

Agriculture: Geo-Information Based Management Solutions

Up-To-Date Crop Information for Better Production Management and Monitoring of Agricultural Areas



Timeliness and accuracy of information is key to success in agriculture. Satellite imagery, mapping services and GPS are becoming commonplace throughout the industry. RapidEye with its own constellation of five satellites is uniquely positioned to provide critical information to agricultural

customers. RapidEye's team of agronomists, remote sensing experts, software programmers and system engineers processes its satellite images to generate products and services for the entire agricultural sector. These are used to watch crop production, optimize fertilizer applications, improve logistics and monitor food safety and quality. RapidEye offers its products and services to customers worldwide. They range from wheat growers in the USA, crop insurers in Lithuania, wine producers in Chile, sugar cane millers in Brazil, grain traders in the USA to European government agencies. RapidEye is ISO 9001:2000 certified. This in combination with RapidEye's highly automated processing system guarantees customers a fast turnaround and the highest quality standards.

Frequent Agricultural Monitoring

The RapidEye constellation of five satellites has the unrivaled ability to image individual fields, counties, states or countries on a frequent revisit cycle. Customers can receive field-based information including **crop identification, crop area determination, crop condition monitoring, and growth stage determination** based on RapidEye's proprietary algorithms and data processing system. These services are useful for crop management and to monitor crops grown under contract. To meet the requirements of those who need crop information over wide areas, such as commodity traders, logistics planners, and food supply managers, RapidEye images over four million

square kilometers every day and is able to provide frequent, up-to-date and reliable analyses of crop status worldwide.

Government agencies on local, regional, state, national and international levels administer various kinds of programs related to agriculture. Many of these programs include regulations concerning uncultivated and agricultural lands, such as management restrictions or payments. The EU crop subsidy and US crop insurance programs are two examples. Administering and verifying these programs often requires regular monitoring of large areas at detailed levels, which makes RapidEye an ideal partner. For example, RapidEye can assist the involved agencies in **area and acreage determination, distance measurements, land use and crop type determination**, as well as up-to-date **status information** at critical times. These tasks are labor and cost intensive when performed in the field, but significant savings and efficiency gains can be achieved by using RapidEye's services.

Damage Assessment & Risk Management

The agricultural insurance and re-insurance industry often faces a critical lack of information when conducting damage assessments or evaluating and managing risk. In many cases, objective information about crop damage is inaccurate or not available when natural disasters like hail, floods or droughts occur. Additionally, information about the crop status before the damage occurred may be unavailable. The ability to monitor damaged areas quickly and compare the images with archived data allows RapidEye to provide

estimates about the spatial extent and magnitude of damages. RapidEye's services help experts in the field perform **damage assessments** efficiently, accurately, and with more transparency.

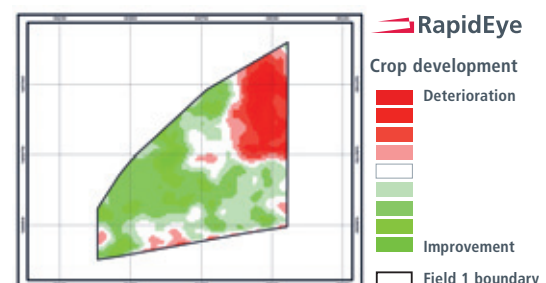


RapidEye is also able to provide entire solutions to support crop insurance processes: insurance application and acceptance, risk determination and damage assessment. By accurately locating the insured fields and analyzing the **risk exposure**, RapidEye helps lower crop insurers' risks and expenses, while enabling them to process claims with greater speed and ease.

Precision Farming Services

The RapidEye satellite system was designed to meet the needs of precision agriculture. It is the only commercial satellite system that acquires data in the red-edge spectral band, which provides specific information about the

Hail Damage Assessment



The map shows crop development (change in green leaf area) derived from 2 satellite images taken before and after a hail event.

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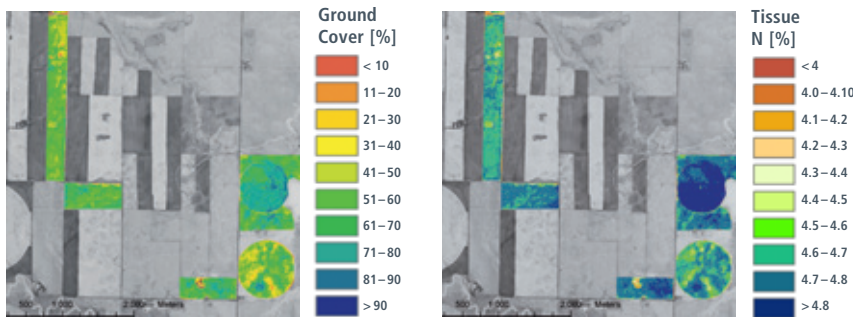
chlorophyll content and therefore **nitrogen (N) nutrition status** of the crops. This opens new avenues for in-season N management. N can be applied when and where it is needed resulting in less under- and over-fertilization, better quality and higher profitability. RapidEye's satellite image based estimates of relative biomass productivity in conjunction with soil color maps are key ingredients to creating **management zones**. They can be used as a base for targeted soil sampling and to

optimize variable rate fertilizer applications and seeding rates. Inseason monitoring of ground cover development and N-status enables growers to identify fields with anomalies at an early stage and to minimize yield loss. Harvest management zones allow for grain segregation according to protein content of cereals, optimizing sugarbeet harvest based on relative sucrose content or timing of wine grape picking based on canopy density. Ultimately, these services help growers increase

profitability by meeting the demands for specific quality traits that are highly sought after by the feed and food processing industries.

Agri-Environmental Services

In recent years, environmental standards and legislation have been introduced in many countries in order to prevent and minimize the environmental impact of inappropriate farming practices. Possible environmental consequences are land degradation, loss of biodiversity, or pollution of soils and water. In some cases, following environmental standards is tied to payments granted to farmers (**cross-compliance**). Verification of compliance is costly, time consuming, and difficult to implement in large areas. RapidEye can assist governmental agencies in compliance verification in cases such as land clearing restrictions or cultivation bans in buffer zones close to sensitive habitats or water systems. Additionally, compliance to early-season cutting prohibitions in sensitive grassland habitats can be monitored.



Example of RapidEye's Precision Farming Services: ground cover maps and tissue nitrogen (N) maps inform about the crop status

Our large international team of experts and partner organizations ensure that RapidEye fully leverages the capabilities of our own satellite system. RapidEye offers an unrivaled combination of advantages:

- > Customized industry specific solutions tailored to your needs for agriculture, forestry, environment, energy & infrastructure, security & emergency and spatial markets
- > Access to the broad knowledge and experience of our multi-disciplinary team
- > Quick, reliable delivery of services based on our satellite imagery in "near real-time"

RapidEye assists businesses and organizations with geospatial management information needs.

RapidEye – Your Innovative Partner For:

Geo-Information Solutions/Services

- > Analysis of customer requirements
- > Solution design, development, and integration
- > Training and customer service
- > Continuous delivery of management information based on processed satellite imagery

Satellite Imagery Products

- > Standard Image Products
- > Digital Elevation Models (DEM)
- > Large area satellite images (mosaics)