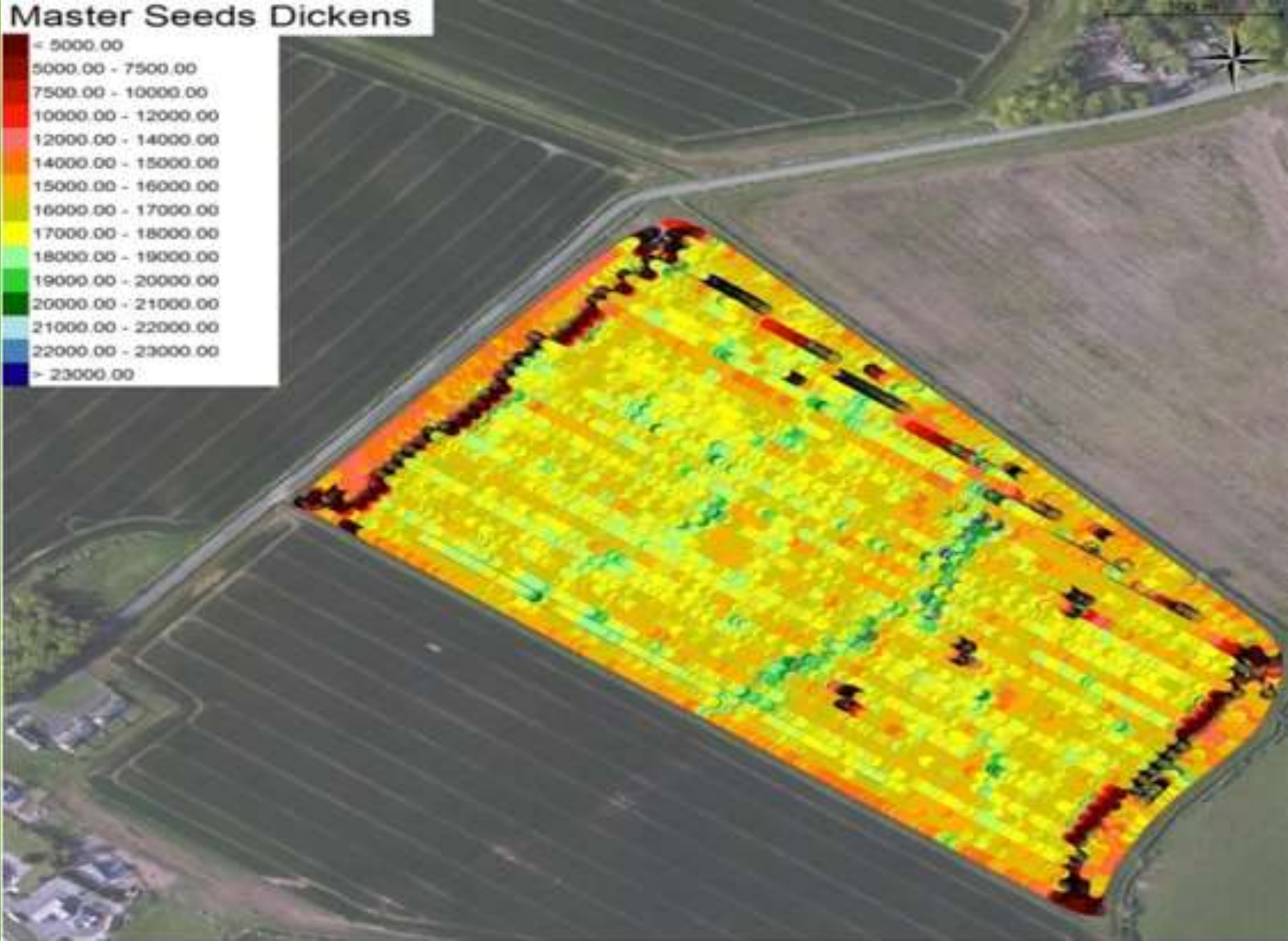
"how data and digital agriculture is changing tillage farming"

Ewan McFarlane
Head of Digital Agronomy
Origin Enterprises plc

AgSpace

Master Seeds Dickens

Legend:
- < 5000.00
- 5000.00 - 7500.00
- 7500.00 - 10000.00
- 10000.00 - 12000.00
- 12000.00 - 14000.00
- 14000.00 - 15000.00
- 15000.00 - 16000.00
- 16000.00 - 17000.00
- 17000.00 - 18000.00
- 18000.00 - 19000.00
- 19000.00 - 20000.00
- 20000.00 - 21000.00
- 21000.00 - 22000.00
- 22000.00 - 23000.00
- > 23000.00

Space

Dashboard

Today
Tuesday, 10 Sep

12°C

Variable 4 kph

Precipitation & soil

Last Hour:	0 mm
Last 24 Hours:	3.6 mm
90 Days:	111 mm
YTD:	267 mm
Soil temperature:	12 °C

Farm output
Yield average

| t/ha | total |

	Target	Forecast (beta)
Wheat (winter, feed)	8.000	10.034
Wheat (winter, milling)	8.000	9.919

Septoria Risk

Low

Weather charts

21.08.2019   📅   09.09.2019   📅   ⇄   select year   ⌄   GO

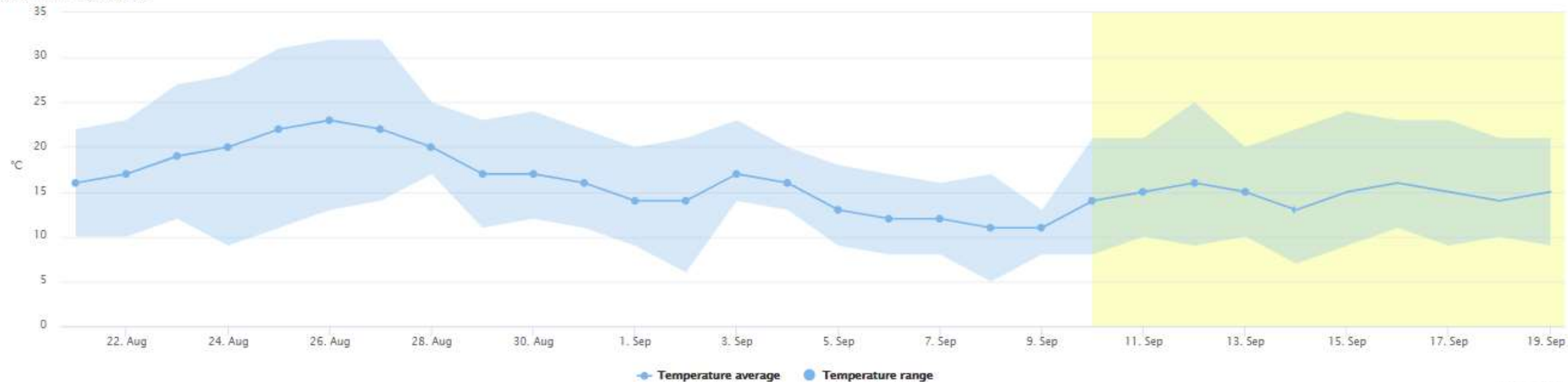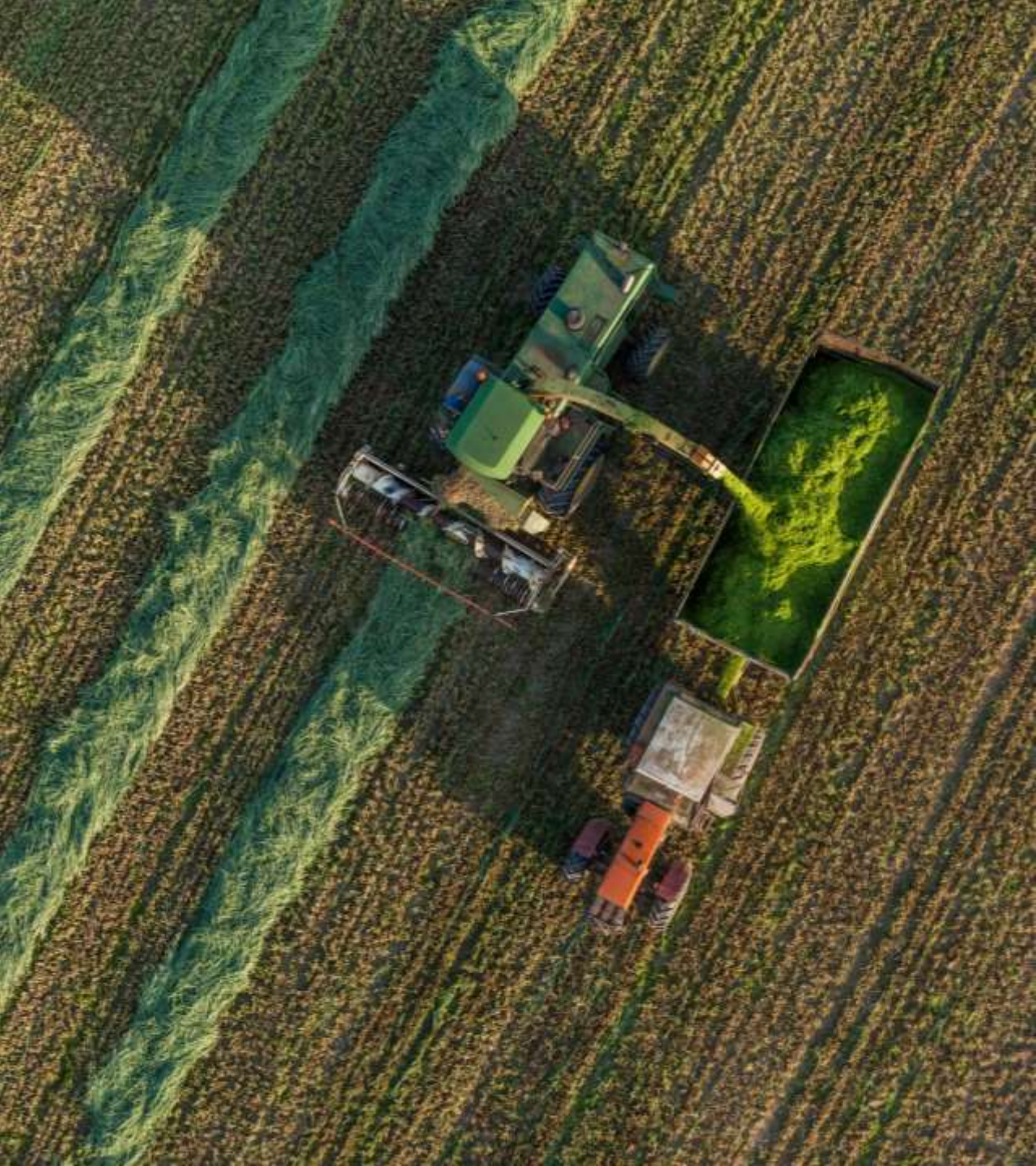Air Temperature   Precipitation and Hail   Surface wind   Soil Moisture and Temperature   Dew Point   Relative Humidity   Solar Radiation and Cloud Cover   Reference evapotranspiration   Growing Degree Days (Averaging Method)

AIR TEMPERATURE

—•— Temperature average   ● Temperature range
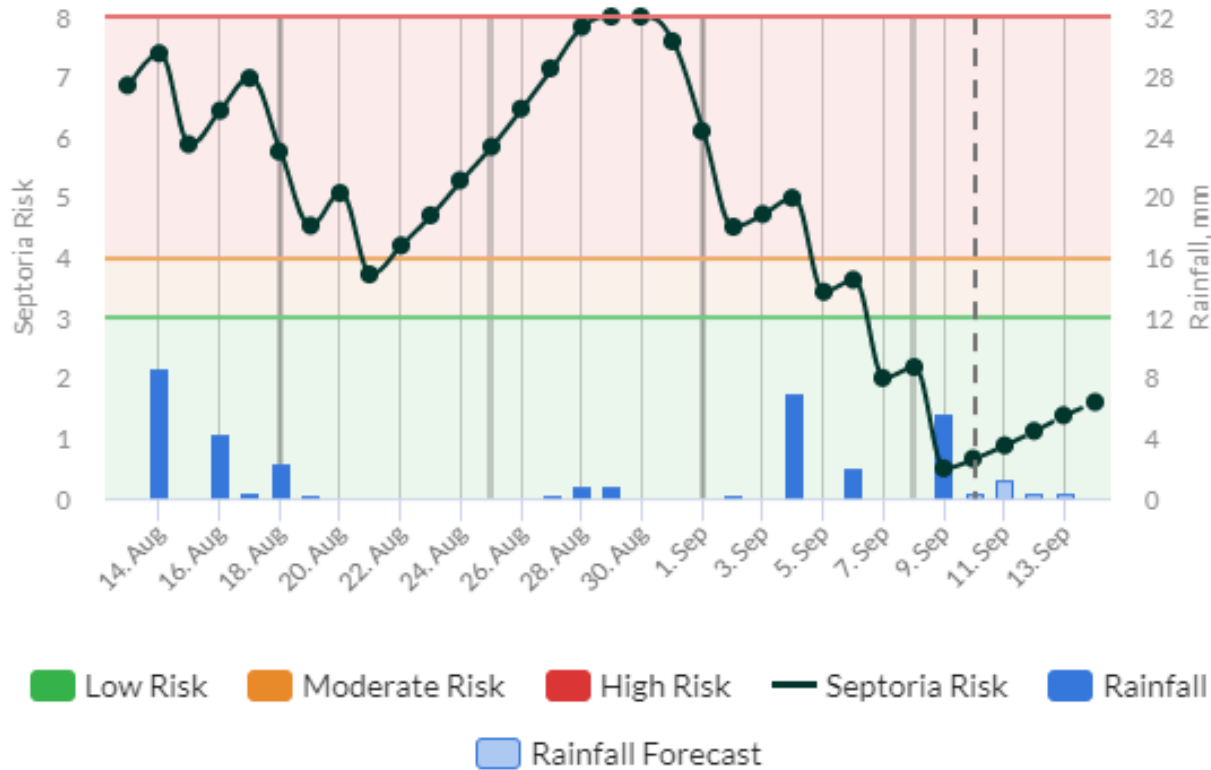
Highcharts.com

Hyper-local weather

Weather forecasting & modelling at farm level

- Current weather conditions & soil temperatures.

- Historical weather to compare seasonal performance.

- Soil moisture and topsoil temperature.

- Leaf canopy wetness

- Field accessibility

- Ensure operations are carried out at the optimum time.

Septoria risk model
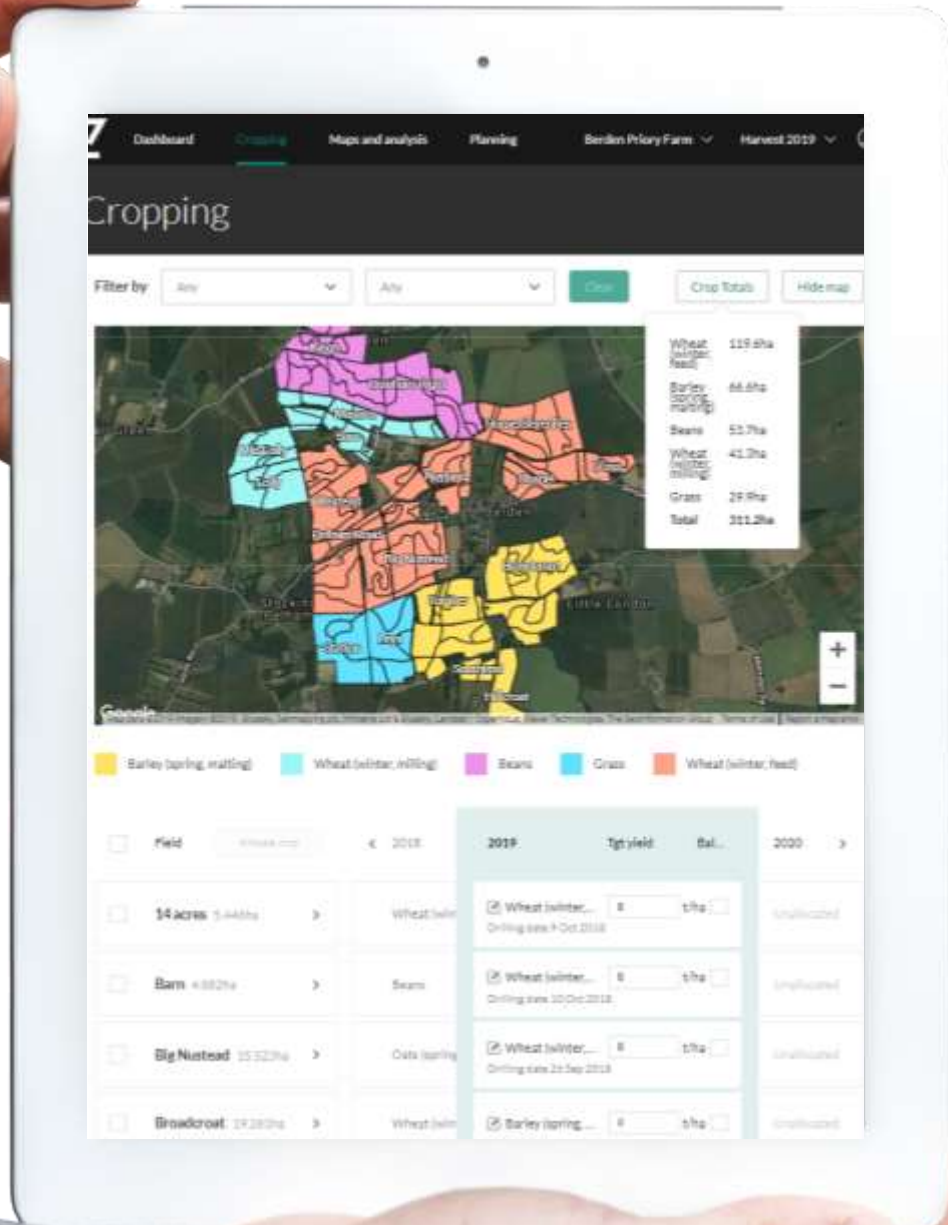
Identify risk level to inform crop protection decisions

Septoria Risk

Low

*The Septoria Risk Index combines the influence of rainfall events and temperature to indicate the level of Septoria disease pressure on your farm. The index takes no account of varietal susceptibility or fungicide applications. Consult your agronomist for field and variety specific crop management advice.

- Origin R&D incorporated into Contour

- Evaluation of 50 replicated trials, over 5 years, across 10 locations

- Quick dashboard view – current day risk

- Green = low risk

- Yellow = get the spray and sprayer on standby

- Red = get on!

- Drill down provides in depth view, previous 21 days rainfall and risk level, with further 5 day risk prediction.

Geo-referenced cropping

Understand crop location and management

- Geo-referenced fields

- Accurate field measurements

- Measured cropped areas

- Identify management options for fields
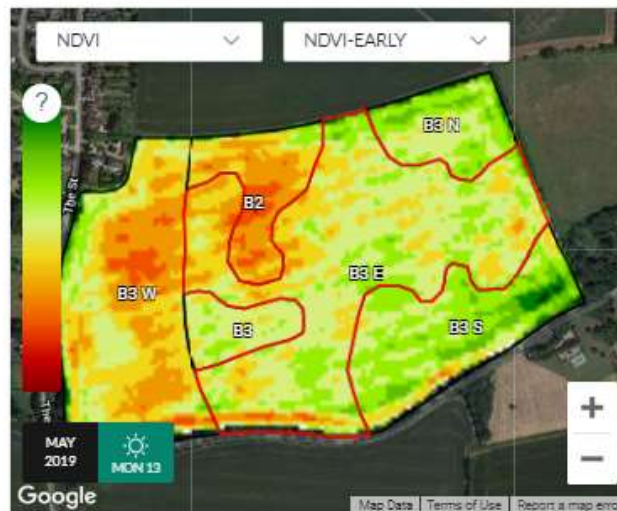
- Record drilling dates

- Update target yields

AgSpace

Field data

Data + context = information

- View and update soil type information

- View soil analysis indices

- View satellite imagery

- View cropping history and yield predictions

- Layering of information helps to identify causes of issues

Broadcroat

Soil analysis by zone — SOIL TESTED: 22 MAR 2018

B2	B3	B3 E	B3 N	B3 S	B3 W

P	2.8	Phosphorus	Target	
K	2.3	Potassium	Target	
Mg	1.9	Magnesium	Low	●
pH	8.01	Acidity	High	●

Irrigation available   Area: 19.3 Ha

NDVI   NDVI-EARLY

MAY 2019   MON 13

Google   Map Data | Terms of Use | Report a map error

Soil characteristics for zone B3 E

Series name	HANSLOPE *
Description	Slowly permeable, chalky clays with impeded drainage and slight seasonal waterlogging *
Soil Code	B - Deeper calcareous soils
Depth to rock	50+cm
Slopes	Gentle (1-3 degrees)
Drainage	0 - Unmottled warm colours (Good)
Soil available water	Medium
Soil type	Medium Edit

Top Soil

Organic matter	Medium (3-6%)
CaCO3 levels	2 - Calc
Stone content	Low (1-10%)
Texture	hCL - Heavy Clay Loam

Subsoil

CaCO3 levels	2 - Calc
Stone content	Low (1-10%)
Texture	hCL - Heavy Clay Loam

* Soil information supplied using data provided by Cranfield University and James Hutton Institute.

Cropping history

2019		2018		2017	
Crop	Barley (spring, malting)	Crop	Wheat (winter, milling)	Crop	Beans
Target yield	6	Target yield	9.5	Target yield	3.5
Actual yield	-	Actual yield	-	Actual yield	3.5

Soil analysis

Measure to manage

- Identify high/low areas of nutrient availability

- Understand where soils need improving – pH and nutrients.

- Target crop walking to understand impact on crop

- Match nutrition to crop requirement and soil nutrient availability.
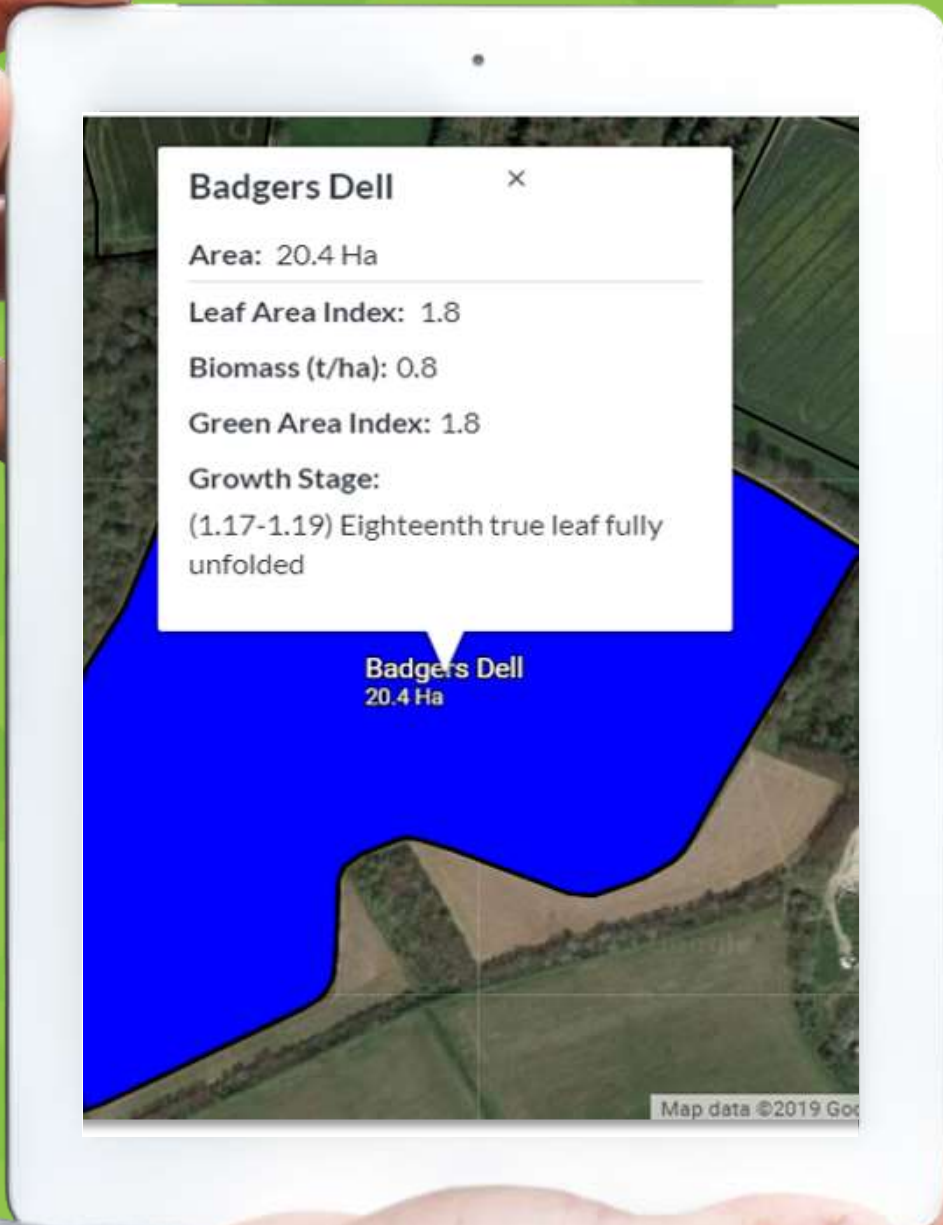
AgSpace
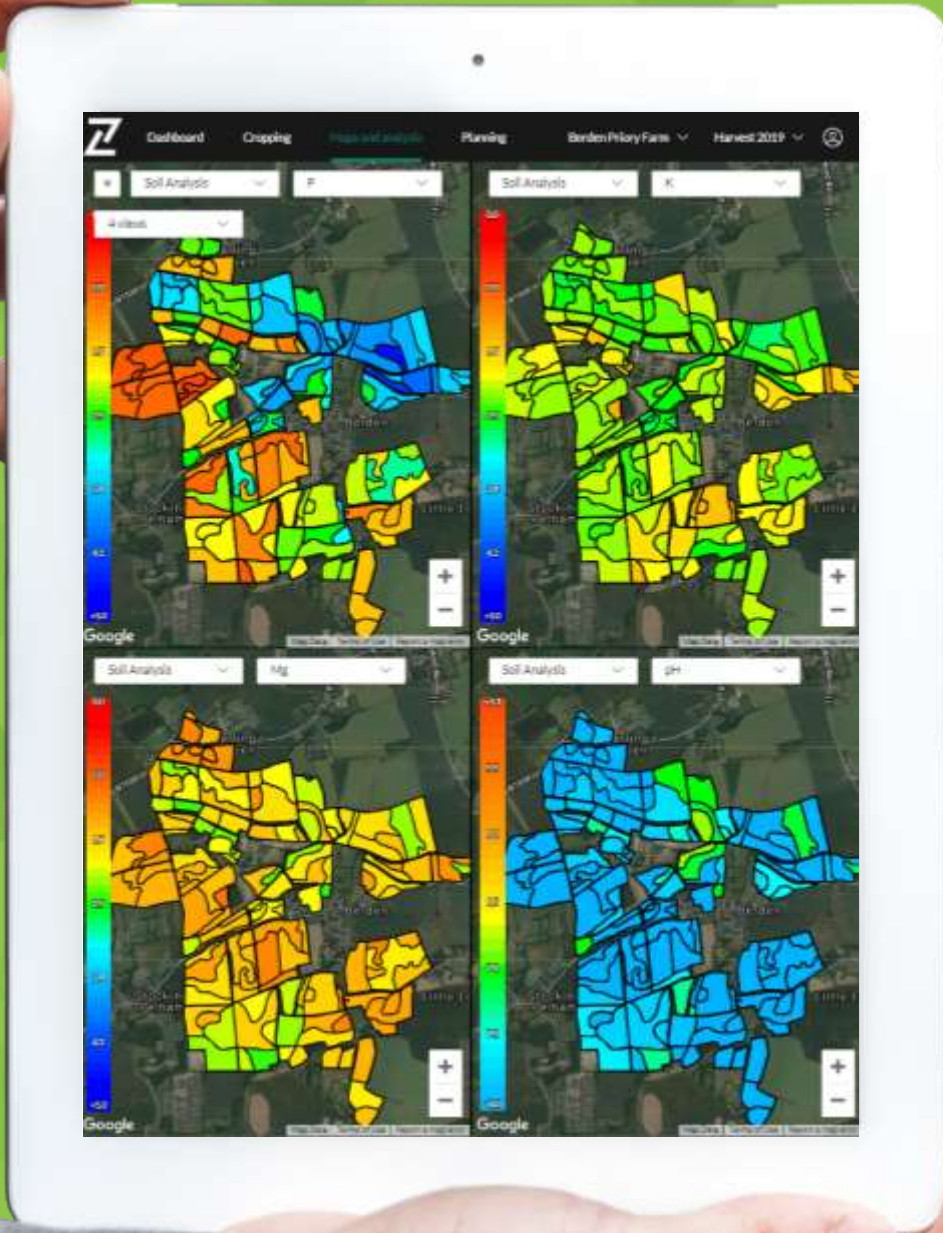
Optical Imagery

NDVI & GCVI

- Virtually crop walk every square metre

- Identify variability in crop performance

- Identify issues earlier in season

- Map observations and issues

- Build up digital crop walking records

- Review throughout the season in the office

AgSpace

SAR crop models

Synthetic aperture radar

- Unaffected by atmosphere, light and cloud.

- Growth stage – improve application timings

- Green Area Index – tailor nitrogen applications

- Leaf Area Index – leaf area measurements

- Biomass – above ground biomass fields yield predictions

- Yield predictions – informs crop spend decisions

Badgers Dell ×

Area: 20.4 Ha

Leaf Area Index: 1.8

Biomass (t/ha): 0.8

Green Area Index: 1.8

Growth Stage:

(1.17-1.19) Eighteenth true leaf fully unfolded

Badgers Dell
20.4 Ha

Map data ©2019 Goo

AgSpace

Nutrient planning

Intelligent nutrition

- Nutrient rulesets developed by AgSpace ensure best practice across multiple markets.

- Decimalised soil indices provide more accuracy to recommendations.

- Optimise fertiliser inputs – environmental and cost impacts

- Reduce nutrient variability across fields and farm, improve performance

- Reduce yield limiting factors and risk

- Quickly calculate product totals for ordering

Soil indices improve

Targeted nutrient applications have led to:
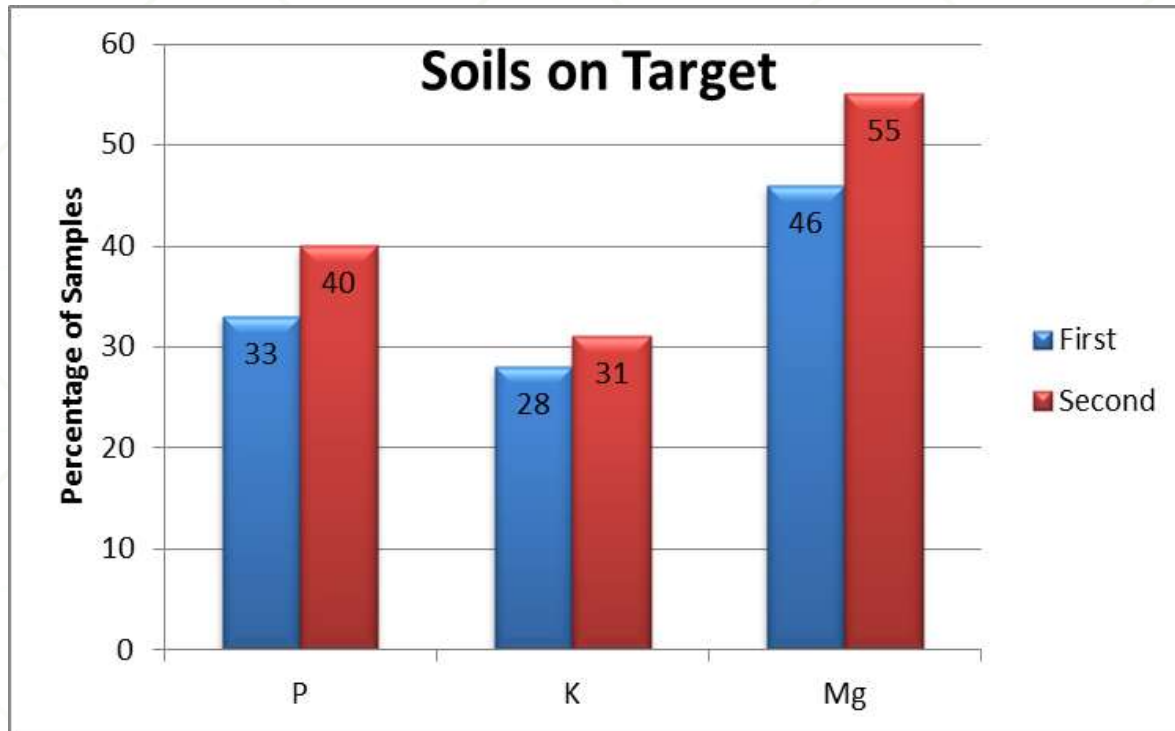
Increased soils at target indices

- Where soils below target:

- 0.51 index increase for P and 0.45 increase for K.

- Where soils above target:

- 0.62 reduction for P and 0.63 reduction for K.

AgSpace

On farm improvements

Phosphate Index 2013

Phosphate Index 2019