

AGRICULTURE ANALYTICS ENGINE HELPS FARMERS GROW BETTER CROPS

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Australian crop health monitoring agtech startup, FluroSat, is helping farmers grow better crops, and grow them more efficiently – both in Australia and internationally.

FluroSat uses state-of-the-art crop models, combined with remote sensing imagery and local weather data, to estimate crop performance in season and suggest precision fixes to improve the grower's triple bottom line.

FluroSense, the analytics engine that runs these optimisations, connects to farm management systems and weather stations and sources satellite or aerial imagery.

FluroSat takes the information from the remote sensing imagery and translates it into actionable data that farmers can use – in real time – to make informed decisions about crop management and crop health.

Based on the difference identified in spectral satellite or aerial imagery, FluroSense can identify lack of nutrients, irrigation failures or development of crop stress, such as pests or disease. An agronomist or a farmer using FluroSense can then tailor the platform's machine learning algorithms to better identify crop stress by labelling the stressed regions identified in their fields.

'The crop models we have access to are world-recognised and best-in-class. We are using remote sensing and machine learning to tailor these models' insights to specific farms, making the science immediately actionable,' says Anastasia Volkova, FluroSat's co-founder and CEO.

'Our online platform, which combines crop growth models with imaging technology and weather information, gives us an advanced level of



FluroSat uses a drone with a hyperspectral camera to scan crops and collect data.

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Anastasia Volkova, Co-founder and CEO, FluroSat

innovation and problem solving,' she explains. 'For example, we can see the difference between water stress and nitrogen deficiency stress in a crop, detect hail and frost damage, and learn the difference between a diseased outbreak and pest infestation. Often our platform can detect the first signs of these stresses before they are noticeable to a human eye.

'With this technology, growers can achieve up to 10-25 per cent better yields, while using 30 per cent less fertiliser and 35 per cent less water,' says Volkova.

Farmers, the environment, and the bottom line will all benefit from less water wastage, less pesticides, and the controlled use of fertilisers.



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Inventing the future

The FluroSat story began in 2016 as part of an 'Inventing the Future' study program at the University of Sydney, where Volkova was an aeronautics PhD student. A couple of years down the track and supported by Australia's agtech startup ecosystem, the ideas first put together during this program have been transformed into a company ready to take on the world.

The FluroSat platform is now in use in areas across Australia and the United States, and trials have begun in South America and Europe.

'Broadacre crops such as cotton, wheat, maize, canola, barley and sugar cane are where FluroSat is now primarily being used. We have demonstrated that the technology is also useful for tree crops such as macadamias, almonds, avocados and citrus fruits,' says Volkova.

The unique Australian environment and ecosystem provided the right background for FluroSat to develop these innovative tech solutions. 'The hostility and harshness of much of the natural environment here in Australia is challenging, so if you can make a product or solution work here it's likely to work everywhere,' she says.

Strong research and scientific background

Australia has a positive collaborative system and practical approach that are ideal for developing products and solutions, Volkova says. 'There's a strong research and scientific background here, a lot of R&D, and a lot of investment. Networks and links between researchers, research institutions, universities and startups are good, and there are investors who support startups.'

She says that FluroSat has been fortunate in having the opportunity to work with startup incubators and accelerators, both in Australia and the United States.

The company's HQ is located at Sydney-based incubator, Cicada Innovations. Founded by four of the country's top universities – the University of Sydney, the University of New South Wales, the University of Technology and the Australian National University – Cicada supports science-based innovation by providing startups with business support and access to advisors, industry and research partners.

FluroSat also participated in a program with a US foodtech accelerator, FS6, based in Silicon Valley. The company is now setting up a US office to increase its reach into the American market.

'This experience gave us an opportunity to be closer to the US agricultural system and customers,' says Volkova.

A closeness between the research community and farmers

Volkova believes the future of agriculture is in artificial intelligence–assisted farming: 'Daily insights at the paddock level are gathered from satellite and weather data, and sent to farmers every morning.'

Farmers in Australia are very much aware of scientific approaches that could help with their most difficult problems, she remarks.

'There's a closeness between the research community and farmers in this country. There has to be. Farmers have to be aware of state-of-the-art scientific solutions to their problems to survive the difficult environmental conditions here.'

A number of organisations in Australia have been set up to help innovation in the agricultural sector. 'The Cotton Research Development Corporation (CRDC) has a history of supporting research – they look at growers' problems and seek scientific and technological solutions,' Volkova says. The CRDC is one of Australia's 15 Rural R&D Corporations.

In late 2018, FluroSat successfully bid for a three-year Cooperative Research Centre (CRC) project with partners Aglink, Agworld, CSIRO, McGregor Gourlay Agricultural Services, PCT Agcloud and Pursehouse Rural.

The project will leverage the work of FluroSat and its partners to investigate smart tools for agronomic crop insights using machine learning and artificial intelligence. The aim is to create real-time, predictive, actionable insights to maximise Australian farm productivity.

FluroSat was also part of an Austrade-led Australian delegation to the US World Agri-tech Innovation Summit 2018 in San Francisco where senior industry leaders, entrepreneurs and investors from around the world met to discuss market insights and latest developments. FluroSat will again participate in the Austrade-led delegation to the 2019 Summit.

'The Australian contingent showcased some of the best of Australian agtech,' Volkova says.

'There were prominent areas of strength demonstrated by Australian agtech companies at the World AgriTech Innovation Summit in the US in March. The representatives of the contingent were well received by the local ecosystem, and exchange of learnings and experience left both US and Australian sides very satisfied and open to future potential collaborations.'

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