EOS DATA ANALYTICS

Satellite monitoring technologies for agricultural consultants

The recent development in the practical use of satellite monitoring and machine learning technologies has transformed the food production industry around the world. Farming of today is precision agriculture — eliminating guesswork, minimizing effort, reducing waste, cutting expenses, and maximizing productivity.

All of this and more can be easily achieved by using our digital precision agriculture platform, EOSDA Crop Monitoring. We've been working on this product a great deal — making sure that the expertise of EOSDA in remote sensing is backed up by the latest available technologies. And with years of experience in cooperating with agro-consultants, we are confident that the product will be of great help to them.

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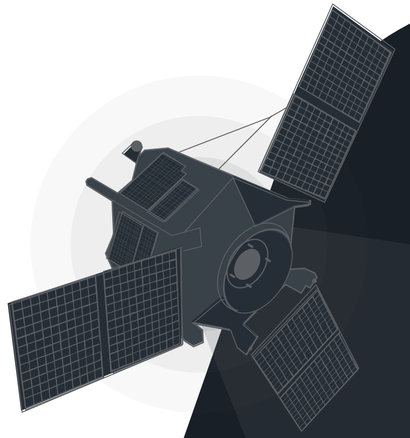
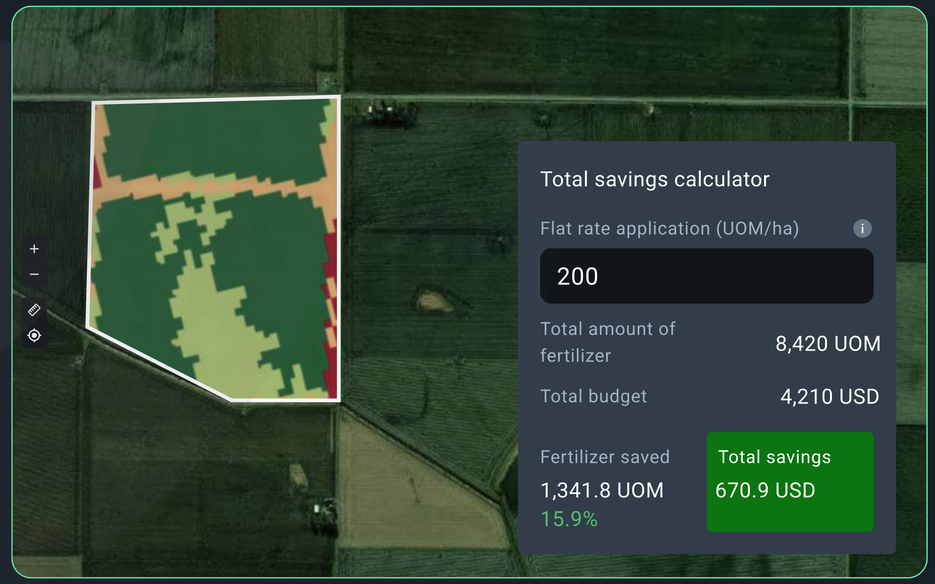
The functionality of EOSDA Crop Monitoring allows for making the interactions between the agri-consultants and their customers (farmers, insurers, agricultural cooperatives, input suppliers, among others) more transparent, which is a foundation of trust.

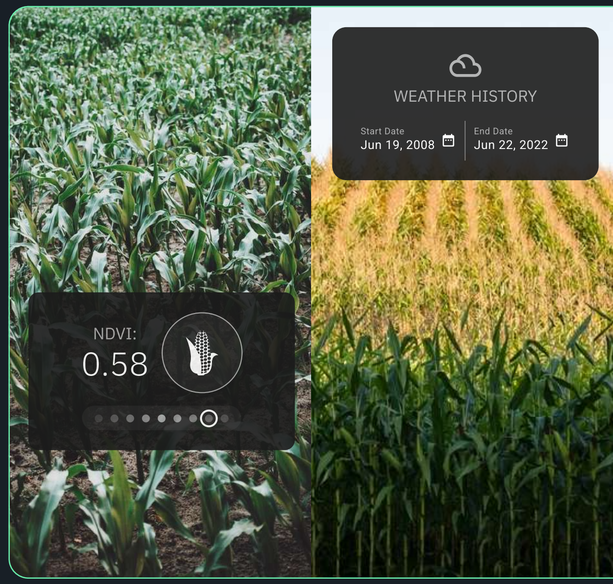




You can:

- Study field productivity trends and monitor crop performance
- Create precise maps for variable-rate seed & fertilizer application
- Get a hyperlocal 14-day weather forecast
- Access historical vegetation and weather data on any given field
- Receive notifications and alerts

and much more.



Agricultural consultants can benefit from using our data as via API access or as a White Label solution. Additionally, we offer a number of AI-powered custom solutions — developed by an experienced RnD team — to some of the most critical challenges of modern agriculture.

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How agri-consultants benefit

- Get historical data on fields' productivity to prove the product effectiveness (to show the difference before and after effect of implementation of recommendations to an end user).
- Ability to track remotely state of the crop with high frequency of update.
- You get a one-stop solution that can be used to monitor crops, create maps for VRA application of seeds & fertilizers, provide assistance to scouts, get a 14-day weather forecast and so much more.
- Access to crucial data on the market status for a particular region, country, or globally — key to attracting more customers.
- Enroll the partnership reselling program to expand the portfolio and reach out to new markets.
- Get historic and daily satellite images.
- Make well-informed decisions based on definitevely large samples of data.
- Simple, easy to use interface.

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Top features of EOSDA Crop Monitoring for agri-consultants

Weather monitoring

- Access to key weather parameters, including clouds, temperature, and precipitation on a daily basis. Additionally, access to crucial historical hyperlocal weather data going back to 2008. A 14-day weather forecast will give you enough time to prepare for unfavourable weather conditions and keep your crops safe.

Advanced vegetation indices

- With the help of vegetation indices available on the platform and by comparing their values with other data, such as growth stages or weather, it is possible to remotely track changes in the state of crops on a regular basis. Currently, there are 18 built-in indices and more can be added/created on request.

Scouting

- Regular scout trips to the fields are vital to the well-being of the crops. That's why one of the functions of EOSDA Crop Monitoring is to assist scouts by guiding them to the problem areas within the field through automatic detection from space. The mobile Scouting App makes the scout trips even easier, providing offline maps with problem areas, the ability to take snapshots and add them to the reports that can be generated on location containing all the important details. Scouts can be assigned directly on the platform or in the app, and the progress of scout tasks is easy to track online.

Field leaderboard

- An interactive tool for prioritizing fields that you own or tend according to how the crops are performing within them. The fields with the most negative vegetation index (NDVI) change will automatically be displayed at the top of the list. There are 7 other criteria according to which you can prioritize your fields and download the lists as a pdf or spreadsheets.

Field activity log

- This feature was designed to allow farmers keeping regular records of all of their field activities (fertilizing, tillage, planting, spraying, harvesting, and others) in one place. Not only that, the log is an interactive tool where you can plan activities and track their progress in real time (from day to day). The system automatically updates information in the log so you don't need to manually keep it going. Completed activities remain in the calendar as long as you are using the platform, with all the details which you can edit at any time.

Zoning

- Aligning with our sustainability goals, we've provided users with tools to reduce the waste of resources such as fertilizers. This is possible thanks to precision maps (vegetation and productivity) that show the field's variations in the fertilizer needs as accurately as possible. A field gets broken into a number of zones according to the variations measured from space. Variable-rate application of both seeds and fertilizers not only reduces waste, but also saves the growers money and increases the yield potential as well as profit.

Field monitoring

- Regular monitoring of crop health based on the data retrieved from satellite imagery analyzed using remote sensing indices.

Split view

- This tool has many uses, but the one agri-consultants will find the most interesting, is comparing the crop performance before and after recommendations are given. Basically, you can split the screen in half and compare the same field over different dates. This provides you with a definitive visual representation of how effective the recommendations are for a specific field.

Team management

- EOSDA Crop Monitoring offers you a convenient and safe solution that will help you manage all the efforts of your team members in one place: get a joint access to your accounts, provide your customers with full information about the state of the fields and your activities, regulate the access rights for each team member. Share only the necessary information with your clients, agronomists, scouts and other team members quickly and conveniently.

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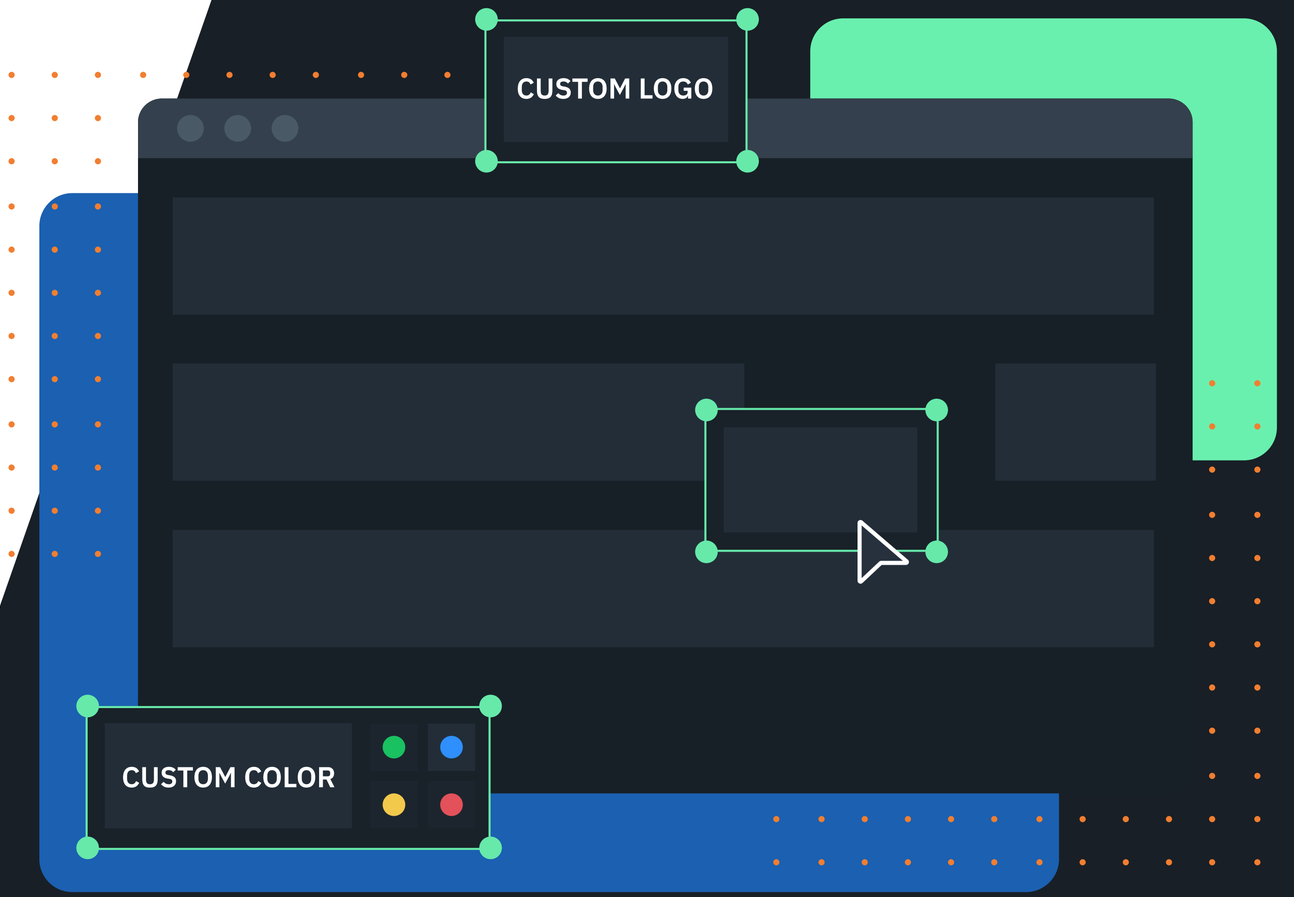
EOSDA Crop Monitoring White Label

We offer a ready product created specifically for growers as a White Label solution. You can use the platform on your own domain, under a logo of your choice, with color themes you prefer, along with other customizations. Also available is a Partner Management panel + a mobile app for crop scouting (Advanced WL option). You get to select the specific features you would like to be using. We will also assign a personal manager to assist you with every issue that might arise. The end result will be a fully customized product to answer your needs.



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EOSDA Crop Monitoring White Label

Field monitoring

- Regular monitoring of crop health based on the data retrieved from satellite imagery analyzed using remote sensing indices.

Weather analytics

- Hourly updates on the weather in the field's location, displaying such parameters as temperature, wind, humidity, and more. Historical data on temperatures and precipitation in the location available since 2008 and a hyper-local 14-day weather forecast.

Field leaderboard

- An interactive leaderboard that arranges all of the client's fields according to the latest changes in NDVI values directly related to crop health. It allows the field owner to react in a timely manner to any crop issues.

Scouting on web & mobile

- Automatic problem area detection provides scouts with leads — which areas within the field should be checked right away. The Mobile version has an offline mode, and allows scouts to take snapshots and generate reports right on the spot. Field owners can assign tasks to scouts online and monitor task completion from any location with an access to the internet.

Zoning

- Mapping of variations in vegetation and productivity within a field. The resulting maps can be used to perform variable-rate seed or fertilizer application, which is more cost-efficient and reduces waste.

Field activity log

- A convenient, interactive planner and manager of field activities where users can assign tasks to specific fields, monitor their completion, and more.

Data manager

- Allows you to import all the data about performed field activities directly from agricultural machinery to the Platform where you can manage it more easily.

Partnership program domain

- An advanced, convenient partner management admin panel on a separate domain.

Mobile app

- Perfect tool for scouts to use while in the field thanks to offline maps, instant report generation, and more. Supports snapshots for visual proof of crop issues to be included in the reports. Field owners get more control over scout tasks, assigning scouts via email, and monitoring the status of task completion directly in the app or on the platform.

Team management

- An interactive dashboard where you can manage a team of employees or members of a cooperative that are tending fields owned or shared by you. An owner can assign roles with different permission levels to other team members, allowing them to add or remove fields, create, edit, and close field monitor tasks, and more.

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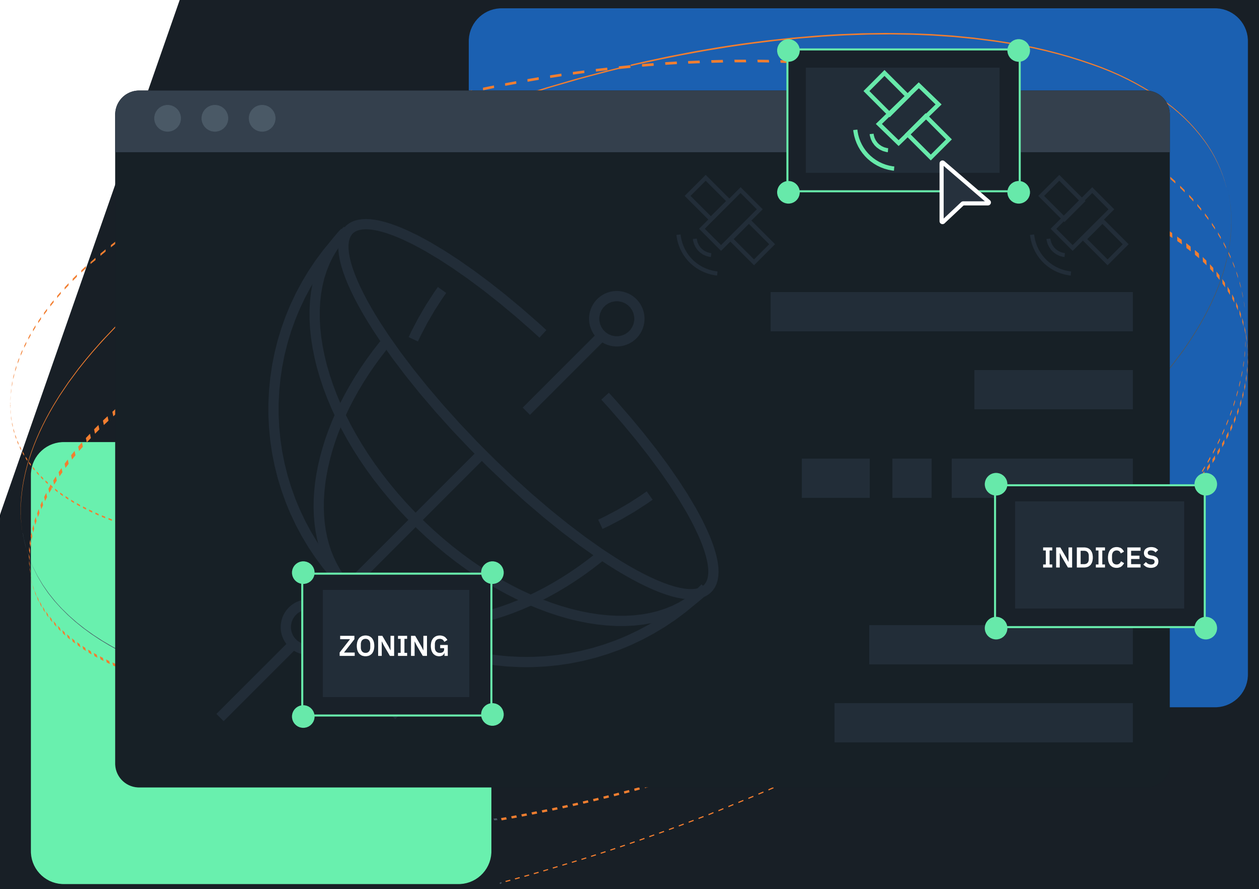
EOSDA Crop Monitoring API

One of the services we offer for agri-consultants is our EOSDA Crop Monitoring API documentation that provides access to data from regularly obtained satellite imagery, historical field and weather data archive, 14-day weather forecast, and more. These features can easily be integrated into third-party software as well as on a third-party website. The integration will add value to the software and the website alike.



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EOSDA Crop Monitoring API

Field satellite imagery

- Access to satellite images of the field with all the available indices (including NDVI, MSAVI, NDMI, and more). Custom indices can be created as well. The number of available bands depends on a satellite.

Scene search

- Essential function for adding fields to the system to enable crop monitoring and field data analytics. Links the field's location to the available satellite imagery.

Historical field trends

- Historical data on temperatures, precipitation, crop state, soil moisture, and more.

Point value

- Current and historical remote sensing index analytics (NDVI, NDMI, MSAVI, among others), showing crop development for a specific area between 10 and 500 meters.

Soil moisture

- Measuring soil moisture levels at both surface and root levels can generate important insights into how the crops should be treated in a specific field. Soil moisture data is available for most fields since 2015. By studying the historical soil moisture data, you can build trends to make better-informed recommendations.

Weather

- Access to historical weather data since 2008 for an area of interest within the 9×9 km grid and a 5-day weather forecast.

Crop classification

- Identification of the crop type growing in the field with an accuracy of up to 90%. The system combines satellite data retrieved from Sentinel-2 images with a 10-m resolution with ground data. You can make an inventory of crops growing on multiple fields at once, within a large region. The algorithm estimates hectarage/acreage and identifies arable land from nonarable.
  The feature is currently only available in Ukraine.

Zoning (variable-rate application)

- Allows you to divide a field into zones for variable-rate application (VRA) of seeds and fertilizers. Precise use of resources according to the needs of each specific area of the field lowers input costs and reduces waste, while boosting the field's productivity.
- Vegetation maps will identify areas with different levels of crop stress within the field based on the latest available satellite image and according to a vegetation index. There are several vegetation indices to choose from, depending on the current crop's growth stage or the type of issue that needs to be detected.
- Based on these maps, agri-consultants can decide on a more precise application of nitrogen fertilizer, according to the needs of the crop. Nitrogen should be applied regularly to uphold the health of the crops.
- Productivity maps identify areas with different levels of crop productivity within the field. The maps are built from all of the available satellite images for a selected period (since 2019) and based solely on the NDVI index values. The field's areas with lower productivity require more potassium and phosphorus fertilizers.

Elevation

- Access to data on elevation (height above the sea level) of any specific point on the map — ranging from 3×3 meters to 2500×2500 meters.

Slope map

- Access to data on differences in elevation within a selected field measured in degrees.

Colorization API

- Possibility to customize the color scheme of the indices available on the EOSDA Crop Monitoring platform.

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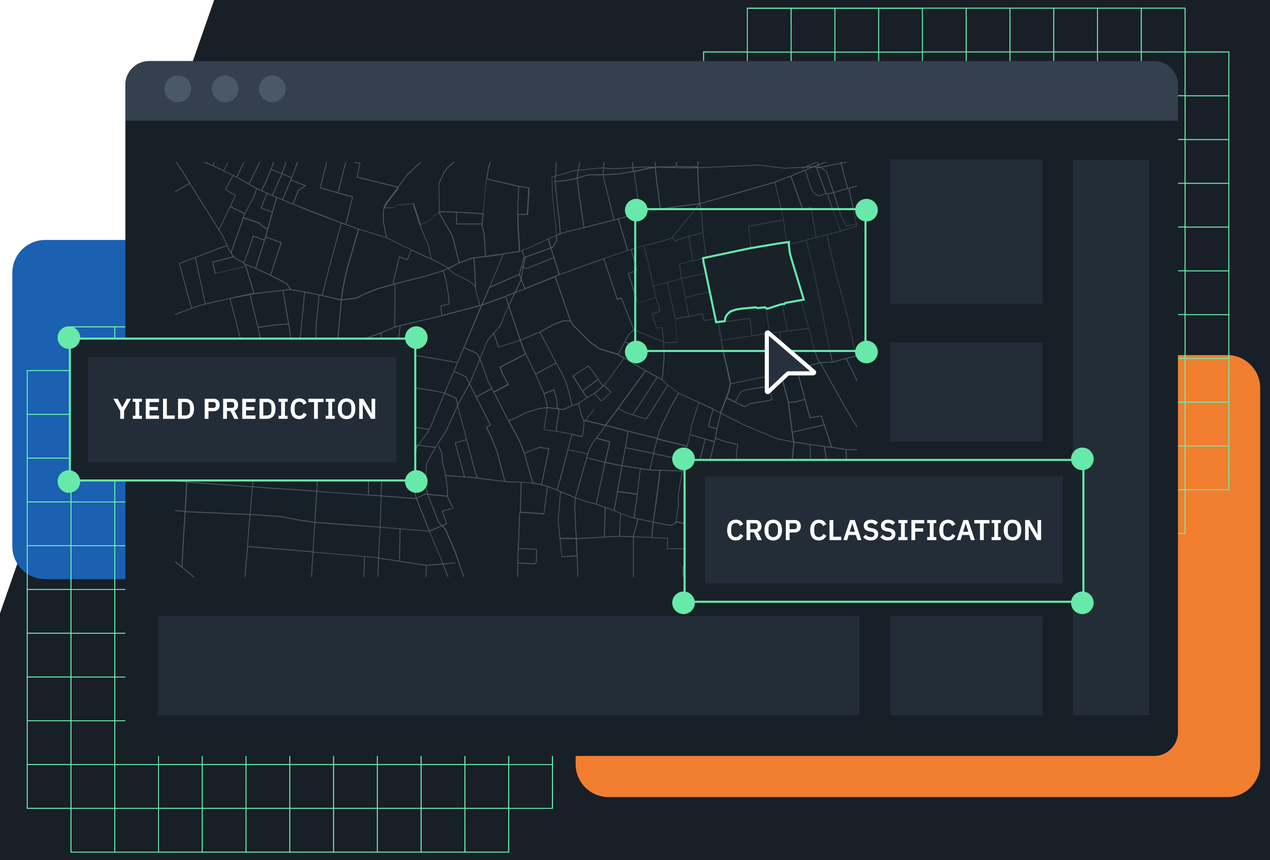
Custom solutions

EOSDA offers years worth of expertise in developing practical AI-powered solutions for agricultural purposes. You can request a solution that fits your particular case — and, thus, get a competetive edge over other players on the agro market.

Here's several custom solutions we have already realized upon our clients' requests.



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Custom solutions

Yield prediction

- ✓ The algorithm estimates the amount of crop that will be collected from specific fields based on the history of past yields. Input data includes but is not limited to growth stage information, temperatures, precipitation, and type of soil.
- ✓ The accuracy of estimates made 14 days prior to harvesting can reach up to 90% and largely depends on the quality and completeness of data. Values for the predicted yield can be downloaded as .xlsx, .csv, and .shp files.
- ✓ You also get a detailed PDF or .docx yield prediction report containing the review of all the data used in the analysis to better understand the grounds for the proposed yield forecast.

Crop type classification

- ✓ Automatic identification of the type of crop growing within each field shown on the map. It is possible to create a crop classification map for a whole region, as large as a country. Our model is based on Sentinel-2 time-series images with a 10-m resolution and has an accuracy of up to 90%, depending on the quality and completeness of data. Maps are provided as .geotiff and .shp files. You also get the data on crop rotation, land use, and acreage/hectarage for each separate field and their total area.

Field boundaries detection

- ✓ Automatic delineation of agricultural field outlines in the satellite image of an area of any size from couple of fields to a whole region. The retrieved field contours (boundaries) can be uploaded to a GIS software as a .shp file. Large numbers of fields can be thus mapped without the need for allocating large sums of money and resources to the process.

Harvest dynamics monitoring

- ✓ Remote estimation of the dates when each field of interest has been harvested either in this season or in the previous ones. We combine radar and optical satellite imagery from Sentinel-2 to construct time series and calculate the hectarage/acreage of fields with the recent sharp drop in vegetation index values.
- ✓ Estimated data values are available as .xlsx, .csv, and .shp files. You also get a PDF or .docx report stating the number of harvested fields, total hectarage/acreage and other data.

Soil moisture analytics

- ✓ Mapping of soil moisture levels within fields and farms. You can keep track of moisture levels in the soil within your area of interest thanks to a 1-2 day satellite revisit and study the historical data available since 2002. Our algorithm calculates soil moisture amount at the surface and root depth (up to 70 cm). Combined with vegetation index value and relevant eather data, a soil moisture map can be used to remotely assess the state of crops within specific fields

Land cover classification

- ✓ A map that contains geospatial information about different types (classes) of landcover: forests, water, croplands, urban areas, swamplands, and more. The map can represent as many classes as necessary. The map can be used to assess the natural resources located within an administrative area on any scale (farm, region, country, etc.)

Soil type classification

- ✓ Soil type maps allow you to assess biophysical parameters of soil that have an impact on crop development. With these maps, you can assess the state of fields and predict the probability of soil degradation*. *accuracy of the prediction depends on the completeness of additionally provided data, e.g. are there any water objects nearby, what's the slope degree of the field surface, and so on.

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Partnership program

EOSDA Partner Program is building a global network of resellers by offering clients like agricultural consultants opportunities to boost their businesses, get a competitive advantage in the market, make additional profit, and establish a lasting symbiotic relationship with EOSDA and other companies.

Field Monitoring

- Track crop performance on a day-to-day basis by having access to regularly updated satellite imagery of the fields and a set of vegetation indices that automatically calculate attributes related to crop health. Data is neatly visualized on the screen as maps with different colors.

Field Activity Log

- A planner and log of activities performed in the field — add all the details you need, including type of activity, dates, cost, and more.

Zoning

- Vegetation and Productivity maps for variable-rate application of seeds & fertilizers will help you cut costs, minimize the negative impact on the environment, and raise larger and healthier yields.

Field Leaderboard

- Easily identify which fields require immediate intervention in terms of crop protection with the help of this interactive board ranking fields according to the largest and most recent NDVI value drop.

Data Manager

- Keep records of all the actually completed field activities on the platform by importing data from agricultural machinery.

Clientele Management

- An admin panel for managing the complete host of your clients with ease and allocating them access to specified amounts of hectares as agreed.

Scouting — Web & Mobile

- Scouting made easier with automatic pinpointing of problem locations within the field, simplified report generation procedure, complete transparency while tracking the progress of individual scout tasks, and more. Scouts get to use the mobile version of the platform, getting as much digital assistance as they need.

Advanced Weather Analytics

- Access to current weather parameters in the field's location, an archive of weather data since 2008 and a hyperlocal 14-day forecast. Get several steps ahead of the weather.

Team Accounts

- Delegate tasks, assign team members, control the access permissions, and more, in a single account acting as an online team of employees.

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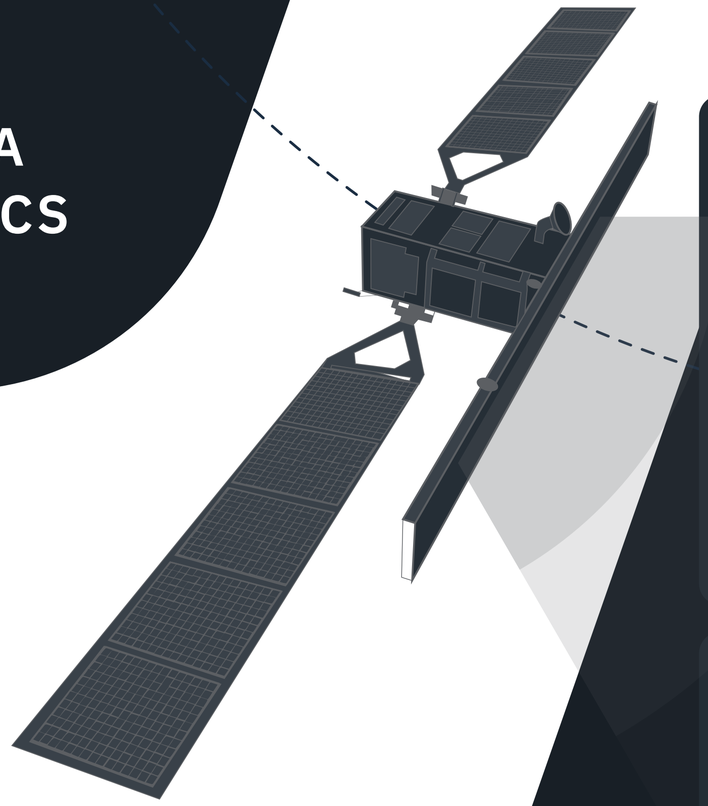

735 422 EOSDA products users globally

105,000+ current users of EOSDA Crop Monitoring worldwide

At least one registered user from every country of the world

32,000,000 hectares of fields to monitor have been already added by EOSDA Crop Monitoring clients

Let our experts guide you!

CONTACT US