WORKGROUP INTRODUCTION

2021

Agrio

ABOUT US

Saillog is a startup pioneering digitized crop protection. Saillog develops proprietary artificial intelligence (AI) and computer vision algorithms to reduce pre-harvest waste.

Saillog reforms out-of-date crop protection methods with an automated and virtual platform. Saillog's technology can be deployed on common smartphones, making it easily scalable in a world where mobile devices are becoming vastly prevalent.

We developed two products: a smartphone app that specializes in early detection and prevention services and customizable dashboard software that streamlines crop protection management.

We offer a private and secure workgroup within our app to manage crop protection tasks and foster collaboration within organizations.

Our technology replaces inadequate and imprecise methods of crop protection with a sustainable approach for agriculture modernization. By enhancing response times to crop anomalies, dispatching warning alerts, and delivering precise agriculture input guidance, agriculture workers can receive immediate and controlled information for reducing pre-harvest waste.

WHY DIGITIZE PLANT PROTECTION?

Digitized crop protection significantly changes the way we interact with our environment by making communication readily accessible and the dissemination of information effortless. It allows better management of crop diseases, pests, and nutritional deficiencies. Agriculture experts no longer need to visit fields frequently. With remote sensing capabilities, observations are collected constantly and decisions are made based on a large amount of data. This advancement results in more productive means of crop management.

OUR OFFRING

We require minimal intervention from growers. Users draw their fields on the map and we take it from there.

What is the Agrio?

Agrio is a web and mobile application that leverages artificial intelligence technology to close the gap in farmer-received support. Agrio facilitates modern plant protection adaptation and is easy to use, affordable, and scalable.

The software solution allows agronomists and managers to monitor fields from remote, and be informed when intervention is needed. The solution is an end-to-end decision support system that allows agronomists to supervise greater acreage. By measuring operations and their outcomes on a large scale, we are able to provide guidance that is evidence-based, removing the guesswork from the challenging operation of plant protection.

OUR OFFRING

What is the Workgroup and what makes it unique?

Workgroup is the world's first secure and private channel for farming organizations and agri-entrepreneurs. It transforms Agrio from a public platform to an internal operations tool. The Workgroup enables users to create digital farming associations to manage crop protection endeavors on a large scale, with enhanced capabilities such as remote monitoring and area-wide integrated pest management. Workgroup is customizable and buildable; protocols and agriculture inputs can be predetermined and displayed to users within their channel.

How does it work?

Users create a Workgroup, assign Admins to the channel, and invite agriculture workers (e.g., farmers and crop inspectors). Communication and uploads in Agrio are only visible to those within the Workgroup. Admins can assign editors to customize treatment protocols and product details following the identification of crop anomalies.

OUR OFFRING

What is the Dashboard and what makes it unique?

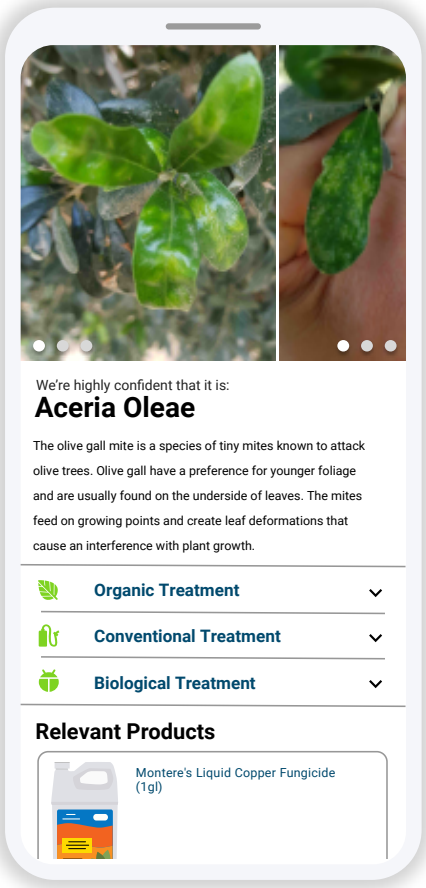
Dashboard is a customizable digital extension software that organizes aggregated data from an Agrio Workgroup. The Dashboard arranges information for supervisors who want more thorough management for the crop protection activities within their organizations.

How does it work?

Saillog's Dashboard interfaces in real-time with the activities of consenting parties within a Workgroup. Remote sensing data and alerts are visable in a way that allows easy reviewing. The Dashboard is fully customizable to meet the needs of each farming organization.

PLANT HEALTH CHECK

Users can snap a photo of their plants to receive a diagnosis and treatment recommendations.



Artificially intelligent plant pathologist

Farmers and inspectors can find it challenging to identify the correct pathogens, as well as to decide the economical threshold that requires a treatment program. Our solution enables users to rely on well-trained artificial intelligence algorithms to identify problems with their crops and decide on treatment necessities. If treatment is deemed required our decision support system enables farmers and inspectors to follow a consistent scientific regime which optimizes the pest management process.

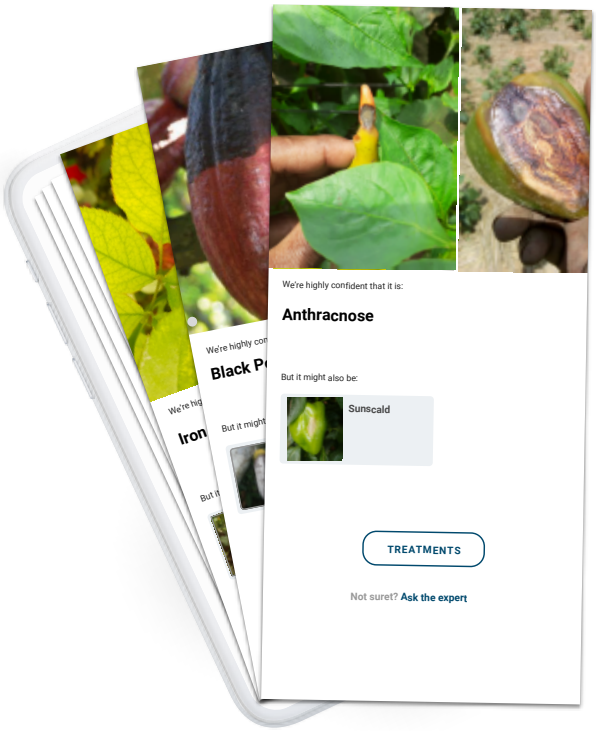
Our solution is plant-type agonistic. Pests and diseases have many hosts, and to model their spread we need a good understanding of their presence on the entire spectrum of the potential hosts.

PLANT HEALTH CHECK

Online machine learning

We developed artificial intelligence algorithms that can learn from few examples, and can learn quickly to identify new diseases and pests, in new crops.

Agrio allows workers which are less experienced in plant protection to take an active part in the effort of keeping plants healthy. Users can snap a photo, and artificial intelligence diagnoses what is wrong in a matter of seconds. The images are geotagged and are used by the system to better predict the problems that might arise in the future.

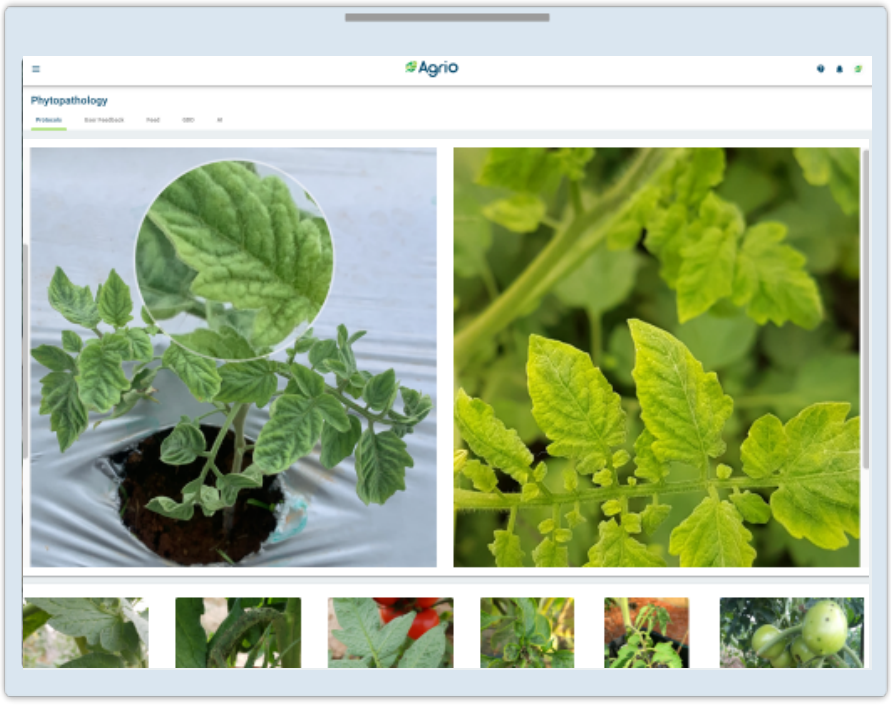


PLANT HEALTH CHECK

Diagnostic support tool

An easy-to-use diagnostic support tool that allows supervisors to help growers when the artificial intelligence confidence is low. Supervisors can build a library of images of diseases, pests, and other crop problems. Photos in the library can be compared with users' uploaded images to find matching symptoms and diagnose the problem. Once diagnosed, the diagnosis, together with treatment protocols, are sent to the growers.

The artificial intelligence system learns from the supervisors' input and becomes better with time.



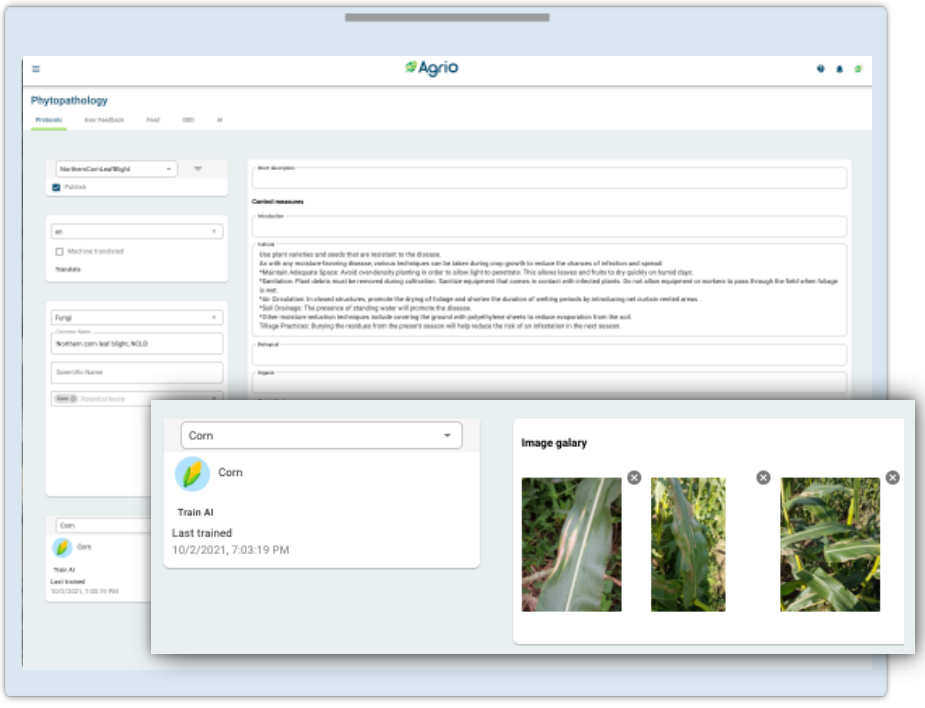
PLANT HEALTH CHECK

Easy to use training tool

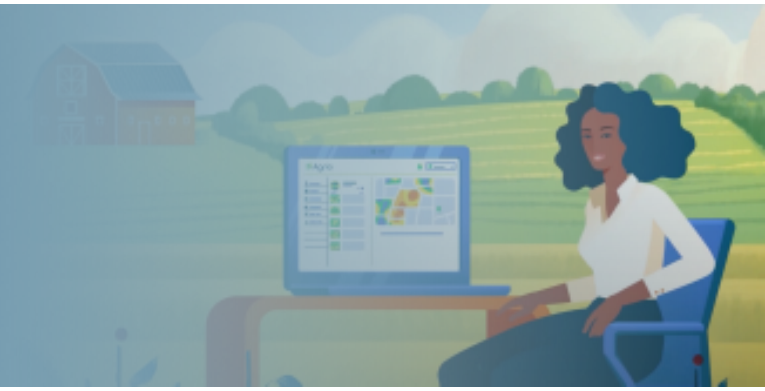
Workgroup supervisors can use a simple user interface to facilitate the training. Once the system is presented with the images that are uploaded by supervisors it will be able to identify new crop problems almost instantly.

The unique artificial intelligence capabilities that are built inside the workgroup are kept secured, allowing workgroup supervisors to gain a competitive edge.

Being exposed to millions of images, the Agrio artificial intelligence solution can differentiate different pathologies based on subtle changes in the symptoms patterns.

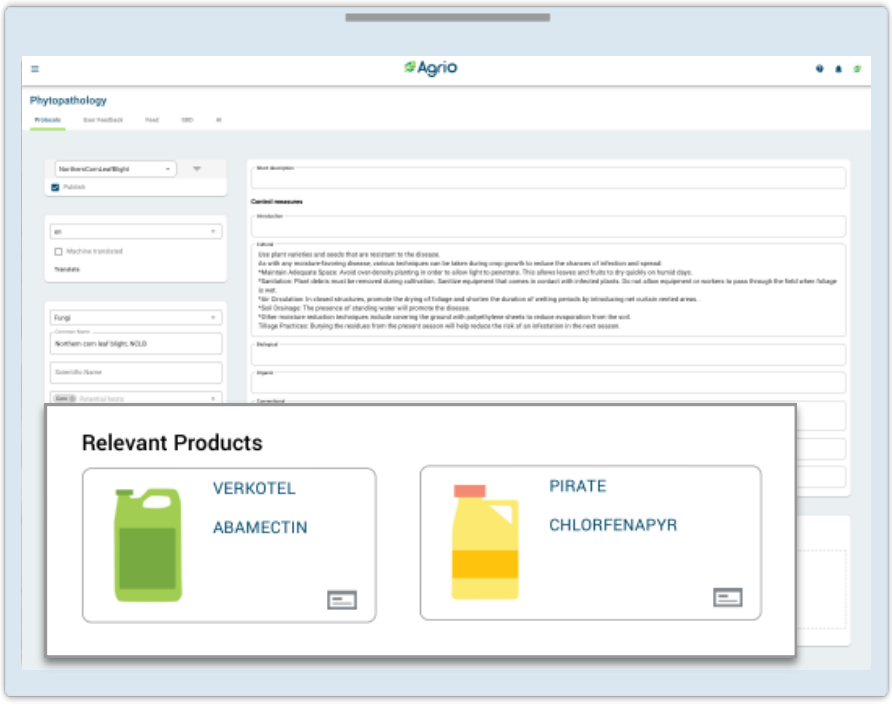


PLANT HEALTH CHECK

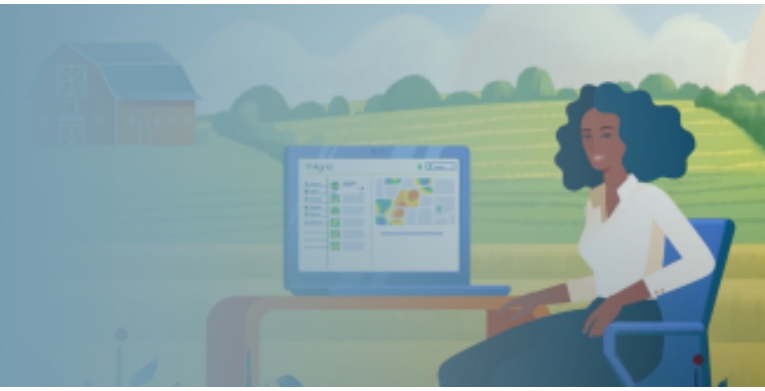


Customizable protocols and products

Supervisors can edit the treatment recommendations that are presented to growers. In addition, specific agriculture input products can be added as well. The product recommendations are served to users based on the crop, pathology, and geographic location.

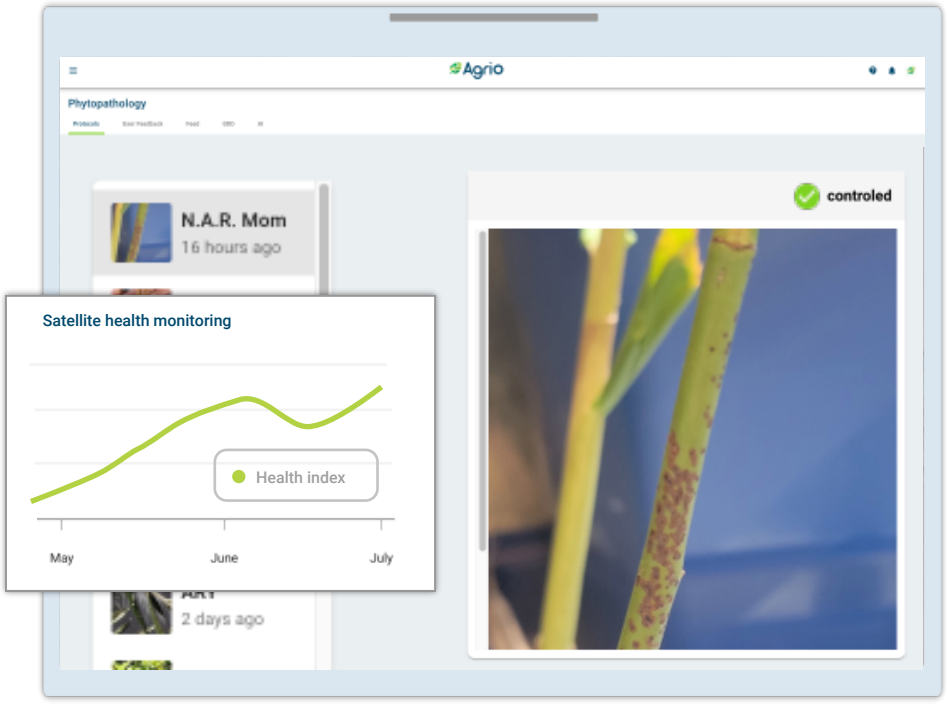


PLANT HEALTH CHECK



Treatment feedback and optimization

Treatment outcomes are monitored with the aid of remote sensing data (such as satellite monitoring) and user surveys. Agrio presents efficacy insights to admins and suggest protocols improvements when needed.



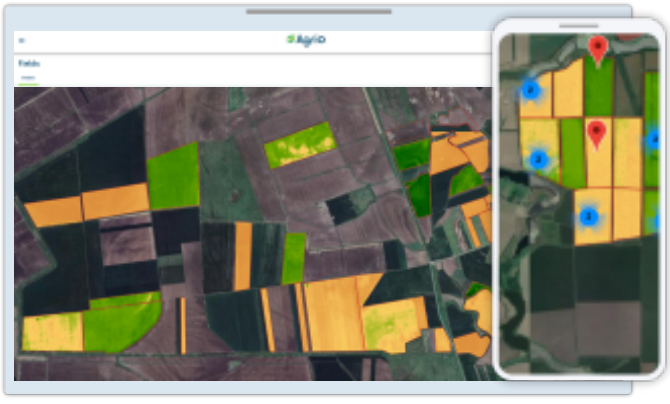
SATELLITE MONITORING

Field monitoring

The ability to monitor crop progress and spot problems in the field before symptoms are apparent is crucial for a successful harvest. Agrio makes such monitoring easily accessible to growers. Our solution supports multispectral imaging in various image resolutions and visits frequency.

Leaf area and vegetation health

Some of the well-known indices such as the NDVI index is presented and tracked. The NDVI is mainly correlated to the leaf area and and allows us to estimate if the crop is developing in a good pace.



Chlorophyll concentration

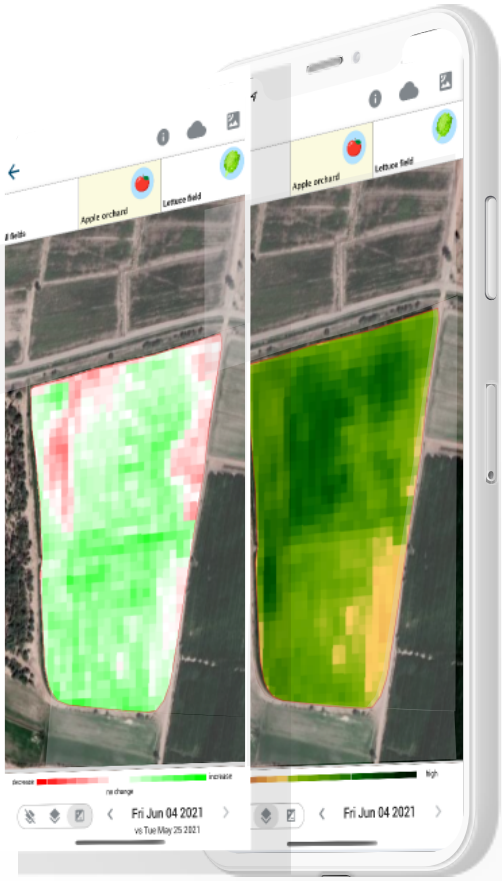
NDVI shows a low correlation with the chlorophyll content, it is more severe in advanced growth stages when the NDVI becomes saturated. This saturation is due to the increase in the leaf area, and the density of the canopy structure. In this stage, there is a need to monitor an index that is highly correlated with the leaf chlorophyll content and less sensitive to the leaf and canopy structure. The leaf chlorophyll content is an important indicator of plant health, photosynthetic potential, and nutritional state. Although extraction analysis by field sampling provides an accurate estimation of LCC status, such methods are not practical. Non-destructive remote sensing measurement offers an affordable, and frequent way for assessing the LCC of plants over fields in high resolution. We do the image analysis and alert you when we find anomalies.

SATELLITE MONITORING

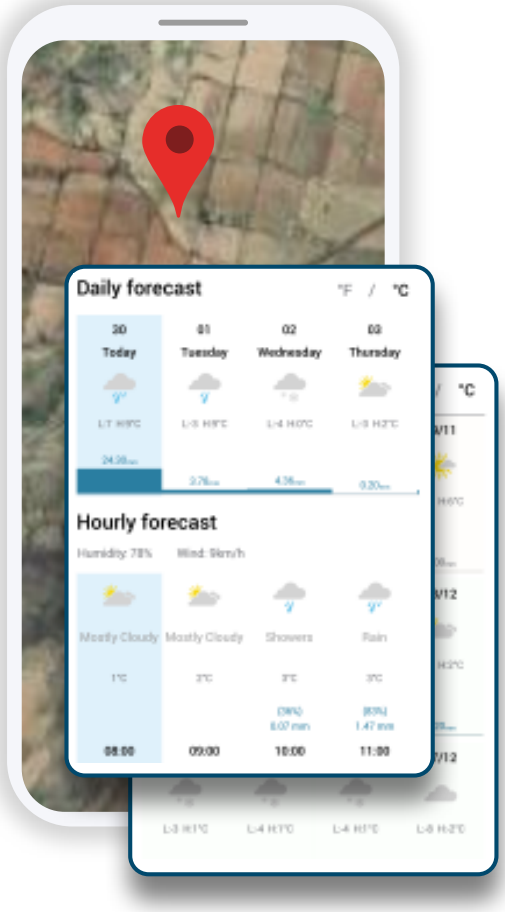
Monitor changes

To measure the impact of field interventions we track the changes in the different indices. Users can see if leaf area and chlorophyll concentration show improvements or decline due to a problem. We compare subsequent satellite scans and can show changes up to day-by-day resolution. This feature allows inspectors to identify problems faster when compared to an inspection of the raw satellite data.

We will show you how your last intervention affected the plants, and guide you which parts of the fields require inspection.



WEATHER MODELS



Hyper-local weather forecast

Weather conditions dictate plant behavior and development and strongly influence the emergence and development of pests and diseases such as the migration of insects, egg hatching, fungal spore development, sexual maturity, etc. Agrio makes precise, hyper-local weather forecasts easily available to all growers, without the need to install any hardware.

Our prediction models combine weather measurements and observations from different sources. These state-of-the-art weather prediction models provide our growers an hourly hyper-local weather forecast designated specifically to their unique area anywhere in the world; the forecast is provided at a 3km resolution so it is specific to their fields.

We developed several models that use this information to track progress ad alert when problems are expected.

WEATHER MODELS

Disease and pest forecast

Agrio dispatches warning alerts on impending infestations and sends written preventative measures to help users impede infestations. The alerts are based on images from all over the world that are being uploaded to Agrio daily. Moreover, we use weather models to predict plant disease and pest spread. Big data analysis helps us to provide pest migration forecasts, fungi spores spread estimation, and disease development predictions.

WEATHER MODELS

Phenology models

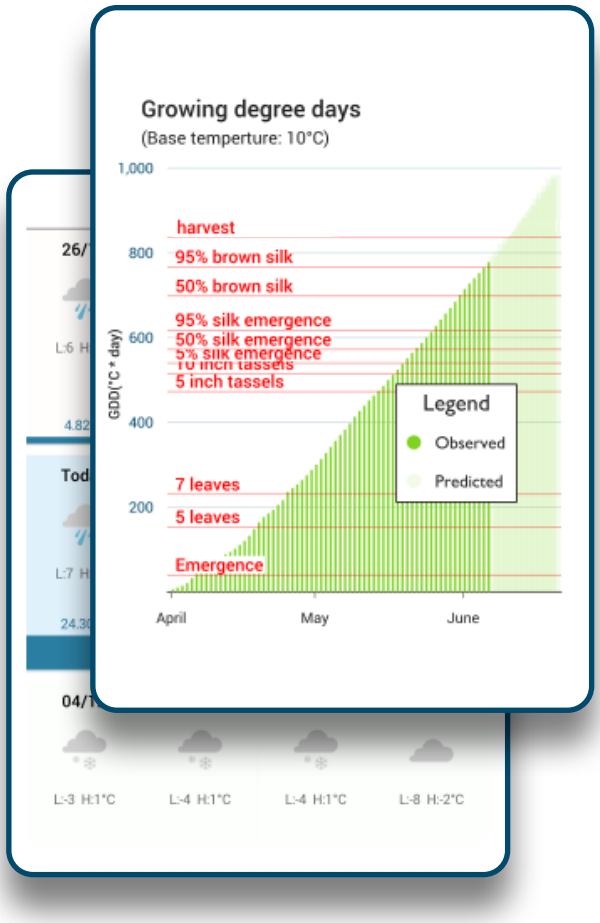
We constantly model plants, diseases and pests, and the interaction between them.

The development stage of the plant plays an important role in plant protection decision-support systems. Monitoring the plant stage remotely allows us to provide more accurate preventative advice and help growers plan the sowing date to minimize disease and pest risks.

Growers can make the models better fit the plant varieties they grow by providing feedback on their plants' development stage. The algorithms take into account this information to fine-tune the models during the season.

We aggregate growers' inputs, and phenology stage estimations made from satellite data to build localized, variety-specific prediction models that serve the entire workgroup.

We track the progress of plants and send alerts when development is not optimal.



SMART PEST TREATMENT

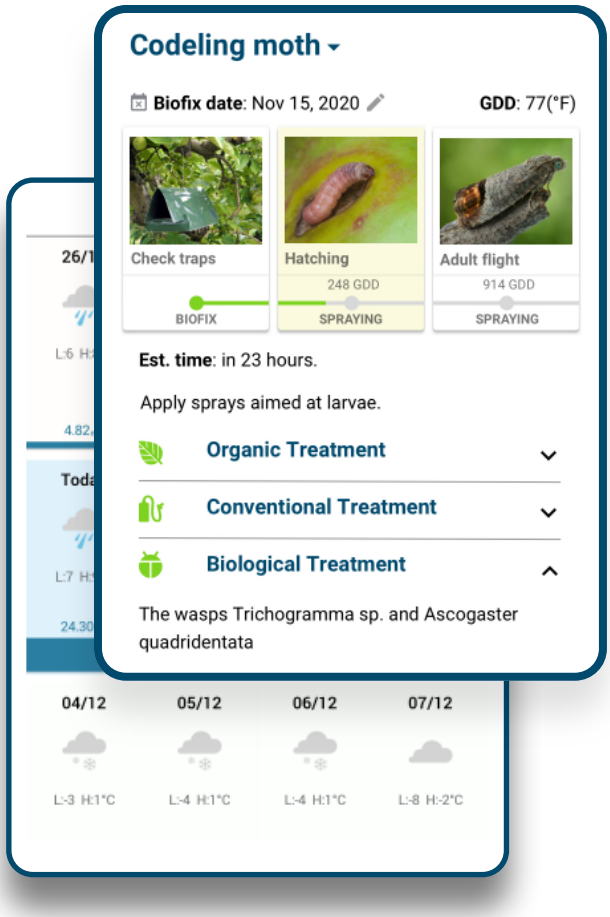
Weather-based treatment schedule

Weather models are used to predict insects' migration, egg hatching, fungal spore development, sexual maturity, and more. Operations that aim to reduce the population density of a pest need to coincide with the high presence of the most susceptible life stage of the species in the field.

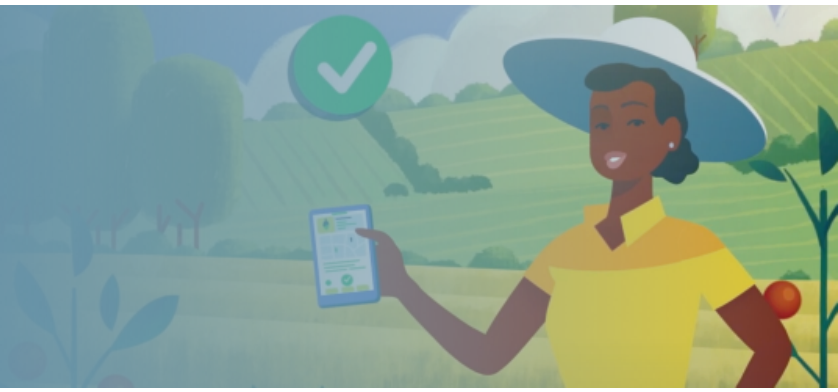
Weather-based modeling is a more accurate method than using the calendar method to estimate the organism stage. Combining a weather forecast with a rigid phonology model brings a new sophistication to pests, diseases, and weeds management.

We compute the accumulation of the different environmental factors and feed them into our models. The digested insights are presented on the home screen. In addition, a daily briefing instructs growers on the required scouting operations and interventions in their fields.

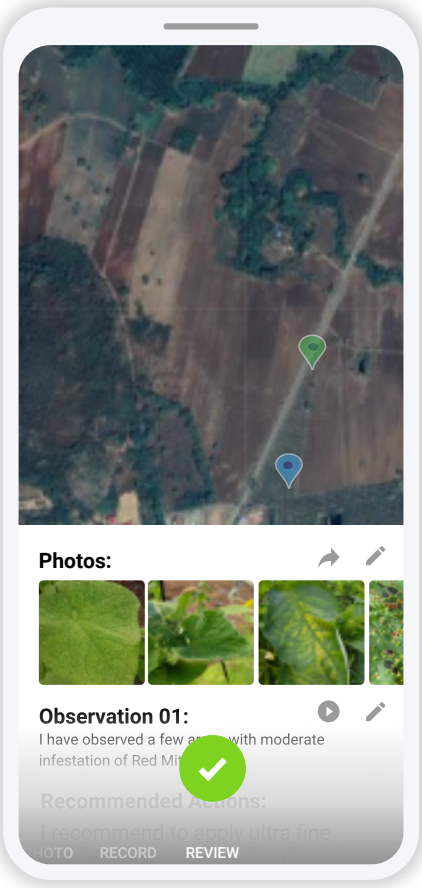
These are updated in real-time with the progress of the weather conditions, observations in the field made by the grower, and observations made by other growers in relevant proximity. We present users with the optimal Integrated pest management treatment on time.



FIELD INSPECTION



While inspecting the fields, inspectors can upload images of suspected symptoms and our artificially intelligent agronomist helps with the diagnosis.

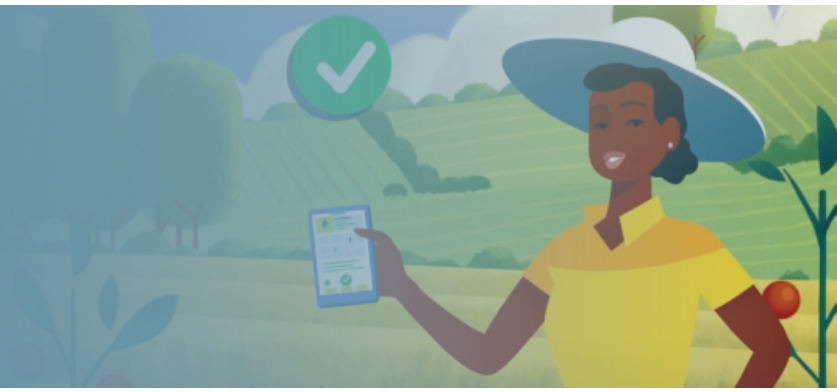


Field scouting

Agrio enables inspectors to create digital screening reports straightforwardly and intuitively. The geotagged reporting is voice-based and does not require typing, allowing you to quickly identify plant problems, count insects, quantify disease and pest pressure, analyze pest traps, and record your insights while keeping your hands free. Reports are interactive and easily sharable, even outside the app.

When at the field, users can use this feature to examine satellite scans and navigate to places in the field that show problems. Pests, diseases, and other problems can be recorded. Visual works like insect counting in a trap can be done with a snap of a photo.

FIELD INSPECTION



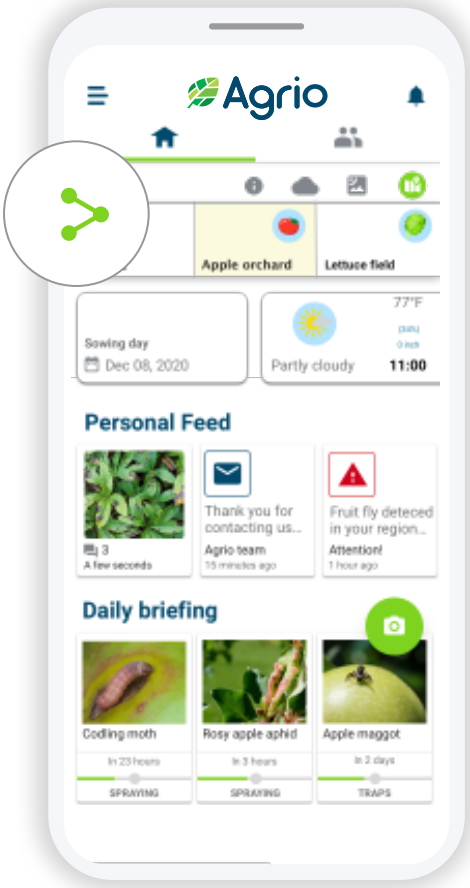
Users are notified of high-risk locations.

Scouting guidance

We provide notifications with instructions when we identify regions in the field that show stress. Analyzing the entire spectrum of wavelengths, with algorithms trained on large datasets, allows us to provide alerts before symptoms can be seen in the field.

FIELD INSPECTION

We make it easier for users to communicate their findings with colleagues and clients.



Sharing the workload

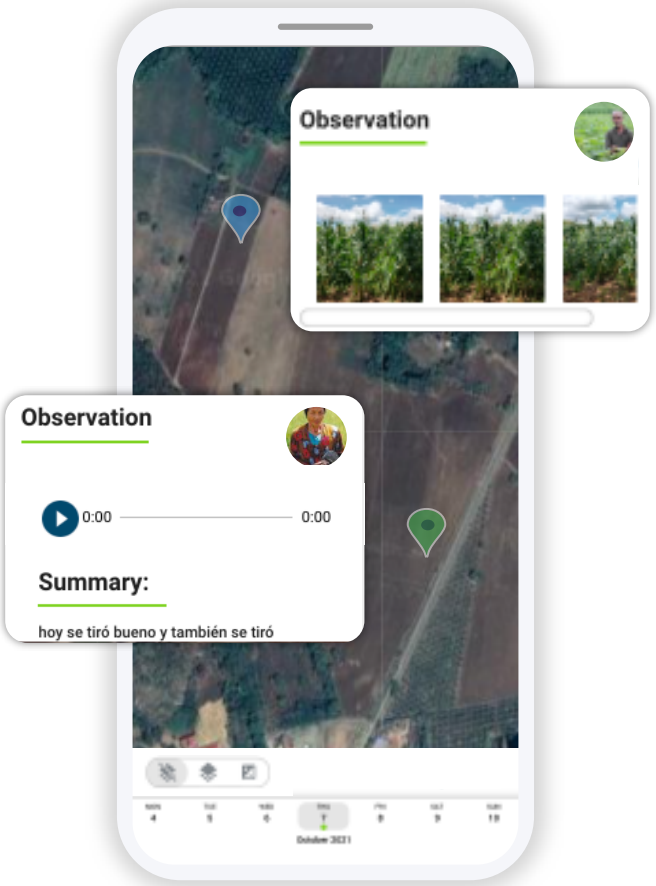
Collaboration and communication are essential for the success of the pest management.

Users can create teams for each of their fields to facilitate collaboration with colleagues. With their teams, users can examine remote sensing insights, alerts, and information collected during the inspection process and assign plant protection-related tasks to other members. This feature allows several inspectors to scout the same field with excellent coordination.

Members can examine the aggregated information and focus on the places in the fields that require attention.

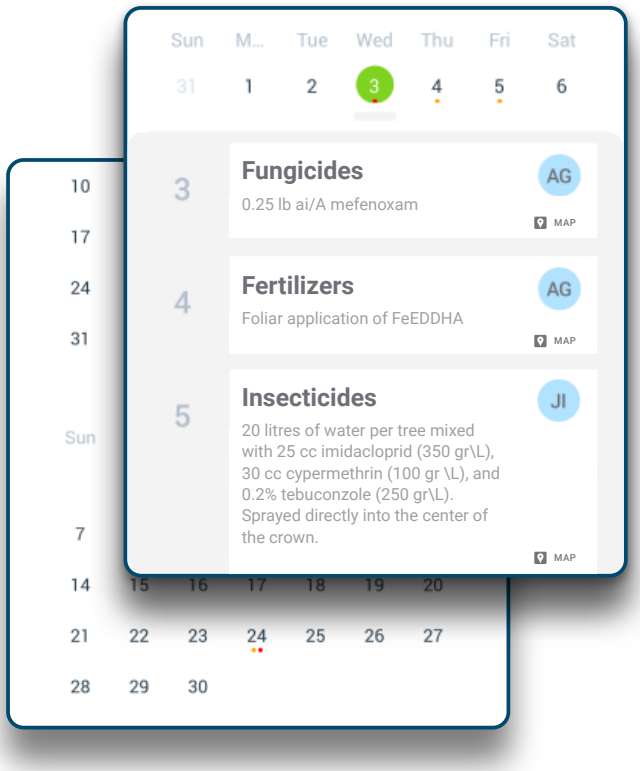
FIELD INSPECTION

In the field, inspectors create geotagged digital scouting reports. Team members can see the collected observations, get updates on the parts of the fields inspected by other team members, and plan the scouting route accordingly. Discussions on the required interventions are becoming easier within the team. Team members can define tasks, such as trap checking and spraying interventions, and be notified once other members complete tasks.



FIELD INSPECTION

Interventions can be easily recorded using the field calendar. We use this information to send you reminders and let you know when we have insights on which interventions worked better. Use this tool to create experiments with different interventions and monitor their progress.




Agrio