



AI for Earth Grantee Profile

Agrimetrics

Accelerating innovation in agri-food by linking data

Summary

The agri-food sector is one of the least digitized industries in the world, with many barriers to collecting, sharing, and using data. Agrimetrics was founded to accelerate innovation in the agri-food industry by connecting data and thus enabling advanced analytics and AI. Their goal is to help agri-food businesses produce food more efficiently and sustainably. As a long-time Microsoft Partner, Agrimetrics uses Microsoft Azure technology to power an agri-food Data Marketplace. This Data Marketplace lets data providers, from farmers to global corporations, market and manage their data, and helps data consumers, from researchers to businesses and government organizations, to find and use that data. Agrimetrics is now working with the AI for Earth program to forge new collaborations, such as with other AI for Earth grantees, and extend its capabilities to deploy innovative, sustainable, and scalable solutions to environmental and agricultural problems around the world.

Linking data to speed up innovation and power AI

“We have built a marketplace for food, farming, and environmental data,” says Richard Tiffin, the Chief Scientific Officer of Agrimetrics. “Data owners are incentivized to add their data because they can generate revenue and identify new partners. Meanwhile, we make this data more accessible and appealing for data consumers through pre-linking, improving visibility and providing it in an analysis-ready and usable format.

Founded as a collaboration between academic, industry, and UK government organizations, Agrimetrics works to connect the vast amount of data across the agri-food industry; it is also pioneering the use of AI and advanced analytics in the sector. Since 2019, Agrimetrics has engaged with Microsoft as a partner to accelerate its work of connecting researchers and organizations with data—most recently through the Microsoft AI for Earth program.

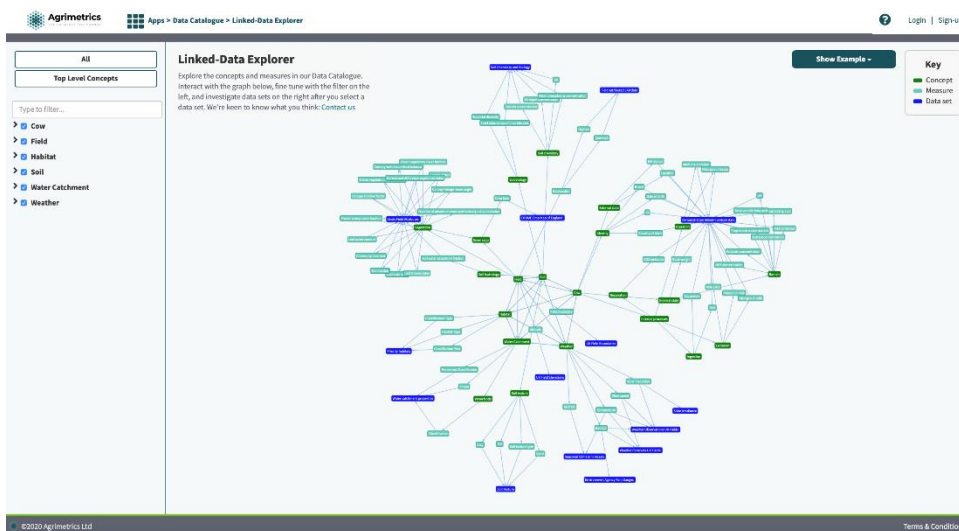
Removing barriers to data-driven innovation in the agri-food sector

“What really resonated with me when I was talking with the AI for Earth team was our shared ambition to make data more easily accessible; we both recognized that data is the key to overcoming so many challenges,” says Tiffin. For the agri-food sector, that means breaking down the barriers to using and sharing data.

A huge spectrum of data is relevant to food and farming. This includes data from remote sensors like satellites, observations from farming machinery, climate and ecological data, and farmers' own inputs into management software. Traditionally, many organizations have been unable to connect the full spectrum of data required to provide them with a comprehensive view. For example, an organization may use satellite and climate data to predict the likely emergence of a crop disease; however, without accurate insights about specific fields, its predictions will not be useful to individual farmers.

**“We estimate that our Data Marketplace reduces the data processing time for some research projects by 50 percent, enabling innovative solutions to be developed and brought to market much sooner.”—
Richard Tiffin, Chief Scientific Officer, Agrimetrics**

Through its Data Marketplace hosted on the Microsoft Azure cloud platform, Agrimetrics works to remove those barriers by helping data owners and producers to manage and monetize their data, and by helping researchers and other consumers find and access the data they need. AI plays a key role in the function of the Marketplace, finding links between different datasets. For example, a query on “soil” can bring up results for satellite-derived analytics, crops, historic and forecasted weather, cultivation methods, and surveys of invertebrate numbers, all from different data suppliers—and all of which may be relevant and useful to questions regarding agriculture, whether from farmers, researchers, or other organizations. By linking the datasets in advance, Agrimetrics estimates it reduces the data processing time for some research projects by 50 percent, enabling innovative solutions to be developed and brought to market much sooner.



The Linked Data Explorer allows users to explore Agrimetrics' Data Marketplace through real-world concepts and visualize the connections between them, making it easier to find the data to address real-world issues. [Image credit: Agrimetrics]

Scaling data analysis services from local to global

As one of four Agri-Tech Centres funded through the United Kingdom's Innovate UK program, Agrimetrics began with a core mission to catalyze innovation in the UK agri-food sector. However, with the United Kingdom importing at least 40 percent of its food, international supply chains are important to consider as well. And even with that consideration aside, Agrimetrics understands how important their services could be for people in countries all over the world and has an ambition to work on a global scale. Tiffin says, "The opportunity for improving agriculture is greatest in some of those less developed countries, and if we can bring some of the technology that we know is available in the developed world to those countries in an effective way, I think the impact that we'll have on global food challenges will be immense."

One such project outside the United Kingdom, for example, was to build a tool to predict the timing and yield of crops in West Africa. Having more reliable expectations for crop production will reduce the financial risks across the supply chain, from the farmers themselves up to the eventual retailers in different markets, such as in the UK. To do this, Agrimetrics made use of earth observation data from Airbus, weather data, and local data



By linking datasets related to crop growth, Agrimetrics built a solution to predict the timing and yield of crops. [Photo credit: Agrimetrics]

on crops to build predictive growth models for different types of crops. With Azure AI technologies, the Agrimetrics solution can analyze the earth observation data to identify different types of crops and their status in real time. The real-time status monitoring and predictive modeling together enable better care for the crops and more sustainable production and sourcing. Additionally, through the processing that Agrimetrics does on the data it hosts, it produced a set of analysis-ready synthetic aperture radar data that makes it easier for others in the industry to produce solutions as well.

Making connections among people as well as data

Although using AI-driven analytics to make connections among data is the basis for Agrimetrics' work, what's important is not the linked data itself but what it enables: innovative solutions to agricultural problems. To find these solutions, people and organizations need to be connected with that data and with each other. Partnering with Microsoft, first through the AI for Good program and now with AI for Earth, has proven very beneficial to Agrimetrics in that respect. "I must say we feel at home both with the internal AI for Earth team at Microsoft but also with the grantees," says Tiffin. "I came to the summit last year, and I just loved it, I really felt as if things were resonating. What we're trying to do with our AI for Earth relationship is to maximize the connection we have with that group of people." For instance, one grantee might be working on wildfire analysis and prediction and have plenty of data for vegetation in wilderness areas and how that affects wildfire spread, but lack information on farmed areas, which Agrimetrics is positioned to provide.



*Richard Tiffin, Chief Scientific Officer of Agrimetrics, speaking at a conference.
[Photo credit: Agrimetrics]*

Another aspect of connecting with different grantees through the AI for Earth program is the opportunity to help them turn their research work into sustainable business opportunities. "Agrimetrics is in part a vehicle—and this is partly why the government set it up—for translating really great science that goes on in universities into something that works in a business context and in practice," explains Tiffin. Often in academia, the online tools and solutions developed through research projects are necessarily abandoned when grant funding ends, or perhaps do gain continued support from the university but not at a commercially scalable level. Agrimetrics works with researchers to help them build solutions that can be easily transferred into a production environment such as Azure and commercialized, so that the researchers' work can continue to benefit both the researchers and the global community.

"Agrimetrics is in part a vehicle for translating really great science that goes on in universities into something that works in a business context and in practice."—Tiffin

Working with Microsoft through the AI for Earth program also gives Agrimetrics its own opportunities to expand and extend its mission. The same datasets Agrimetrics hosts in its Data Marketplace on Azure could be offered at different resolutions and at different price points for different organization and customer types.

Agrimetrics can also extend data and analysis from local or regional to global scales, for example applying Microsoft algorithms for harmonizing US-focused satellite observation data to European-focused data. Similarly, Agrimetrics can take its dataset associating synthetic aperture radar data with imagery of individual fields—currently for the United Kingdom, but which could be extended to a global scale—and make that linked data available through an API so that researchers can easily get just the data and imagery they need for their location. Tiffin says, “We’re trying to tackle some of the core problems that the AI for Earth program is trying to look at. As a business, we’ve landed naturally with kindred spirits.”

About Agrimetrics

Agrimetrics provides, connects, and analyses complex data to drive greater productivity for agri-food businesses and to deliver food sustainably. The company aims to help solve the global challenges of economically, ethically, and environmentally sustainable food production through the use of data, analytics, and artificial intelligence. Agrimetrics is the food and farming sector's Data Marketplace. The Marketplace is underpinned by the latest linked-data technologies, which makes connecting disparate data simpler and quicker. This means data consumers can access pre-linked and analysis-ready data, significantly reducing data transformation time and costs. Agrimetrics is ISO-27001 accredited and operates an equitable revenue share model, meaning data owners can safely share and monetize their data.

Agrimetrics is one of four Agri-Tech Centres set up by the United Kingdom government to inspire new business, greater efficiency, and improved profits for the UK agri-food sector. Its four founding partners of Rothamsted Research, University of Reading, NIAB, and SRUC provide Agrimetrics with access to world leading expertise and capabilities in data science, smart analytics, bioinformatics, translational research, and knowledge exchange in soils, crops, livestock, food, and sustainability.

Resources

Websites

[Agrimetrics](#) home site

Press

Richard Tiffin, Kate Rosenshine. “Interconnected data for an interconnected planet.” Microsoft Industry Blogs – United Kingdom. Microsoft. March 12, 2020. <https://cloudblogs.microsoft.com/industry-blog/en-gb/cross-industry/2020/03/12/interconnected-data-for-an-interconnected-planet/>