

# HARVESTING THE POWER OF DATA



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Greenhouses Irrigation, Fertigation and Climate Control and Automation.



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Satellite Monitoring

IoT-Based Farming Management Systems.



# Who is ReddAgro

#### Who We Are

ReddAgro is an Agri-Tech company that specializes in providing precision farming, greenhouse control and automation, and IoT-Based Farming Management Systems. We are committed to transforming the way agriculture is practiced by leveraging the latest technologies and innovations.



#### **Our Mission**

Our company aims to transform the agriculture industry through technology, sustainable practices to increase yields, optimize efficiency, and promoting environmental stewardship.



#### **Our Vision:**

We aspire to become the leading Agri-Tech company in the region, by introducing innovative, eco-friendly solutions that enhance productivity, efficiency, and sustainability for the benefit of literally everyone.



# Challenges:

**ReddAgro** company aims to solve a number of market problems in the agriculture sector. Some of these include:



**Food insecurity:** With a growing global population, there is increasing pressure on the agriculture sector to produce more food with limited resources.



**Environmental sustainability:** Agriculture is a significant contributor to environmental degradation, including deforestation, water pollution, and greenhouse gas emissions.



**Supply chain inefficiencies:** The agriculture supply chain is often characterized by inefficiencies and waste, which can result in higher costs and reduced profits for farmers



#### Lack of access to information: Many

smallholder farmers lack access to the information and resources they need to make informed decisions about their farming practices

# **Our Solutions:**

Our solutions are designed to address the challenges faced by farmers in various areas of agriculture including:



**Precision Farming:** Incorporating remote sensing and data analytics to assist farmers in maximizing crop yields while minimizing the utilization of resources, including water, fertilizer, and pesticides.



#### **IoT-Based Farming Management Systems**

#### (Supply Chain Management )

This solutions help farmers manage the entire agriculture value chain, from production to distribution.



**Greenhouse Control and Automation:** enabling precise control of environmental conditions as well as soil nutrition for optimal crop growth, higher yields, and better quality.

# Our Services:



#### Designing Consulting and Planning:

We work with our clients to provide customized solutions that meet their specific needs. Our team of experts provides advice and guidance on how to implement precision farming, greenhouse control and automation and agriculture supply chain management solutions.

#### Implementation and Deployment:

We provide end-to-end implementation and deployment services for our solutions. We work closely with our clients to ensure a smooth transition to our technologies and provide ongoing support to ensure the success of our solutions.

#### **Training and Support:**

We offer training and support services to help our clients get the most out of our solutions. We provide training on how to use our services and offer ongoing support to ensure our clients are achieving their agriculture goals.

# What is Agri-Tech

# What is Agri-Tech?



**Data Analytics and Al** 



Internet of Things (IoT)





Precision Farming Tools



Biotechnology and Genetic Engineering











# What is Agri-Tech?



Digital Platforms and Apps



**Biological Solutions** 





Sustainable Energy Solutions











# Agri-Techin Jordan

Jordan faces several challenges in it's agricultural sector, including water scarcity, limited arable land, and the need to enhance productivity and sustainability. In response to these challenges, the country has shown interest in adopting Agri-tech solutions to improve agricultural practices and address these issues.

Challenges: Despite the potential benefits, there have been challenges to widespread adoption of Agri-tech in Jordan, including limited awareness, access to financing, and the need for capacity building among farmers.



# Technologies

# Sciellite Monitoring

# **Satellite Monitoring**

Satellite monitoring involves using satellite images to monitor crops and agricultural land from space. This technology provides valuable data such as crop health, soil moisture, vegetation growth, weather patterns, such data can be used to optimize crop production, prevent crop damage, reduce water usage.

Satellite imagery plays a pivotal role in modern Agritech by providing crucial insights into various aspects of agriculture. Leveraging advanced sensors and data processing techniques, satellites offer essential information for optimizing crop production and resource management.



Satellite Imagery and Data Collection: • Satellites equipped with multispectral or hyperspectral sensors capture images of Earth's surface across different wavelengths of light. These images are then transmitted back to Earth, where they undergo processing to generate informative maps and data products tailored to agricultural needs.



 Data Processing and Analysis: Cutting-edge computer algorithms process the acquired satellite data, meticulously analysing the images to extract vital agricultural information. These algorithms often employ machine learning methodologies to identify intricate patterns and anomalies within the data, enhancing the precision of insights.

VRA is Based on all cloudless images through the season



 Soil Moisture Monitoring: Satellite data is also invaluable for monitoring soil moisture levels, a critical parameter in agriculture. By analyzing the reflectance of light from the soil, indices such as the Soil Adjusted Vegetation Index (SAVI) or the Thermal Infrared Ratio Index (TIRI) can be computed. Moist soil tends to exhibit higher SAVI values due to increased reflectance of near-infrared light and lower TIRI values due to decreased reflectance in the thermal infrared range. In contrast, dry soil displays lower SAVI values and higher TIRI values. This data facilitates precise irrigation scheduling and prudent water resource management.



 Crop Health Assessment: A central application of satellite data is monitoring crop health. By assessing the reflectance of light from plants, key indices are derived to gauge their well-being. Indices like the Normalized Difference Vegetation Index (NDVI) and the Red Edge Chlorophyll Index (RECI) are computed. Healthy plants tend to exhibit higher NDVI values due to increased reflection of green light and lower RECI values due to reduced reflection of red and blue light. Conversely, unhealthy plants display lower NDVI values and higher RECI values. These indices enable the creation of comprehensive crop health maps, empowering farmers to make informed decisions to maximize yields and mitigate potential crop damage.



Integration of Weather Station Data: In the context of monitoring weather patterns, it's crucial to clarify that satellite data is integrated with information from weather stations. Cloud cover, temperature, and other meteorological factors from both sources are amalgamated and analyzed. This synergy enhances the accuracy of weather pattern prediction and aids in identifying regions vulnerable to extreme weather events like droughts or floods.

## BENEFITS



Constant monitoring at a highresolution lead to quicker inspections of health deviations.



Taking preventive measures against extreme weather events using weather forecasts.



Customized alarms at vegetation and weather events.



Scouting management, task visualization, and documentation.







# Greenhouses

## Greenhouses Irrigation, Fertigation and Climate Control (Automation).

Greenhouse climate and fertigation control involves using sensors to regulate the environment within a greenhouse to optimize plant growth and health.

This technology includes sensors, automation systems, and data analytics tools.

#### Sensors

Sensors are installed throughout the greenhouse to collect data on temperature, humidity, light, CO2 levels, and other variables. These sensors provide continuous, real-time data that is used to adjust the greenhouse environment for optimal plant growth.

#### Automation systems

Automation systems use the data from sensors to control equipment such as heating, cooling, lighting, and fertigation systems. This ensures that the environment within the greenhouse is maintained within optimal parameters for plant growth.

#### Data analytics tools

Data collected from sensors and automation systems is processed and analysed using data analytics tools to provide insights into greenhouse conditions and plant health. These tools can generate reports and visualizations to help growers make informed decisions.

## **COMPONENTS - Sensors**



### **COMPONENTS - Automation systems**





### **COMPONENTS - Data analytics tools**





# **Benefits**

- Enhanced Efficiency
- Resource Optimization
- Smart Recommendations
- Predictive Analytics
- Mitigated Crop Loss Risk
- Elevated Crop Quality







The Integrated IoT-Based Farming Management System combines the best features of both the IoT-based Agriculture Monitoring and Control solution and the Farm Management System. By integrating these two innovative platforms, farmers gain access to a comprehensive suite of tools and real-time data that empowers them to make informed decisions, optimize farming practices, and enhance overall productivity.



IoT Meteo Agricultural Meteo Stations



IoT Fleet Fleet Management Platform



IoT Soil Agricultural Soil Sensors



AGRIVI VRA Variable Rate Application & Prescription Maps





#### Sensors

capturing data from the environment such as Temperature Sensors, Humidity Sensors, Soil Moisture Sensors and Light Intensity Sensors.

#### Connectivity

This includes the communication protocols and technologies that enable the devices to transmit data to a central system or the cloud.

#### **Data Processing**

Raw data from sensors can be noisy and voluminous. Data processing involves cleaning, filtering, and aggregating the data to make it more useful for analysis.

# System Capabilities



#### **CROP PLAN**

Overview of all fields and crop rotation over time to simplify the crop planning process for the season.

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#### FINANCIAL BUDGET

Financial planning of all inputs, work and services for the season per crop. Budget vs actual analysis in real time.

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#### SEASON AGRONOMY PLAN

Production plan with planned field activities throughout the season. Defined agronomic instructions for each activity.



#### DAILY WORK ORDERS

Daily activities plan per crop, field and worker with agronomic instructions. Work orders are delivered to workers via smartphone.



#### RECORD AGRONOMIC INSIGHTS DIRECTLY FROM FIELDS

- Register scouting observations
- Pest infection and development stage
- Drought, flood, frost and other damages
- Photo evidence with geo-tagging
- Notes

#### IDENTIFY SCOUTING LOCATIONS REMOTELY





#### PRECISE WEATHER DATA FOR EVERY FIELD

Plan your work based on actual weather conditions.

- ✓ 7-day weather forecast per field
- 3-year weather history per field
- Ability to connect to your weather stations
- ✓ Weather forecast updates every 3 hours
- ✓ Temperature, precipitation, wind speed, humidity

#### SMART ALARMS FOR WEATHER DISASTERS AND PEST RISKS

Protect your crops timely with automated risk alarms.

- ✓ Weather risk detection (hail, frost, etc.)
- Early pest risk alarms by field
- Customer-defined alarms based on internal know-how
- In-platform alarm notifications
- E-mail alarm notifications



#### DASHBOARDS FOR INTERACTIVE ANALYTICS

- Yield analysis per field, crop and variety
- Crop profitability analysis (revenue, expenses, profits per crop)
- Field analysis (inputs, weather, work per field)
- Resource utilization analysis (machinery, people)
- ✓ Farm finance KPIs (profitability, return on investment, etc.)

#### REPORTS (EXPORT TO PDF AND EXCEL)

- Input usage report (fertilizers, pesticides, irrigation, etc.)
- Harvest report per crop and variety
- ✓ Farm finance reports
- Reports for certification (Global GAP, ISO)
- ✓ Reports for authorities



# Uses of FMS

### **FMS Uses**

#### ALL FARM DATA ON ONE PLACE

No more papers. No more Excel.



Fields



Machinery



Farm workers



Warehouses



### **FMS Uses**

#### PLAN, TRACK AND ANALYZE COMPLETE CROP PRODUCTION LIFE-CYCLE

Real Real





















Irrigation





Labour management

Soil analysis

Soil cultivation

/ seeding

Fertilizing



Spraying

Maintenance

Harvesting



# System Benefits

### **FMS Benefits**

### Full Crop Production Traceability



#### MARKET YOUR PRODUCE AS PREMIUM

- Generate QR code for harvested produce
   Put QR code on your produce packaging
   Consumers can scan QR code on packaging
- Traceability data is shown on a mobile web

#### TRACEABILITY DATA

- Resources used (work hours, fuel, irrigation)
- Crop nutrients applied (nitrogen, ..)
- Active substances applied
- Nutrition data (calories, protein, carb, fat)
- Field location on a map
- Photos of the farm

### **FMS Benefits & Standards**

### 12 SUSTAINABLE GOALS



### **FMS Benefits & Standards**



#### MICROSOFT GOLD PARTNER

AGRIVI products are built based on latest technology practices and operate on scalable Microsoft Azure Cloud.



#### ISO-CERTIFIED COMPANY

- ISO 9001: 2015 (quality management)
   ISO 27001: 2013 (information security)
- ✓ ISO 27017: 2015 (cloud security)



#### CYBER-SECURITY INSURANCE

AGRIVI products have maximum data security and are insured against system damages, privacy breaches and cyber attacks.



Real-Time Environmental Monitoring: The integrated system offers continuous updates on crucial environmental parameters, such as temperature, humidity, soil moisture, wind speed, and more. Farmers can monitor these factors in realtime, enabling data-driven decisions and quick action to ensure optimal crop health and growth.



 Pest and Disease Monitoring: With integrated pest traps and disease models, farmers can detect potential infestations early on. Timely
 identification allows for targeted and eco-friendly pest control measures, reducing crop losses and promoting sustainable farming practices.

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		Diptera	Ceratitis capitata		Ceratitis capitata			
		Diptera	Chamaepsila rosae		Chamaepsila rosae			
		Diptera	Delia radicum		Delia radicum			
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 Precise Irrigation Management: Datadriven insights from the system
 facilitate precise irrigation scheduling,
 ensuring crops receive the right
 amount of moisture at the right time.
 This optimization minimizes water
 usage, conserves resources, and
 maximizes crop yields.



 Crop Planning and Monitoring: The integrated platform provides tools for planning crop rotations, monitoring planting schedules, and managing crop health. These features lead to better harvest planning, improved yield forecasting, and enhanced overall crop management.



• Inventory Management: Real-time tracking of inputs, seeds, fertilizers, and equipment optimizes inventory levels, reducing wastage and stockouts. This ensures that farmers have the necessary resources available when needed, improving operational efficiency.



• Labor Tracking and Scheduling: Efficient labour management is facilitated through attendance tracking, task assignment, and optimized work schedules. By maximizing productivity, farmers can streamline operations and achieve higher output with fewer resources.



Financial Analysis and Decision Making: In-depth financial reporting and analysis tools provide insights into cost structures, revenue streams, and profitability. Armed with this information, farmers can make datadriven financial decisions, identify areas for improvement, and enhance overall financial performance.

#### Credit to Agriculture Global Value\*









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