farmdeck

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ALL-IN-ONE
FARM MANAGEMENT SOLUTION,
INCLUDING SENSORS AND ADVANCED AI AND VIDEO ANALYTICS

DEVELOPED BY FARMERS FOR FARMERS

AVAILABLE IN ENGLISH, PORTUGUESE AND SPANISH

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Farmdeck was founded in Australia in 2016 by a team of farmers and engineers that decided to combine their two passions, technology and farming, to help other farmers like them increase their efficiency while reducing their costs. Our team is based across the globe and supported by a vast partner network offering installation and support services globally.

Our team is composed of over 90 employees based across Australia and provides installation and support services nationally. We are very proud to have a dedicated farm testing facility in Bathurst NSW, Australia, which gives us an opportunity to field test all features and sensors, and gives us an unique perspective on how Farmdeck can help our customers.
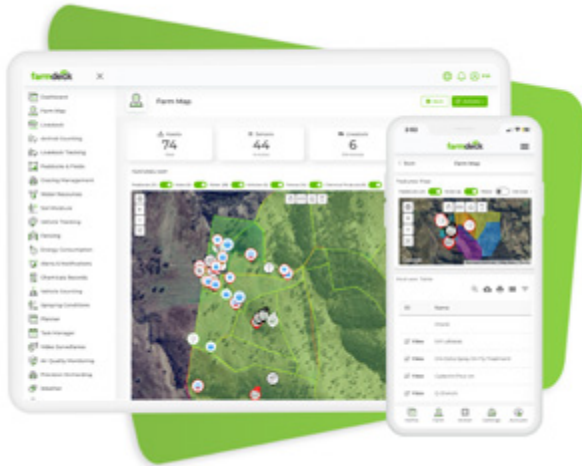
More than just an App

Farmdeck is different from most other AgTech solutions because it provides an all-in-one offering that includes the sensors, the network connectivity and the user platform. Farmdeck can be accessed by any browser capable device or available online for Android and iOS devices. Shipping from factory directly to end users with end user self provisioning for ease of deployments.

Delivering all-in-one IoT Solutions

Sensors
Edge devices installed onto vehicles, assets, animals, trees, soil, water etc.

Network & Connectivity
Connect from anywhere. 100% earth surface coverage.

Data Processing
Converting raw data into meaningful information with rich Ai

User Platform & visualisation
Accessible via any browser enabled device. Available on IOS/Android App. Integrates with existing systems

Guaranteeing the highest level of quality

We follow a strict quality assurance program for the IoT sensors; analysing factors such as their range, sensitivity, battery life, security, manufacturing quality, dust and waterproofing, and ease of integration. Every Farmdeck sensor has been selected following this program which ensures they are secure and follow the best practice design principles.

Our organisation has over 3 decades of experience with networking technologies and cyber security, which form an integral part of the underlying architecture required for IoT networks. Our expertise is a great advantage when deploying solutions in remote areas with low connectivity and power options.

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AI-Powered Video Surveillance for Plant Disease Detection

Combining cutting-edge sensors, interactive dashboards, and advanced AI-driven tools, Farmdeck now offers a game-changing feature: Video Surveillance with AI Observation for Plant Disease Detection and Real-Time Notifications.

Spot and Stop Plant Diseases Early

Diseases can spread rapidly in corn and maize crops, threatening yields and profitability. Farmdeck leverages AI-powered video surveillance to monitor your crops 24/7. Using strategically placed high definition cameras, the system scans plants for **early signs of disease, such as discoloration, leaf spots, or unusual growth patterns.** AI algorithms analyse this video feed in real time, identifying potential threats before they become widespread problems.

Real-Time Disease Notifications and Recommendation

When the AI detects signs of disease, Farmdeck sends instant alerts directly to your smartphone, tablet, or desktop. This empowers you to make informed decisions quickly, whether it's adjusting irrigation, applying targeted treatments, or seeking expert advice.

Benefits for Corn / Maize Farmers

Real-Time Disease Notifications and Recommendations:
Detect diseases early and mitigate risks before they escalate.

Save Time and Labor:
Eliminate the need for manual field inspections with automated video monitoring.

Optimise Resources:
Apply treatments more efficiently by targeting only affected areas.

Boost Yields:
Healthy plants lead to better harvests, maximizing your return on investment.

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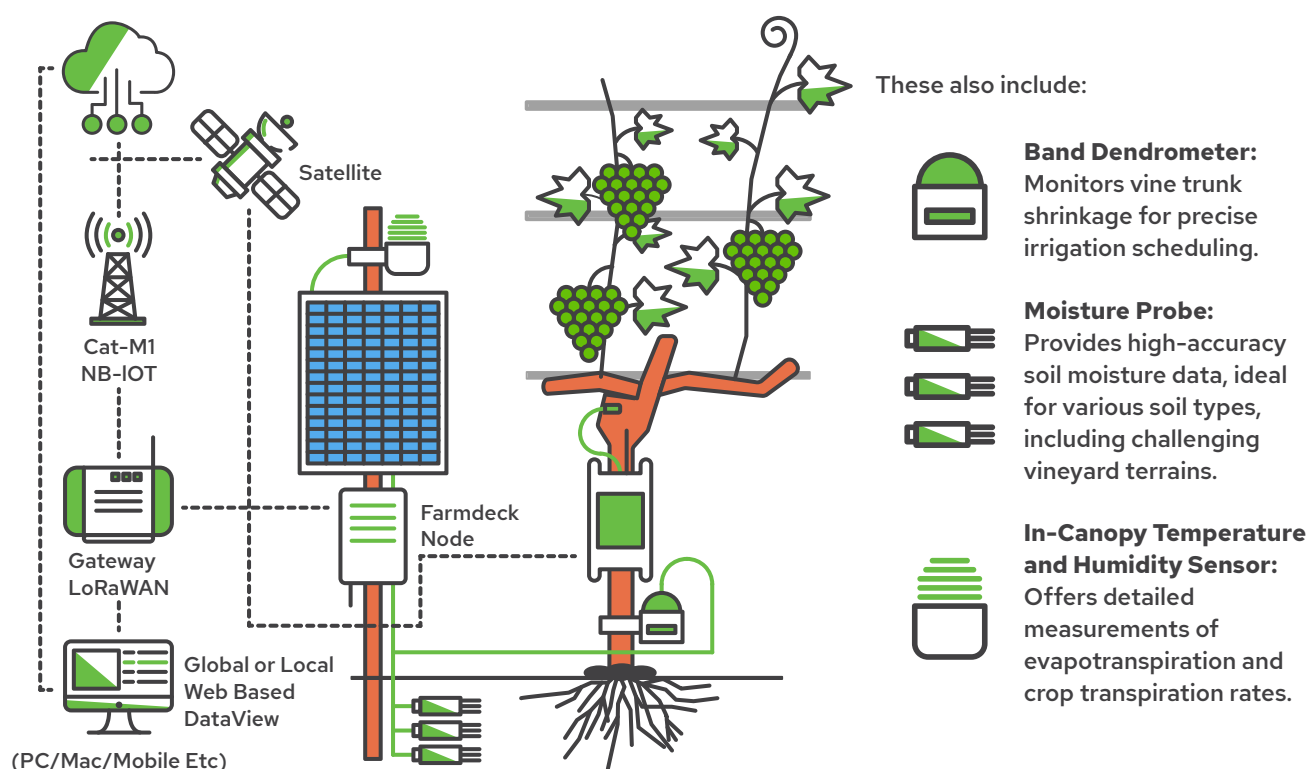
Vineyard Water Budgeting

Effective water budgeting in vineyards ensures a predictable yield by aligning irrigation practices with the vine's most active growth processes. Farmdeck's advanced IoT solutions offer a comprehensive system for monitoring and managing water resources effectively. By leveraging precision technology, vineyard operators can optimise irrigation scheduling, reduce water stress, and enhance the quality and yield of their grapes.

Farmdeck's Sap Flow Meter has proven to be a game-changing tool for irrigation water management in vineyards. Using the Heat Ratio Method (HRM) principle, this device accurately measures sap flow in both small woody stems and large trees, making it ideal for monitoring water transport within vines.

Beyond supporting sustainable irrigation, the Sap Flow Meter delivers valuable insights throughout different growth stages of the vine, ensuring water is applied precisely when and where it is needed to encourage fruit development while conserving resources. When paired with Farmdeck's Soil Moisture probes and Microclimate sensors, it forms part of a **robust water budgeting solution**.

SNiP for Vineyard Water Budgeting

These also include:

Band Dendrometer: Monitors vine trunk shrinkage for precise irrigation scheduling.

Moisture Probe: Provides high-accuracy soil moisture data, ideal for various soil types, including challenging vineyard terrains.

In-Canopy Temperature and Humidity Sensor: Offers detailed measurements of evapotranspiration and crop transpiration rates.

Satellite

Cat-M1 NB-IOT

Gateway LoRaWAN

Global or Local Web Based DataView
(PC/Mac/Mobile Etc)

Farmdeck Node

Water Budgeting benefits:

Ensure consistent grape quality through effective water management.

Prevent water stress during critical growth phases with deficit irrigation strategies

Make informed decisions using real-time physiological, soil, and climate data.

3

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Soil Moisture

Gain better visibility and understanding of your farm's soil in real-time and historically by collecting data remotely through **IoT soil monitoring sensors**. Precise soil monitoring helps you accurately predict the water and nutrient needs of your corn crop, preventing over, or under, watering. This not only reduces costs but also promotes healthier, stronger plants, leading to higher-quality maize yields season after season.

Soil Moisture at Multiple Depths: Monitor moisture levels at root and sub-root zones to manage water availability effectively.

Temperature: Track soil temperature trends to optimise planting schedules and ensure ideal conditions for corn germination and growth.

Soil Water Depletion: Measure the available water in the soil profile to ensure it aligns with crop requirements during critical growth stages.

Sensor Signal Strength and Battery/Solar Voltage: Monitor signal strength and voltage for accurate measurements.

Data-Driven Irrigation Practices

Leverage Farmdeck's sensor data to implement advanced irrigation strategies to:

Manage Critical Growth Stages: Prioritise water application during peak water-use periods, including vegetative, tasseling, silking, and kernel filling stages.

Optimise Water Distribution: Avoid under, or over, watering by understanding soil moisture depletion rates and refilling the root zone only when necessary.

Reduce Water Loss: Implement irrigation methods that prevent waterlogging, leaching, and evaporation losses.

Tailor Schedules Based on ET (Evapotranspiration): Adjust watering schedules using ET calculations to match water application with crop water use rates.
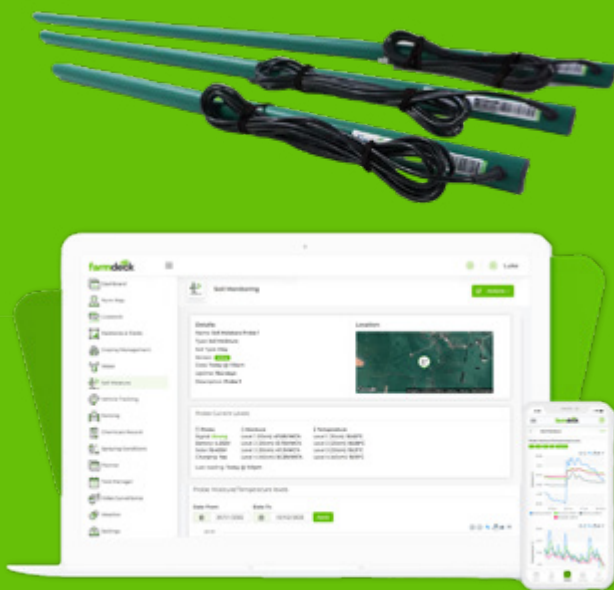
Digging deep: Historical Insights for Long-Term Gains

Farmdeck allows you to track and analyse your soil data over time with daily logs, by accessing moisture, temperature, and voltage records from installation to the last sensor reading. Furthermore, Farmdeck's soil moisture sensor allows you to visualise patterns of graphical trends in soil health and irrigation performance to fine-tune practices for future planting cycles.

Weather Monitoring

Your Key to Better Farming

Precision Weather Monitoring

Gain a clear advantage with cutting-edge weather technology tailored for your farm's needs. Our Weather Station and Farmdeck app work together to transform weather data into actionable insights for better farming outcomes. Farm with confidence, rain or shine.

Our Weather Station monitors critical weather parameters including air temperature, wind speed, air pressure, humidity, rainfall, and wind direction. This data integrates seamlessly with the Farmdeck app, offering real-time alerts and customised spraying recommendations for healthier crops and higher yields.

Receive real-time weather alerts and customised spraying recommendations through the Farmdeck app. This integration ensures you have accurate data to make informed decisions.

Stay ahead and plan smarter

Precision Monitoring: Measure key weather metrics like rainfall, wind speed and direction, humidity, and air pressure and temperature with high accuracy.

Integrated Reporting: Seamlessly works with the Farmdeck Spray Condition report, which gives you spray recommendations for corn crop needs.

Real-Time Data: Provides up-to-date weather information for timely decision-making.

Applications:

Weather Monitoring: Track weather patterns specific to your fields for better planning.
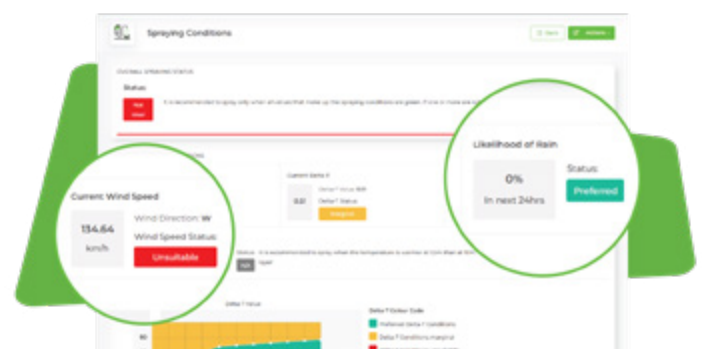
Spray Condition Reports: Optimise spraying schedules based on accurate weather data.

Seasonal Forecasting: Prepare for planting, pollination, and harvesting by leveraging accurate seasonal insights.

Alert System: Protect your crops from extreme conditions with timely notifications for storms, frost, or heatwaves.

Water Level Monitoring

Save time, reduce costs, and conserve water with real-time remote monitoring of all your water resources. Designed for all-scale corn farming operations, the Farmdeck water level monitoring sensor eliminates the need for physically checking every tank, dam, or trough across a vast property. With a comprehensive overview of your water sources, you'll always know the exact water levels, tank capacities, and sensor status across your operation.

Access from anywhere

Have visibility on all your water resources at any time whether it is on mobile, tablet, or desktop. Always be able to monitor your:
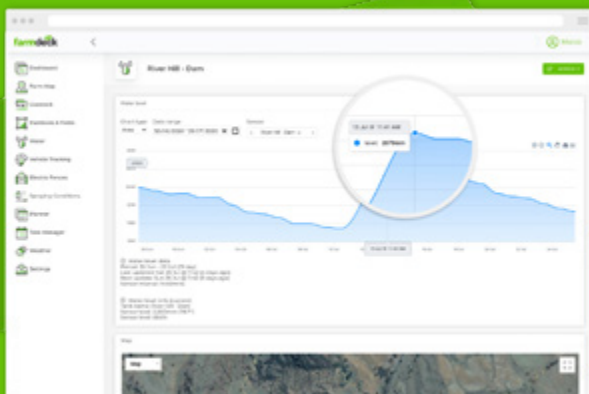
Water tanks

Troughs

Dams

Turkey's nests

Water Level History

Take a closer look at how your water levels have changed through time with our water level graph. Select the period you are interested in by modifying the date range. See exactly when the last reading was taken with this sensor, and when the next one will be.

This graph can help you plan where to send your mobs next depending on their water consumption and the water available in your paddocks.

Water Map

View where all your water sources are located on your land through the map. Select what you want to see and hide the rest using our toggle buttons.

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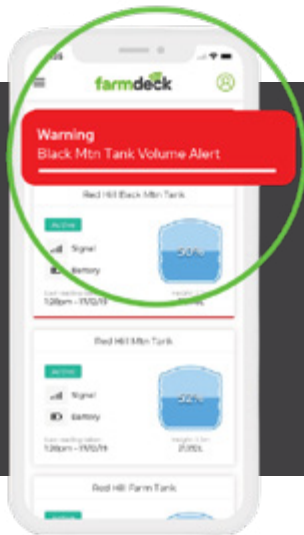
Set Alerts

The Farmdeck app will send you alerts when a fault is detected, allowing you to rectify the issue sooner rather than later. These alerts are customisable, so you can decide at what water level you will receive them. Alerts can be sent out to your email address or to your mobile, whichever is most convenient for you!

How do we monitor water levels with IoT?

We monitor our customers' water levels using three different methods depending on the type of water assets they have:

1 **Closed tanks:** We use a pressure transducer sitting at the bottom of the tank. The transducer measures the remaining Litres and percentage of water based on the applied water pressure.

2 **Open tanks and troughs:** We position an ultrasonic sensor at the top of the tank or trough. The sensor emits sound waves, and as they reach the water, they reflect back on the sensor. The water level is determined based on the time it takes for the sound waves to come back to the sensor, harnessing the speed of sound as measurement. Using this type of sensor in a closed tank would lead to important inaccuracies in the data as the sound waves would bounce back to the top of the tank instead of to the sensor.

3 **Dams:** We install a pressure transducer at the bottom of the dam linked to a buoy. The buoy plays two roles: it contains the transmitter, and it serves as a visual reminder of where the transducer is located. The pressure transducer measures the water level the same way it does in a closed tank.

Smart Pump and Valve Control: Smart control for optimal water usage

Automate your irrigation, fill up your tanks and ensure your crops get the precise amount of water they need. For corn/maize farming, precise irrigation and water management are critical to optimising yields and ensuring crop health. Unlike a basic ON/OFF switch, our system provides intelligent control tailored for these needs by analysing key factors such as water flow rates, soil moisture levels, and pressure changes. The Smart Pump and Valve Control leverages real-time data and user-defined metrics to adjust and automate irrigation schedules and water distribution dynamically.

Farmdeck's Smart Pump Control

Tailored to your needs, our sensor allows you to connect up to eight
devices. Depending on your property's connectivity needs, the sensor is available in LoRaWan and 4G. Leveraging cutting-edge communication technologies like LPWAN (LoRa/NB-IoT), it provides reliable, long-distance data transfer, at minimal cost and with extended battery life.

Sustainable and efficient water management

Integrated with water level monitors in your tanks, this system is designed to automatically activate the pump when water levels drop to a customisable threshold, ensuring a consistent water supply to meet the high demands of your crops. This automation guarantees your tanks remain adequately filled to support precise irrigation schedules, reducing the risk of water shortages and eliminating the need for manual intervention.

Irrigation aligned with your soil moisture.

Conserve water by preventing over-irrigation and reducing water wastage. By distributing water based on the actual needs of the crops and the soil moisture, our smart system ensures water is being used efficiently. Combine the Pump Control sensor with our Soil Probe sensor and irrigate only when necessary.

Turn the automatic feature of our Pump Control and let it adjust irrigation according to other information collected by our sensors. Stop guessing when to irrigate and efficiently manage your water consumption with data-centric decisions. Consistent and precise irrigation over time helps maintain the ideal soil moisture levels, promoting healthy crop growth. This leads to higher yields and better-quality produce.
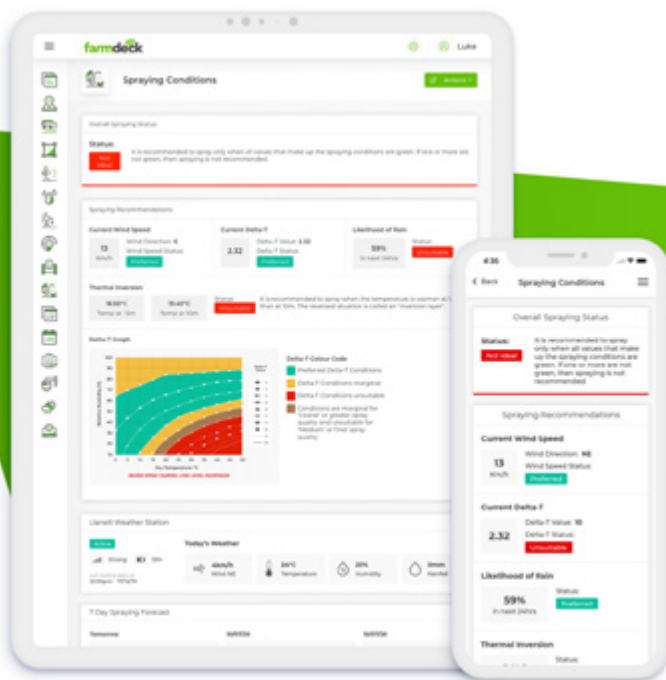
⚙ Other features

Better plan your livestock's next movement

Manually or automatically manage your livestock's movements on your paddocks using Farmdeck. Paddocks and Fields provides visibility over the essentials for day-to-day decision making on the farm including stocking rate.

Leverage the detailed information Farmdeck allows you to work with, including number of grazing days remaining, number of days a paddock has been resting, feed on offer, and pasture growth rate to help with making choices about when to move livestock between paddocks.

## Smoke and Fire Monitoring for enhanced farm safety

Protecting your corn and maize crops from fire hazards is critical to safeguarding your investment and ensuring a successful harvest. Farmdeck's Smoke and Fire Monitoring and Alerting feature offers peace of mind by providing real-time detection and instant notifications of potential fire threats.

Using advanced smoke and heat sensors integrated into Farmdeck's IoT ecosystem, the system continuously monitors your fields and surrounding areas for signs of smoke or abnormal temperature spikes. When detected, it immediately alerts you through the Farmdeck dashboard, SMS, or email, enabling swift action to prevent disasters.

Keep track of and record your farm's chemical details in one easy location

With the inventory tab, you can add, edit and view all the chemical products that you have on-farm, including dates, supplier info, batch number and storage location. You can also add your spraying equipment setups here. Record the nozzle model and size, boom height and pressure system all in one place.

Once you've built up a record, you'll be able to store information each year and have an easy-to find logbook if you are requested to undergo any audits.
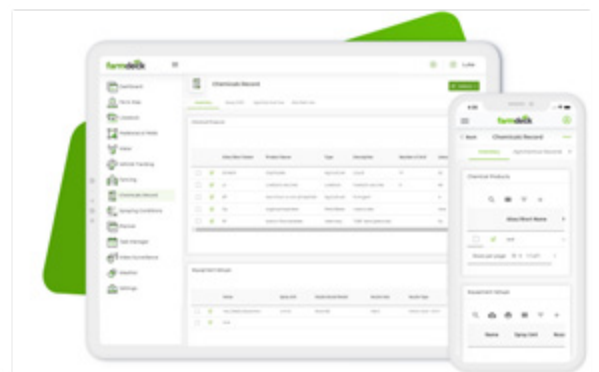
Our features

Livestock Tracking and Identification
livestock is identified and then tracked (weight, births, sheep/cattle drafters).

Water Level
monitors water levels in real-time, including water tanks, dams, troughs, and turkey nests.

Rainfall Monitoring
monitors how much rain has fallen across various locations on a farm.

Water Quality
monitors water quality (drinking and livestock) - salinity, turbidity, blue/green algae.

Delta-T Safe Spraying
gives spraying recommendations depending on delta-t, thermalinversion, and wind, and includesrecord keeping.

Paddock and Grazing Management
and Recommendations alert once grazing days have been reached, based on the quality of livestock in pad-dock.

Vehicle Tracking and Maintenance Management
track location, distance and speed of farm machinery like tractors, utes, quads, etc.

Farm Map
draw and manage paddocks and fences, and keep track of your mobs, vehicles, and all your assets in one place

Electric Fence Monitoring
monitors electric fences and alerts if power drops below a certain threshold.

Soil Temperature, Humidity and Moisture
monitors and reports on soil temperature, salinity, and moisture at various depths.

Quad Bike Overturn Alerting
alert if quad bike overturns or a motorbike goes down on its side.

Outdoor/Indoor Fire and Smoke Detection
indoor and outdoor fire and smoke detectors.

Task Manager
organises your activities by assigning tasks to your team and tracking their progress.

Operational Planner
recommends timelines for series of activities based on your farm, like sheep or cattle breeding cycles.

Stem Trunk and Fruit Diameter
monitors fruit trunk, diameter and leaf wetness.

Video Surveillance
surveillance monitoring of troughs and other farm assets.

Grazing Management
create a grazing planner and chart to gain a better understanding of your paddocks' needs and avoid overgrazing.

Chemical Records
keep an inventory of all the chemicals you use on your farm, whether for agriculture, livestock, or both.

Livestock Down Alerting
monitors livestock and alerts if cattle/sheep have been down or non-mobile for a period of time.

Energy Consumption
what can your data tell you? Track your electricity consumption as you go and avoid surprises.

NEW

Weed Detection
satellite images and machine learning identify weed types and calculate weedy areas - detects weed types, sizes patches.

Insect and Pest Detection
determine population numbers, plan crop protection, identify weak areas, and record insect species in specific areas.

Yield Estimation
identify and count crop produce, differentiate ripe from unripe fruit, receive detailed yield estimations without harvesting.

Automated Drafting
Integration automate livestock counting, enhancing security, detect theft and alert authorities in real-time.

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BY FARMERS
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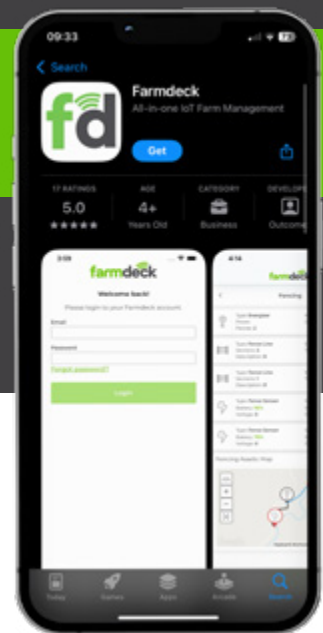with manufacturing facilities in Australia & New Zealand
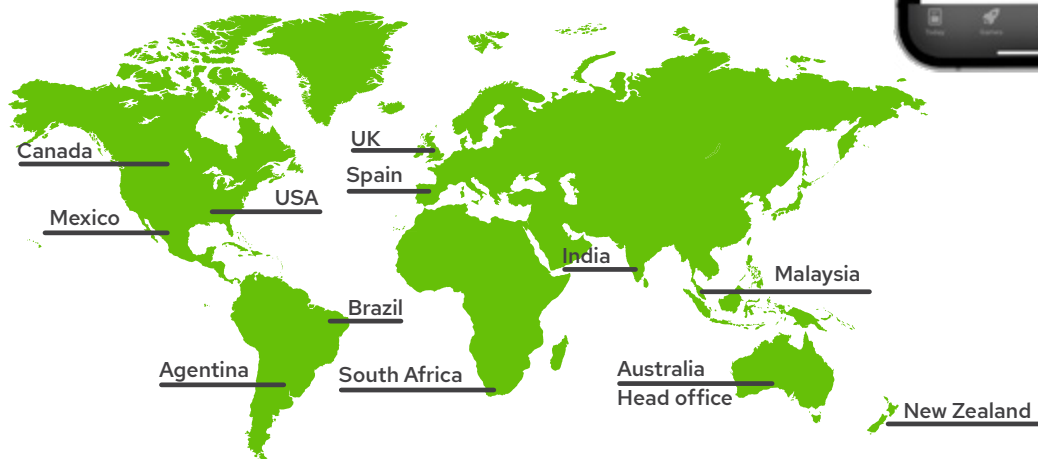
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