

Hummingbird Technologies



High resolution application maps for your fields in <24h

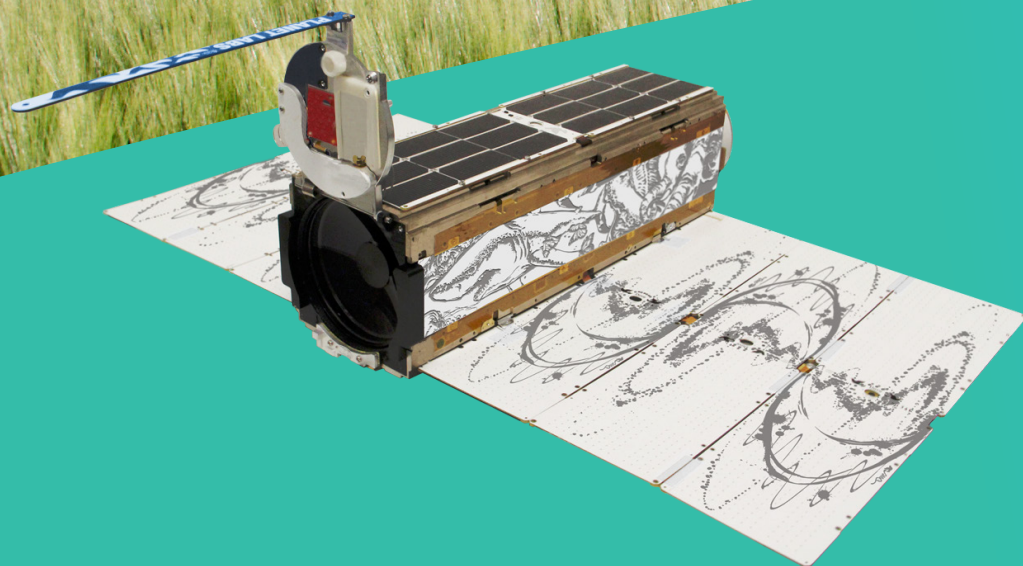


Why us?

At Hummingbird Technologies, we enable farmers and agronomists to gain a detailed understanding of their crop at a high resolution in a very short space of time. Our custom-built, cutting-edge technology uses the most advanced techniques available to deliver insights on crop health tailored to the exact needs of the farmer. Through our web and mobile platforms, we make application maps available to farmers less than 24 hours after a flight and at a price that is accessible for long-term, sustained analysis. Our technology enables faster and better decision making that allows you to optimise your farming inputs in real time.

What really sets our technology apart is our range of crop management tools, which provide detailed insight into how crops are growing to make more informed input decisions on crop health to enable precision agriculture and accuracy in yield forecasting. We have developed our own platform to target your needs, with a mobile app that supports crop walking alongside a website containing downloadable maps at the click of a button.

We have flown over 5,000 flights across 100,000 hectares for farmers and agronomists to evaluate the health of their crops, helping them to make informed decisions with greater accuracy.



How do we do it?

Our end-to-end process takes less than 24 hours and is driven by proven and proprietary algorithms.

1. DATA COLLECTION



2. CLOUD-BASED PROCESSING

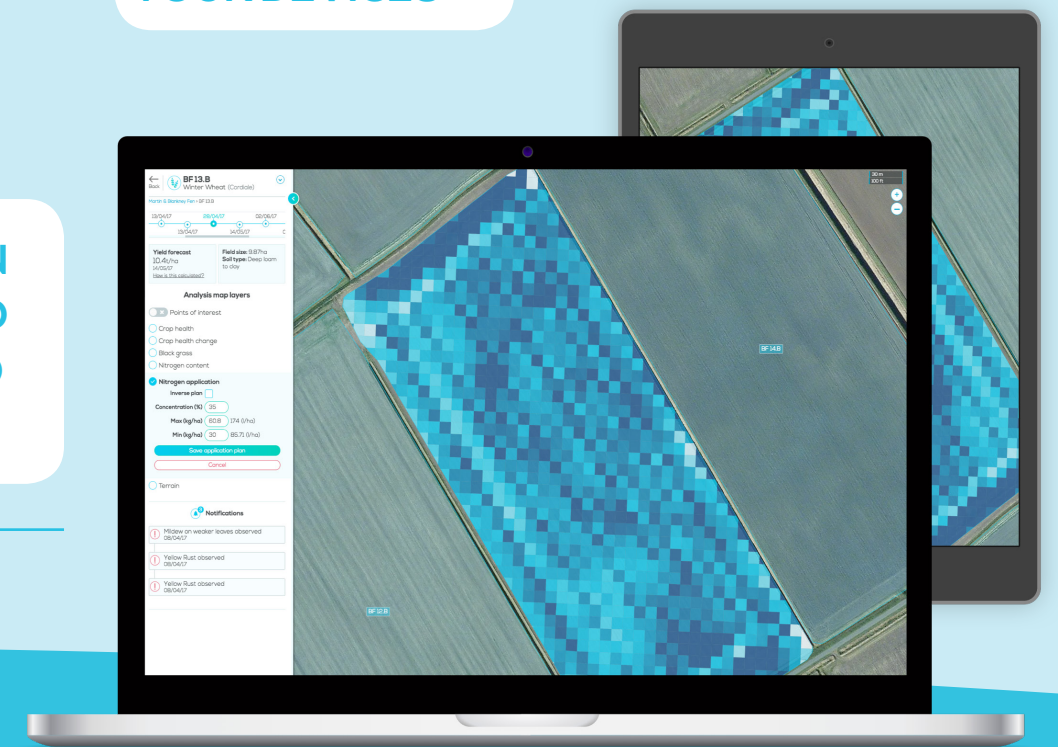


3. IMAGE & DATA ANALYTICS



- Nitrogen Application
- Crop Health
- Biomass & Health
- Disease Risk
- Soil Map & Historic Yield
- Corrected Image
- Raw Image

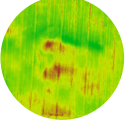
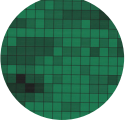

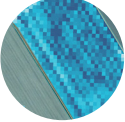
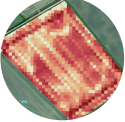
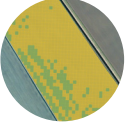
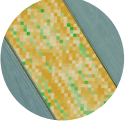


4. AVAILABLE ON YOUR DEVICES



5. APPLICATION FILES PLUGGED STRAIGHT INTO TRACTOR...

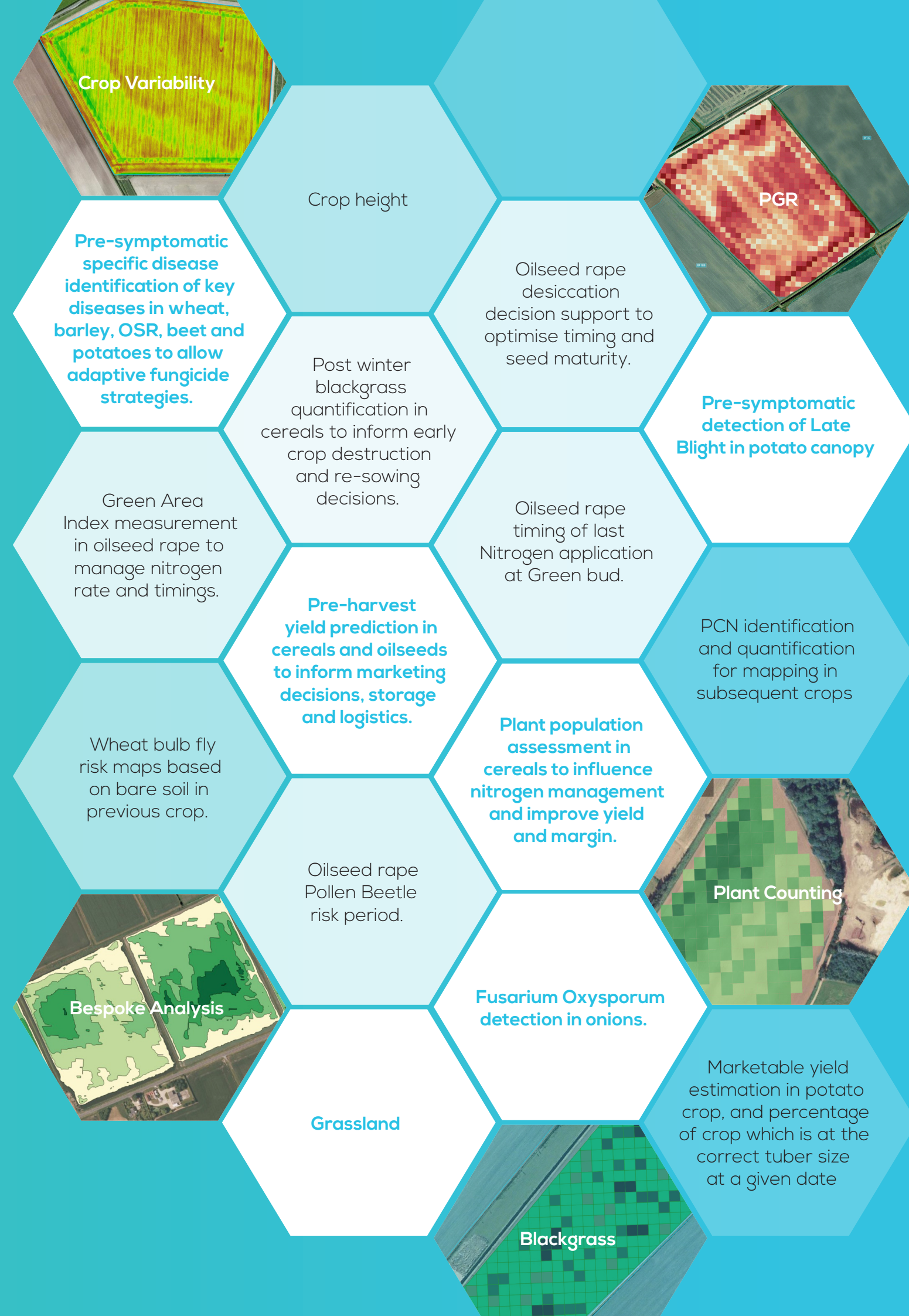
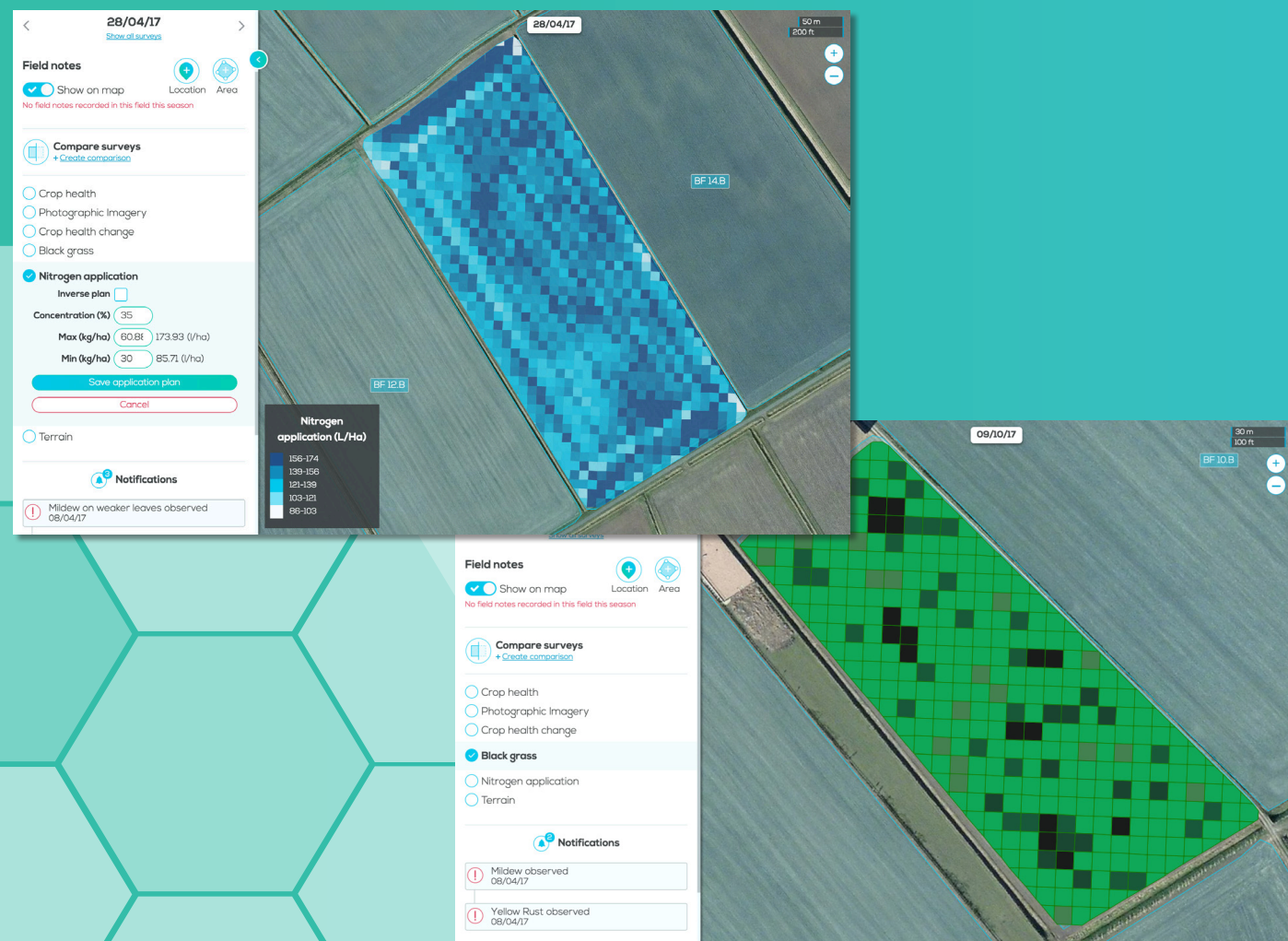
...the outcome is that farmers have maps as shapefiles to plug straight into equipment.

How can Hummingbird's technology help you?

PRODUCT		DESCRIPTION	BENEFITS	Wheat	Barley	OSR	Sugar Beet	Potatoes
	CROP VARIABILITY MAPPING	Map showing differences in the rate of development within a crop	Highlight problems such as pH, drainage, compaction, nutrition, weeds, or pests (soil and foliar), nematodes, other soil pests, and compaction	✓	✓	✓	✓	✓
	BLACKGRASS CROP DESTRUCTION	Blackgrass crop destruction maps in winter cereals in late May	Prevent seed return from herbicide resistant blackgrass	✓	✓			
	GRASSWEED MAPPING IN BREAK CROPS	Identify zones of highest grassweed population	Identify areas of high grassweed pressure in break crops to ascertain where additional residual herbicide application will be needed in the following cereal crop			✓	✓	
	VARIABLE RATE NITROGEN MANAGEMENT	Match nitrogen application to crop requirement	Optimise crop performance and nitrogen investment	✓	✓			
	VARIABLE RATE LATE SEASON GROWTH REGULATORS IN CEREALS	Variable application maps based on lodging risk & growth rate	Enable targeted use of late season PGRs to avoid over or under application	✓	✓			
	SCLEROTINIA DECISION SUPPORT MANAGEMENT	Reporting on sclerotinia risk in relation to crop flowering status	Reduced fungicide usage, sclerotinia infection and subsequent yield loss.			✓		
	DESICCATION ZONING FOR CEREALS AND OIL SEED RAPE	Desiccation requirement zoning map	Produce maturity map to target cereal fields with un-even maturity	✓	✓	✓		
	PLANT COUNTING	Map illustrating plant population across a field	Inform re-drilling decisions in sugar beet and potatoes				✓	✓
	YIELD PREDICTION TOOLS	Assessment of rate of canopy development	Optimise late sugar beet harvest lifting schedules				✓	

Research & development pipeline

At Hummingbird, our subscription customers also benefit from the following products that are still in developmental or Beta form.

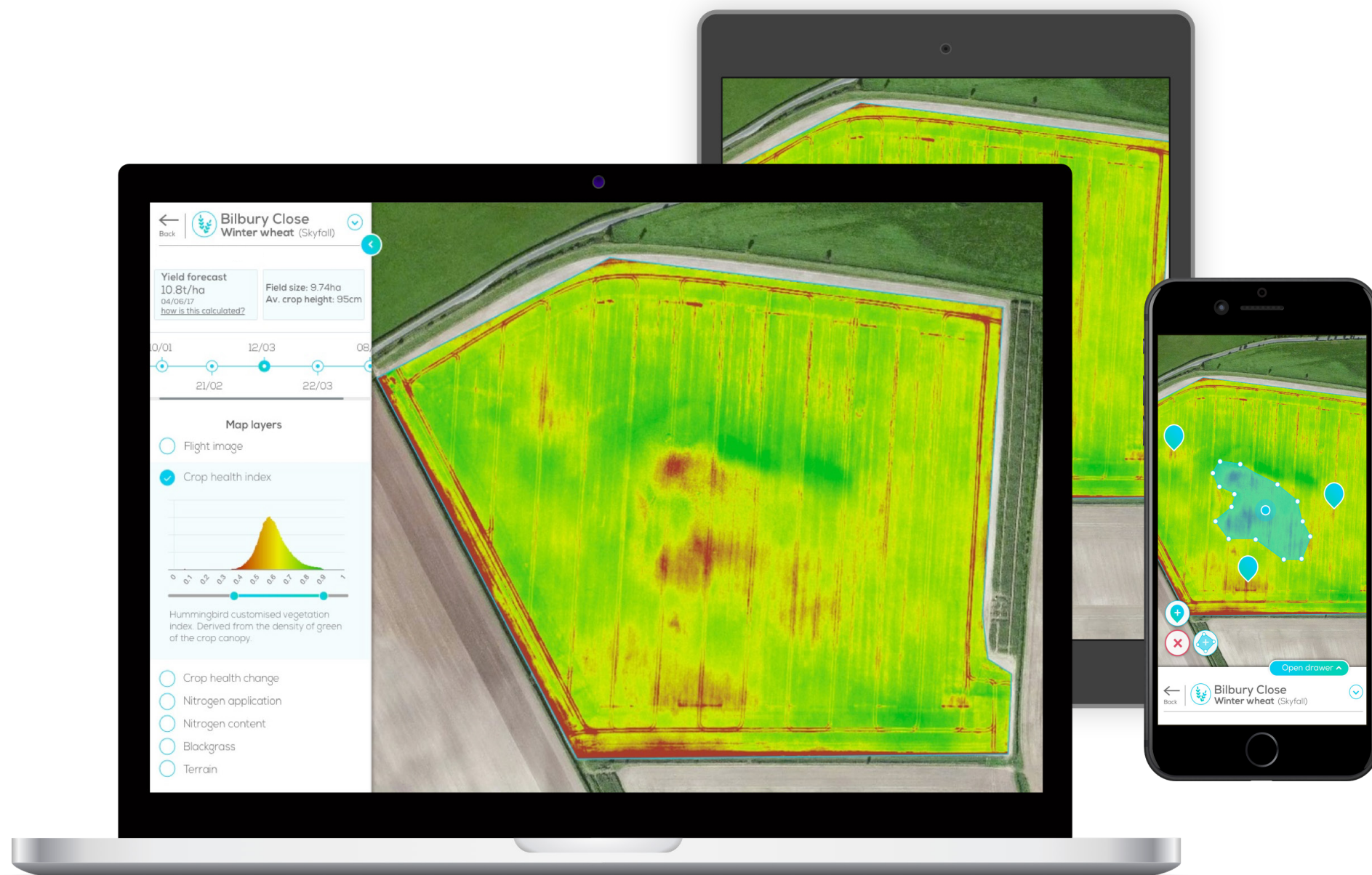


The Hummingbird Platform

Our expert team of agronomists, software engineers and big data experts, combined with the backing of large agri-businesses and leading academic universities, provides Hummingbird with the dynamic tools to drive the next generation of precision agriculture. Once a flight has taken place, our algorithms work behind the scenes to deliver exceptional insights into crop health and decipher hidden patterns in a field.

BENEFITS INCLUDE:

- Actionable intelligence that is ready to view on our mobile and web-based platforms just 24 hours post flight.
- Reduction in the need for manual, point-to-point data collection, saving time and money by enabling a targeted response once a crop issue is identified.
- Continual updates of the weather and yield allows for real time analysis and fast reactions to changing conditions, so an appropriate course of action can be taken.
- Data collection via multiple flights throughout the year, as well as the ability to superimpose historic data into the system, enables trends to be mapped over time so more accurate analysis is produced - allowing actions and their subsequent results to be monitored.



What's next?



Our specialists have a consultative approach, and will provide a fully comprehensive review of your needs and how Hummingbird Technologies can best serve them.

Together we will decide a flight plan and schedule dependant on the specific requirements of your crop and growing cycle. You will be guided through the on-boarding process, and alongside your agronomist, shown how to access and analyse the data provided once a flight has taken place.

We take pride in the ongoing support that we give to ensure that every farmer we work with gets the very best out of our product, and in turn provides data that makes the accuracy and efficiency of our technology increases with every flight.

FAQs

I'm near a road/building – can you still fly?

The drone must remain no more than 500m away and no higher than 120m from the pilot, and the pilot must maintain visual line of sight on the drone at all times.

The flight must be safe, and therefore no closer than 50m to anything that we do not have permission to fly near, and no closer to than 150m to any "Congested Areas".

Are your pilots insured?

All our pilots are fully insured both privately and as part of the business. They are all CAA qualified, and attend specific training with our Head of Operations.



What happens if it's raining/cloudy/windy?

There are occasions when we are not able to fly due to adverse weather conditions. We will always aim to reschedule the flights for the soonest clear day after a poor weather day.

What happens to the map data for my farm/ who owns it?

We do not sell your data to any other business. We do however anonymously use your data to feed into the machine learning to continuously improve and build on the services we provide.

Does your service cover all crop types?

We currently cover Wheat, Barley, Oil Seed Rape, Sugar Beet and Potato. We undertake a number of R&D projects annually with other crops as well, to enable us to continue to build and expand our portfolio.

Get in touch.



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