Success Story

Improving Precision Agriculture with RapidEye Imagery

Farmers Edge uses RapidEye imagery to provide detailed crop information to help growers reduce input costs and increase yields

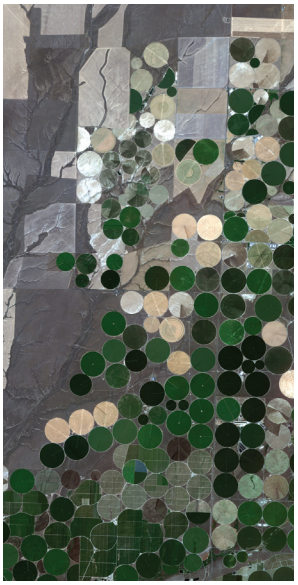
The successful management of crops is no easy feat. It involves collection and interpretation of detailed field-level information to assess plant health and soil conditions, and the careful management and application of crop protection and nutritional inputs. All of these activities require time, money, and expertise. To be profitable and sustainable, growers face a number of challenges.

Challenge

Crop management requires site-specific data in as close to real-time as possible. This is especially true during the growing season when it is necessary to detect and diagnose crop problems. To get this information, agronomy managers and advisers often rely on satellite imagery. However, most satellite systems such as Landsat do not provide the required revisit times and field-level detail to ensure that high-quality data is readily available.

Satellites imaging agricultural areas need to compete with cloud cover to acquire usable imagery. Satellites with fewer and fixed revisit cycles allow no flexibility to deal with unfavourable weather conditions. In the case of Landsat 8, one would have to wait for 14 days for the next opportunity to image an area.

A vast amount of imagery can be collected during a single growing season. Storage and processing, as well as discovery and access to the imagery, then become an issue. For users to access imagery in a timely manner, it must be downlinked, and processed on a daily basis. The capital and operating expenses to build and maintain a system to serve this need can be immense.

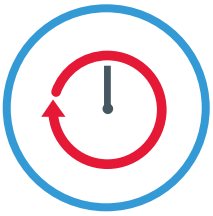


Washington State, USA, July 2013

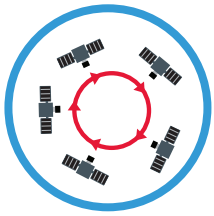
Solution

Precision Edge & Monitoring Programs For Agriculture

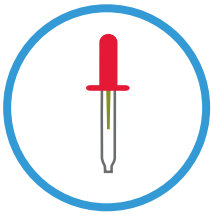
In 2011, Farmers Edge developed Precision Edge, which has been using RapidEye imagery since 2013. Precision Edge is a precision-agriculture system that provides in-field information for site-specific management of crop inputs including fertilizer, water, and seed.



To provide crop management consultants and other customers with timely access to in-field information, Precision Edge leverages data from the Planet Monitoring Programs over several areas world wide.



Planet uses the RapidEye constellation of five satellites, in conjunction with their growing flock of PlanetScope satellites, to collect high-resolution imagery at the most advanced revisit rate over major agricultural areas around the world throughout the growing season.



Precision Edge then uses this imagery, along with archived imagery from previous seasons and Landsat 8 imagery, to extract in-season and historical field information for the consultants and their farmers to evaluate crop health and identify issues before they impact yield.

The high-frequency revisit schedule and collection capacity of the Planet constellation of dozens of satellites ensures that there will be a robust collection of high quality and cloud-free imagery regularly available. Within the 2014 growing season, Planet collected over 37 million square kilometres of imagery over 33 US states and 5 Canadian provinces, including monthly coverages of the US Corn Belt from May through September. Additionally, Planet collects imagery of the Earth's entire landmass.

After collection, Precision Edge uses the high resolution, multi-spectral imagery to assess the in-field variability of crops. This is possible by calculating vegetation indices, using the red-edge band, which is(?) unique to the RapidEye satellites.

The Planet imagery collected over agricultural areas, in addition to Landsat 8 imagery, is available to download via the Planet API shortly after acquisition. All Planet imagery is stored and accessible in a ready-to-use format via Planet's cloud-based platform.

Results & Benefits

End users of Precision Edge benefit in a number of ways. With a clearer picture of crop status, growers save time and money by applying fertilizer and crop protection exactly where fields need the most attention.

With the information available to users through Precision Edge, customers now receive high-quality, timely, crop-relevant information without the added expense of additional sources of information.

In-season crop diagnostics are now possible within a period that allows growers to take immediate action to correct crop-related issues before they affect yields.

A hyper-frequent revisit schedule means that the Planet constellation captures more usable, cloud-free data.

With a higher resolution than Landsat 8, Planet imagery provides Farmers Edge with sufficient field-level detail to serve growers within the Precision Edge program.

Planet's best-in-class automated pipeline and online tools help you find and access data in near real-time, enabling faster decision making. Our state-of-the art API seamlessly integrates into your applications and workflows to allow users to view AOIs as often as needed during the growing season. All of this timely data is part of Planet's extensive 7-year archive of imagery.

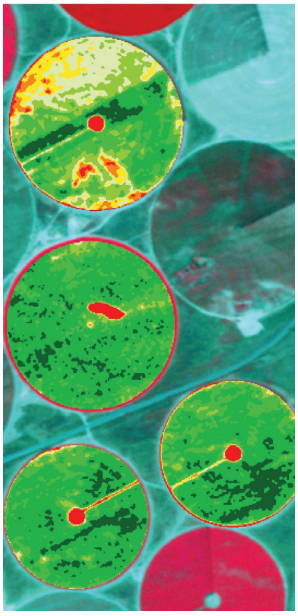
Global Program Expansion

Precision Edge was originally launched to service North America. However, after success in this area, the service now includes North America, South America, Russia, and Australia.

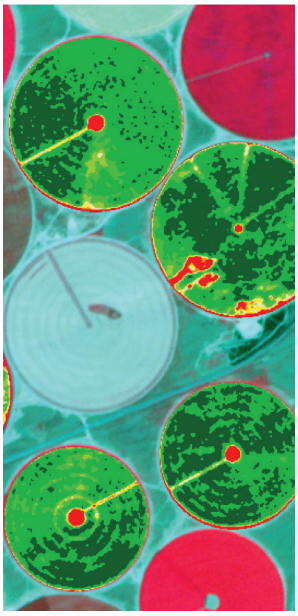
The global coverage provided by Planet allows Farmers Edge to provide its customers with consistently high-quality information on their crops, now and into the future.

Current program locations

Field zoom time series in Oregon. Relative chlorophyll content is depicted in four fields. Green tones represent high chlorophyll levels. Red and yellow tones represent low chlorophyll content.



June 2014



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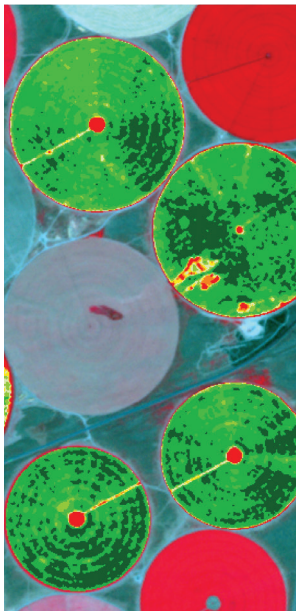

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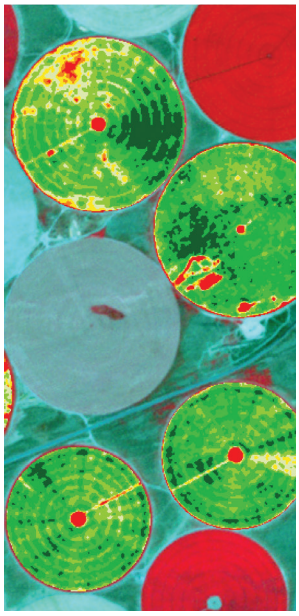

September 2014

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