

AgriBIT

NEWSLETTER

So that you don't miss a single thing



WHEN THE PROJECT STARTS BLOOMING...

Just as the blooming season signifies a period of transformation and abundance, AgriBIT has been diligently cultivating innovative solutions and pushing the boundaries of precision agriculture.

AgriBIT unveils its remarkable achievements, empowering farmers with cutting-edge technologies and paving the way for sustainable and efficient farming practices. From precision applications to geospatial analysis, the project's endeavours have taken root and are now bearing the fruits of their labour.

Join us on this journey through the pages of the newsletter as we explore the latest advancements, groundbreaking research, and success stories that are contributing to a more resilient and sustainable agricultural sector.

In this edition, we celebrate the dedication and collaboration of our project partners and the tangible impact of our work in the field. From the development of advanced tools and systems to the integration of innovative technologies, AgriBIT is cultivating a future where precision agriculture flourishes, providing sustainable solutions to address the challenges of modern farming.

AgriBIT's newsletter invites you to dive into the fascinating world of precision agriculture and discover how our project is revolutionizing farming practices.

Warm regards,
AgriBIT Team

THE VITALITY OF PRECISION AGRICULTURE AND ITS BENEFITS FOR FARMERS

In recent years, precision agriculture has emerged as a transformative approach to farming, reshaping the way farmers cultivate their lands and manage their resources. The European Union (EU), with its diverse agricultural landscape and commitment to sustainable practices, has recognized the significance of precision agriculture in driving agricultural productivity, efficiency, and environmental stewardship. This article explores the importance of precision agriculture in the EU and highlights the array of benefits it offers to farmers.

Enhancing Resource Efficiency

Precision agriculture leverages cutting-edge technologies such as remote sensing, global positioning systems (GPS), and geographic information systems (GIS) to optimize the use of resources. By providing farmers with real-time data on soil conditions, crop growth, and weather patterns, precision agriculture enables precise and targeted application of inputs like fertilizers, pesticides, and water. This leads to significant reductions in resource wastage, ensuring that farmers use only what is necessary for optimal crop health and growth.

Increased Productivity

The adoption of precision agriculture practices empowers farmers to make data-driven decisions, enabling them to optimize crop yields. By employing technologies like variable rate applications, farmers can customize the application of inputs based on specific requirements of different areas within their fields. This precise approach maximizes the potential of each plot, leading to increased crop productivity. Moreover, real-time monitoring allows for the early detection of pest infestations, diseases, or nutrient deficiencies, enabling farmers to take prompt corrective actions and minimize yield losses.

Environmental Sustainability

The EU places a strong emphasis on sustainable agriculture, and precision agriculture aligns perfectly with this vision. By minimizing the use of chemicals, fertilizers, and water, precision agriculture reduces the environmental impact of farming operations. Targeted application of inputs reduces the risk of runoff and leaching, safeguarding water bodies from pollution. Additionally, by optimizing crop production and reducing wastage, precision agriculture helps preserve natural resources, protects biodiversity, and contributes to the overall ecological balance.

Cost Savings and Economic Viability

Precision agriculture equips farmers with the tools to maximize their returns on investment. By employing site-specific application techniques, farmers can significantly reduce input costs, including fertilizers, pesticides, and fuel. Moreover, accurate data and real-time monitoring allow for effective planning and proactive management, minimizing crop losses and optimizing resource allocation. These cost savings contribute to the economic viability of farming operations, helping farmers maintain profitability and sustainable livelihoods.

Data-Driven Decision-Making and Future Innovations

Precision agriculture generates vast amounts of data related to soil conditions, crop health, weather patterns, and machinery performance. This data can be harnessed for advanced analytics, enabling farmers to gain valuable insights into their operations. Data-driven decision-making helps identify patterns, optimize strategies, and predict future outcomes. Furthermore, this data can fuel ongoing research and development, leading to innovations in farming practices and technologies, and ultimately driving the agriculture sector forward.

Precision agriculture represents a paradigm shift in European farming, empowering farmers with knowledge, insights, and technologies to cultivate their lands more efficiently, sustainably, and profitably. By adopting precision agriculture practices, farmers in the EU can maximize resource efficiency, increase productivity, contribute to environmental sustainability, and ensure economic viability. As the EU continues to emphasize sustainable agriculture, precision agriculture stands as a vital tool to meet these goals while securing a prosperous future for European farmers and ensuring food security for generations to come.



DEVELOPMENT OF A VERSATILE GNSS RECEIVER PROTOTYPE FOR PRECISE AGRICULTURAL LOCALIZATION AND GEOGRAPHICAL INFORMATION

The AgriBIT project has recently made significant progress as a whole, with a particular focus on the development of the final version of the baseline GNSS receiver prototype. This receiver plays a crucial role in achieving precise localization and manoeuvring of agricultural vehicles, both on the ground and over the fields. Additionally, it enables geo-coding and geo-localization of PA sensors and other points of interest within the agricultural context.

The GNSS receiver has been designed to integrate various augmentation options, in addition to its autonomous operation. These options include the use of SBAS (e.g., EGNOS) and custom PPP-RTK corrections over mobile (3G, 4G, and validated for 5G+) as well as wireless (Wi-Fi) and optionally wired (Ethernet) networks. The prototype supports multiple satellite navigation constellations, including Galileo (EU), GPS (US), GLONASS (Russia), and BeiDou (China). Its modular design allows for easy customization to meet the specific requirements of different applications, reducing complexity and cost for customers.

Extensive technical validation has been carried out for this development, involving testing in both open sky and urban areas. The results have confirmed that the receiver meets the initial performance expectations and complies with the predefined system specifications. When operating in RTK mode with third-party services, the augmentation service within the receiver can achieve accuracies ranging from one centimetre in static mode to two centimetres in dynamic mode, while in SBAS mode, it achieves an accuracy of 30 centimetres. Moreover, the receiver supports L1/L2/L5 GNSS frequencies and can be deployed on-site to provide RTK correction factors to receivers on agricultural machinery. This involves the transmission of timing corrections and other parameters over terrestrial networks from a reference station to the receiver, enabling more accurate positioning calculations and improving the overall precision of the system.



The AgriBIT project has successfully developed a versatile GNSS receiver prototype that offers enhanced positioning capabilities, customizable features, and improved accuracy. Its potential applications extend beyond the agricultural sector, making it suitable for various domains requiring precise geographical information and control systems

INSTALLATION OF AGENSO'S WEATHER STATIONS IN THE AGRIBIT PILOT SITES

In the framework of AgriBIT's activities, a total of 6 brand-new weather stations accompanied by soil moisture sensors produced by AgriBIT's project partner AGENSO were installed in demo fields in Greece, Portugal and Italy. Two weather stations were installed in the Greek pilot area, in Giannitsa and Pella in northern Greece, where peach and nectarine varieties are being cultivated. Two weather stations were also installed in the Portuguese pilot area of Ribeira de Sao Joao region and Cartaxo in central Portugal. These areas constitute significant tomato-producing areas in Portugal. Finally, two weather stations were installed in Italy, in Miralduolo and Brufa areas in central Italy, where vineyards are traditionally grown. The selected pilot areas were meticulously selected in order to ensure that the crops and respective production in each area are representative of the current local circumstances.

The weather stations and soil moisture sensors function through an electronic node device developed and produced by AGENSO. It's a small energy autonomous small device of 12x10 cm and its battery is being charged by a 13x11 cm photovoltaic panel, reducing the energy footprint and environmental nuisance in the context of sustainable development. The system is a plug-and-play system that is easy to install while data acquired are directly transmitted to the cloud services and projected in MeteoloT AGENSO's app. Access to the app is free at costs. This way, any interested party such as farmers, producers, cooperatives, extension advisory services, as well as any other stakeholder operating the agricultural and not only sector, can have access to this valuable information.

Some of the available information are temperature, relative humidity, UV radiation, wind direction, wind speed, gust speed, light intensity, precipitation, absolute pressure, dew point, wind chill and heat index. Taking into account the aforementioned information, farmers can better schedule and thus organize and accordingly optimize the agricultural practices exercised in their production units. The weather stations' measurements are available in the following links:

For Greece:

Ø [MeteoloT - Agricultural Cooperative of Pella: Weather Station](#)

Ø [MeteoloT - Giannitsa \(south\): Weather Station](#)

For Portugal:

Ø [MeteoloT - Ribeira de São João: Weather Station](#)

Ø [MeteoloT - Cartaxo: Weather Station](#)

For Italy:

Ø [MeteoloT - Brufa: Weather Station](#)

Ø [MeteoloT - Miralduolo: Weather Station](#)

A BRIEF RECAP OF THE PILOTS

GREEK PEACH ORCHARDS

Focuses on the full management of peach orchards, benefiting from the capability to overcome the limitation of EO and UAV data which cannot provide accurate results due to tree canopy shape.

PORTUGUESE TOMATOES

Speeding up the early detection of diseases during the growth period and delivering the ability to apply corrective measures earlier than without the use of GNSS services, i.e. before the harvest.

ITALIAN VINEYARDS

Management of 200 ha of vineyards, with a focus on being able to improve automatic guidance, decrease water usage and connect AgriBIT services to other management platforms.

AGRIBIT FACILITATES VARIABLE RATE APPLICATION WITH PRESCRIPTION MAPS

Variable rate application is a precise method for applying plant protection products (PPPs) in agriculture. By leveraging geospatial data analysis and crop characteristics like vegetation indexes such as NDVI, prescription maps can be generated. These maps play a vital role in adjusting the variable rate application, ensuring the optimum dose is applied to efficiently control the target with minimal environmental impact. AgriBIT, an innovative project, aims to support and enable farmers in utilizing these approaches and accessing advanced tools and systems in precision agriculture.

Optimizing Variable Rate Application

The utilization of geospatial data analysis, combined with crop-specific characteristics, offers farmers the ability to generate prescription maps. These maps serve as valuable guides for adjusting the variable rate application of PPPs. By considering factors such as vegetation indexes and NDVI, the ideal dosage can be determined for each area within a field. This precision approach minimizes the need for repetitive applications and reduces the overall quantity of PPPs required, benefiting both farmers and the environment.

Benefits for Farmers and the Environment

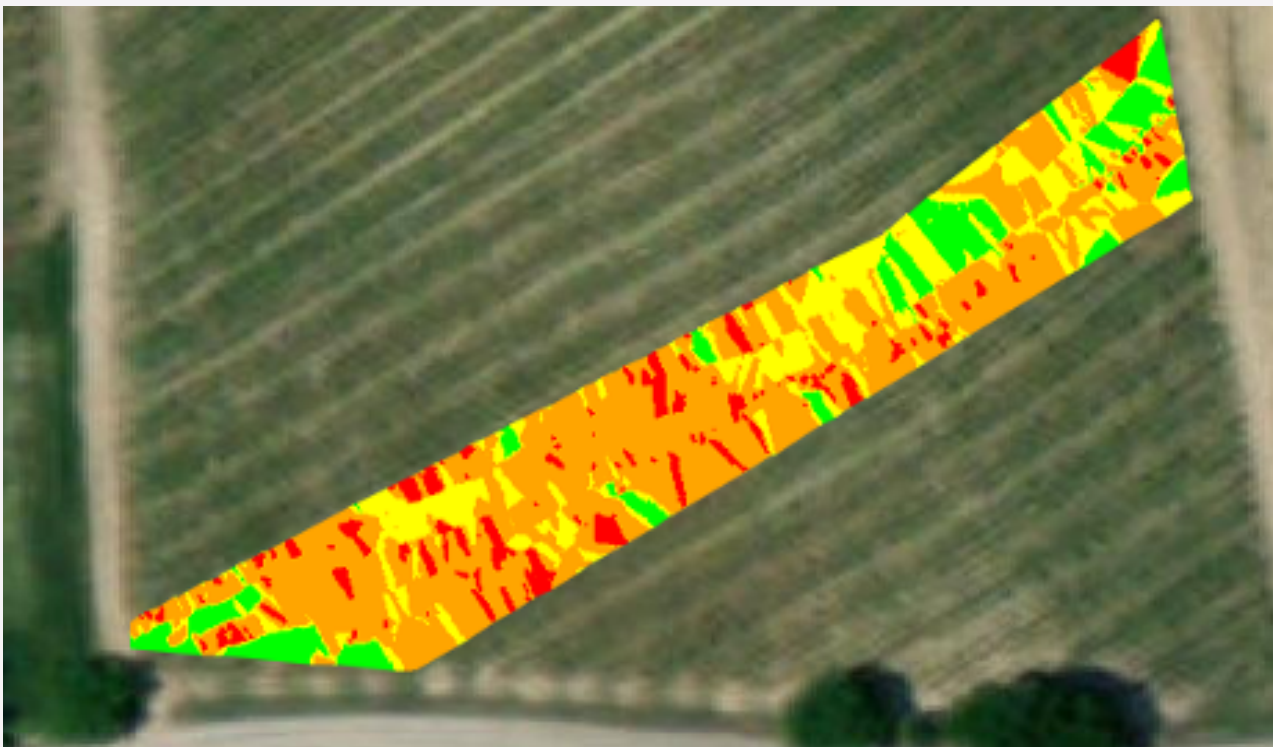
Implementing variable rate applications through the use of prescription maps brings several advantages to farmers and the environment. Firstly, the method optimizes the use of PPPs, ensuring that only the necessary amount is applied to achieve effective pest or weed control. This not only reduces costs for farmers but also minimizes the potential environmental impact associated with excessive pesticide use.

Furthermore, the reduction in repetitive applications provides increased efficiency and time savings for farmers. By accurately targeting areas with specific needs, farmers can allocate resources more effectively, leading to improved productivity and overall crop health.

AgriBIT's Role in Precision Agriculture

AgriBIT recognizes the importance of precision agriculture and aims to enhance its practices by supporting and promoting the use of variable rate applications with prescription maps. Through the AgriBIT project, farmers gain access to advanced tools and systems that facilitate the generation and utilization of prescription maps for optimizing their variable rate application processes.

By empowering farmers with these tools, AgriBIT contributes to the adoption of sustainable and environmentally friendly farming practices. This, in turn, leads to improved resource management, reduced chemical usage, and enhanced overall agricultural productivity.



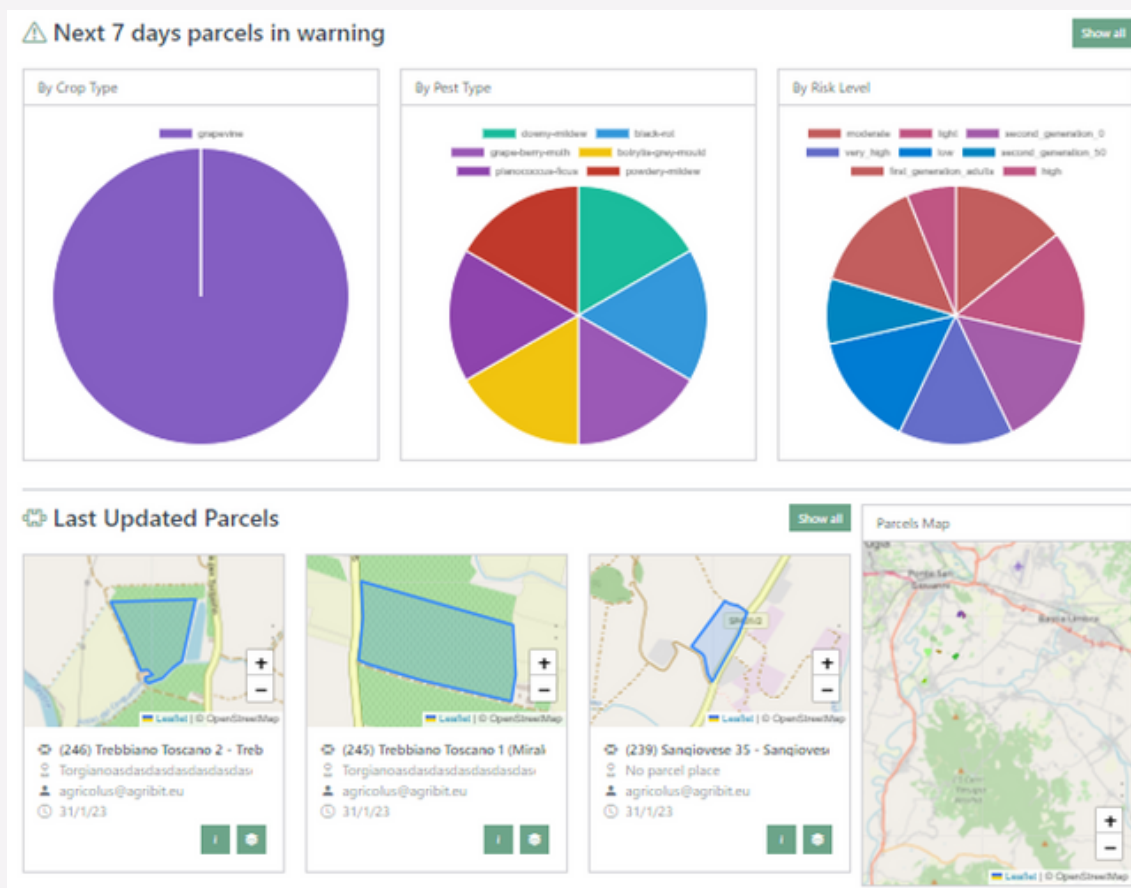
Variable rate application with the aid of prescription maps is a valuable technique in precision agriculture, enabling farmers to optimize the use of PPPs. AgriBIT's support for this approach ensures that farmers have access to the necessary tools and systems to implement variable rate application effectively. By reducing repetitive applications and minimizing environmental impact, AgriBIT contributes to sustainable farming practices, benefiting both farmers and the environment.

SERVICE INTEGRATION AND CROSS PLATFORM VISUALIZATION

The first version of the Cross Platform visualization developed by Engineering is now up and running. Cross-platform visualization is a web application that enables AgriBIT farmers to utilize and leverage most of the services provided by the AgriBIT project.

In the last months, developments to integrate data from the fields and data from precision agriculture services have been made, and data are now available by cross-platform visualization. The data coming from the fields are generated by the GNSS enabler services and the meteorological stations installed on the fields, both developed and installed by AGENSO. The Mobile App part of the GNSS enabler component, provides information on field perimeter and the activities documented by farmers. Meteorological stations, on the other hand, provide environmental data of the parcels, these collected data are sent to the integration platform, which filters and archives information.

The information of the Mobile App and Meteorological stations aggregated in the AgriBIT data storage are recovered and organized in the cross-platform visualization. Cross-platform visualization provides a function to manage parcel data. In the parcels section, each field is displayed by means of a map and described with its main information. Here farmers can also integrate the information of the parcels, adding data such as soil analysis or crop description. The data source section in the cross-platform allows for displaying data from meteorological stations.



WORK

Activities

EXECUTE

Analysis

Observe

EQUIPMENT

Parcels

Data Sources

Data Source: Weatherstation1

← Go Back

Type

weatherstation

Description

Trebbiano toscano 1 (AGENS ID: 245)

Parcel

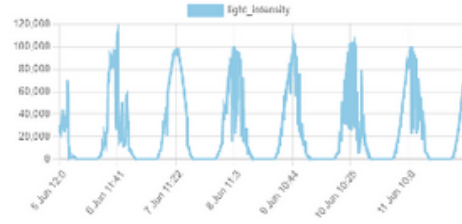
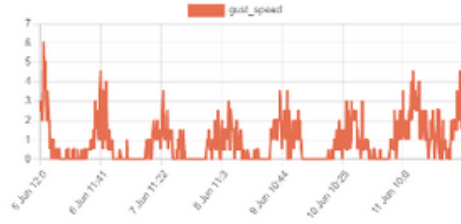
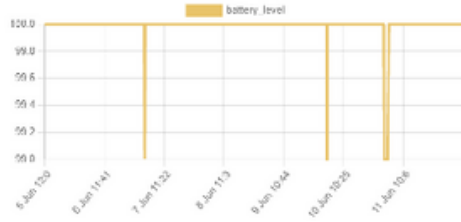
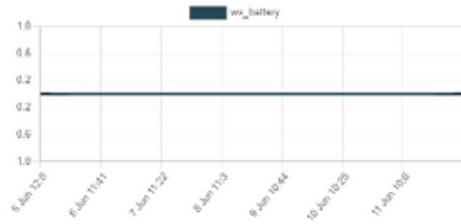
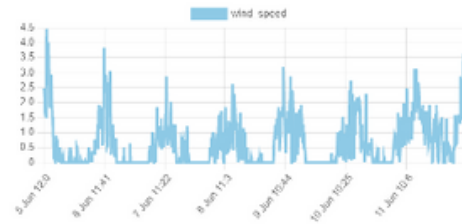
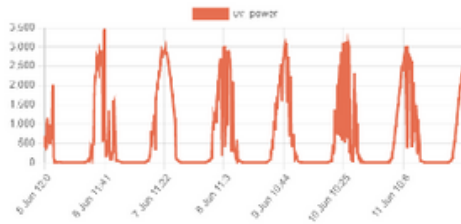
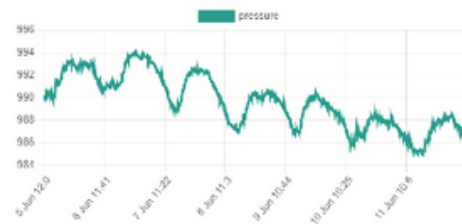
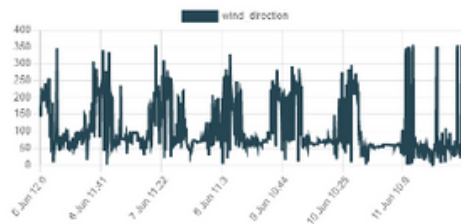
(245) Trebbiano Toscano 1 (Miraduolo) - Trebbiano toscano 1

Data Source URL

<https://agribit-be.eng.it/acquire/sensingdata/63dce7fd0bfbe30fe707ee2f>

Last 7 days data source events

Chart Table



Finally, another section is dedicated to Precision Agriculture Services: early warning and yield estimation services are currently available based on services provided by Agroapps. This section in particular will be the subject of interventions in the coming months, further services such as crop growth monitoring and irrigation services will be added to the services present.

AGRIBIT COMMUNITY PLATFORM

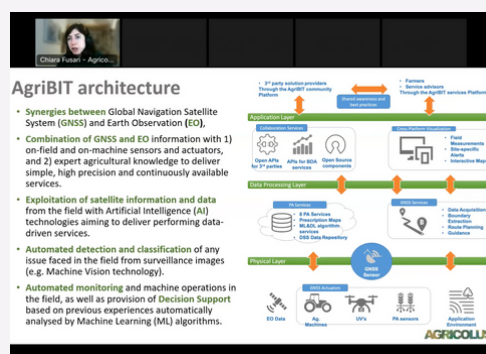
From now on it is possible to self-register as an external user into the AgriBIT community platform to view the customers, fields, services, and analytics. Once the user has registered, she can decide to join also on the Cross-Platform Visualization. Join us! <https://agribit-khub.eng.it/>



EVENTS

COPERNICUS RELAYS AND COPERNICUS ACADEMY

AgriBIT project was presented by Agricolus Srl at the monthly videoconferences for the Copernicus Relays and at the monthly videoconference for the Copernicus Academy, on the 19th of January 2023. The first event is organised for the Copernicus Relays, which is formed by a wide network of Copernicus ambassadors. Since 2017, they act as local champions, coordinating and promoting activities based on the Copernicus Programme.



The second event is organised for the participants in the Copernicus Academy, which has the goal to bring together research & academic institutions with authorities & service providers in order to contribute to the development of the use of Earth Observation data in general and Copernicus data and information. Both events were attended by multidisciplinary speakers presenting various exciting applications of Copernicus data and beyond. A great attention was put into the synergies arising within the project between the use of Galileo and Copernicus services, and how these are integrated into the project architecture.

DESIRAH2020 FINAL CONFERENCE



The DESIRA Final Conference held in Brussels on April 26th and 27th, united a vibrant community consisting of policy-makers, researchers, local actors, and stakeholders in the field of rural and agricultural digitalization. Piero Scrima presented the project, shedding light on the transformative potential of rural and agricultural digitalization.

FRUTOS COM CIÊNCIA



The Center of Competences for the Tomato Industry sector (CCTI) participated in the “Frutos com Ciência” conference and fair held in Lisbon on May 28. The conference attracted approximately 56 attendees, including industry experts, scientists, and agricultural stakeholders.

CCTI set up an interactive stand to display various technologies and the latest results of the project. A highlight of the event was the keen interest shown in the AGRIBIT project by the Director of the Portuguese Collaborative Laboratory dedicated to crop protection technologies. The interactive stand at the conference allowed attendees to explore various facets of the project, including real-time data monitoring, innovative agricultural technologies, and advanced crop health management. The CCTI team was on hand to engage with participants, answer questions, and discuss the potential impact of AGRIBIT on the future of agriculture.

6TH PLENARY MEETING



The AgriBIT 6th Plenary Meeting was held on the 5th of June in Palermo, where the consortium gathered to discuss the achievements and next steps towards more sustainable farming and innovation in precision agriculture.

VIDEOS



AGRIBIT AT FEIRA NACIONAL DE AGRICULTURA 2023

AgriBIT tools were demonstrated to the Portuguese farmers at the National Fair of Agriculture, in Portugal. In this video, we present the AgriBIT platform and the tools that support farmers for more sustainable management of their crops!



INSTALLING THE AGRIBIT WEATHER STATION

This video showcases our partners INOV installing the weather station for precision agriculture that will allow farmers to have an integrated and timely management of their crops at an affordable price!



AgriBIT_H2020

AgriBIT will improve the agriculture chain by combining GNSS and Earth Observation (EO) information with on-field and on-machine sensors and actuators, and expert...

 YouTube



Subscribe to our youtube channel and stay updated with the latest news on the AgriBIT project!

WHO ARE WE? AND WHAT DO WE DO FOR AGRIBIT?

Click in the logos to find out!

